



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

7171 Cleanwater Lane, Building B, 114-14 * Olympia, Washington 98504-6814

October 8, 1991

TO: Bruce Cochran
Toxics Cleanup Program

FROM: Pam Marti *PM*
Toxics, Compliance, and Ground Water Investigation Section

SUBJECT: Lakewood/Plaza Cleaners Long-term Monitoring Round II

SUMMARY

The Toxics, Compliance, and Ground Water Investigations Section collected samples from monitoring wells located near the Lakewood/Plaza Cleaners Site on May 15-16, 1991 (Figure 1). This sampling is part of routine ground water monitoring conducted in compliance with the Record of Decision (ROD). Observed concentrations for PERC, TCE and 1,2-DCE are consistent with previous sample results. Samples collected for water quality analysis met all applicable state and federal drinking water criteria.

OBJECTIVES

The Toxics Cleanup Program (TCP) requested that the Toxics, Compliance, and Ground Water Investigations Section conduct long-term monitoring of the ground water at the Lakewood/Plaza Cleaners Site on a semi-annual basis. Monitoring objectives are as follows:

1. Collect ground water quality data that can be used to evaluate the effectiveness of continued operation of wells H1 and H2 to contain and remove contaminated ground water from the aquifer.
2. Monitor the uncaptured portion of the plume.
3. Monitor ground water upgradient of the site to determine if contaminants are migrating toward H1 and H2 from McChord Air Force Base (MCAFB).
4. Collect samples for additional water quality analysis during the first year of monitoring to characterize the general ground water quality of the study area.

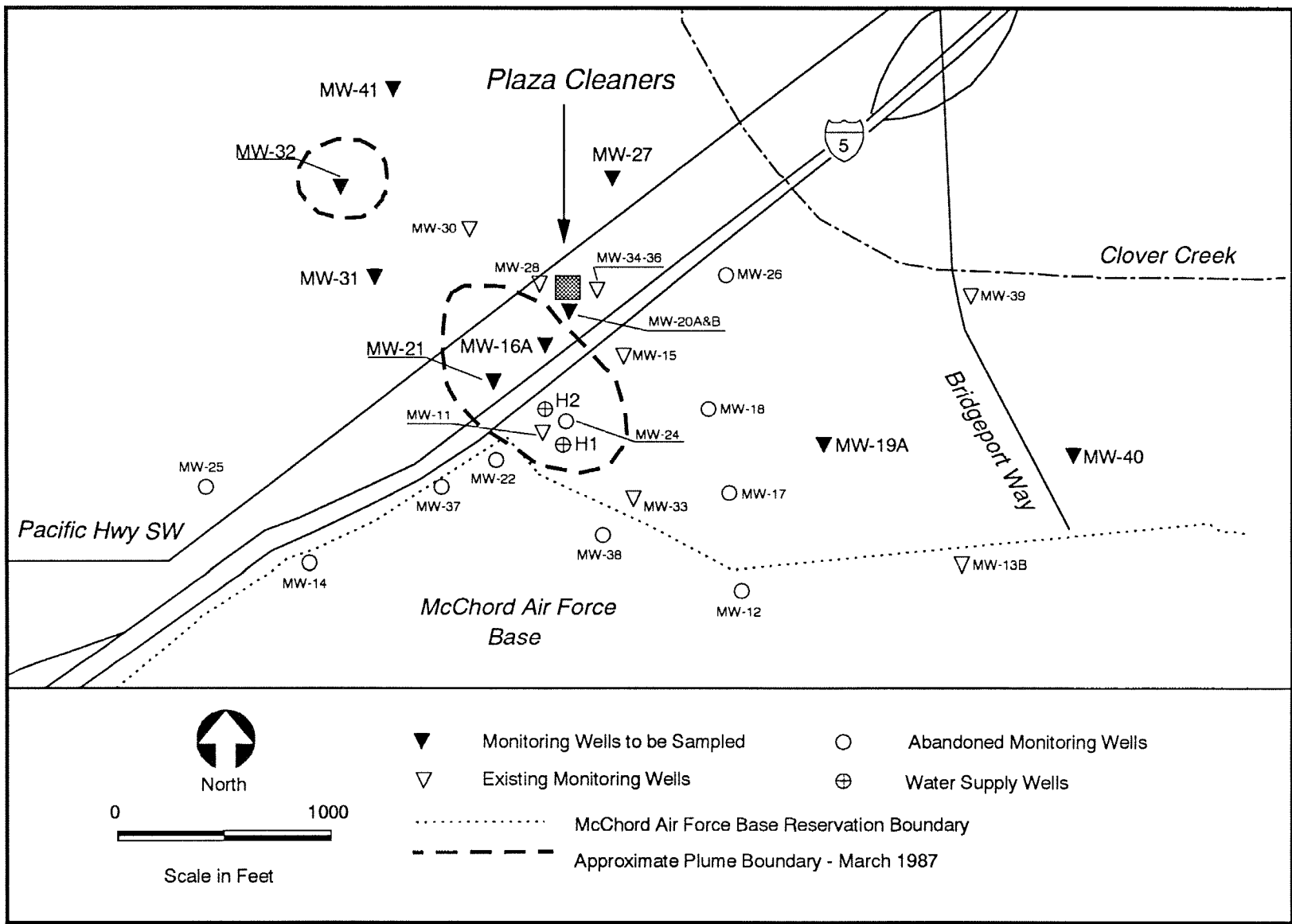


Figure 1: Well Location Map - Lakewood/Plaza Cleaners

SITE BACKGROUND

In 1981, tetrachloroethylene (PERC), trichloroethylene (TCE), and 1,2-dichloroethylene (1,2-DCE) were detected in two Lakewood Water District supply wells (wells H1 and H2), as shown on Figure 1. On-site disposal of waste solvents and sludges at Plaza Cleaners, located 800 feet north of the wells, was identified as the source of the contamination. Site remediation consisted of removal of contaminated sludge and soils, soil-vapor extraction and installation of two air-stripping towers for wells H1 and H2. Soil-vapor extraction was performed intermittently between March 1988 and April 1989. During operation, several hundred pounds of PERC was removed from the glacial till that overlies the main aquifer in the area.

Results from on-site monitoring wells between 1985 to the present show that the pump and treat system has contained and reduced the level of ground water contamination (CH2M Hill, 1990). A portion of the contaminated plume located northwest of the site is not being captured by remedial pumping. However, contaminant concentrations in the uncaptured plume are decreasing; possibly due to biodegradation, dispersion and/or dilution.

Upgradient monitoring wells were installed to detect possible contaminant migration from the adjacent McChord Air Force Base (MCAFB). Previous studies (EPA, 1985) indicated potential contamination sources from MCAFB are located within the long-term capture zone of wells H1 and H2. Possible contaminants from McChord AFB include hydrocarbons, pesticides, and heavy metals.

Geology of the study area was defined in the Final Draft Remedial Investigation Report for Ponder's Corner, Washington (1985) as consisting of four geologic units which are listed in descending order; the Steilacoom Gravel, Vashon Till, Advance Outwash, and the Colvos Sands. The main units of interest are the Vashon Till and the Advance Outwash. The Steilacoom Gravel is found throughout most of the study area and ranges in thickness from 1 to 58 feet. This unit often contains perched water which flows to the northwest near wells H1 and H2, but to the south and southeast near the south end of Plaza Cleaners. The Vashon Till underlies the Steilacoom Gravel and ranges in thickness from 8 to 92 feet. Over most of the site the till mixture forms an aquitard of unsaturated and saturated sediments separating the Steilacoom Gravel, above, from the Advance Outwash, below. The Advance Outwash is the primary aquifer for the area. The predominant horizontal flow in the Advance Outwash is west-northwest when production wells H1 and H2 are not in use. When in use, the wells create a large cone of depression. Previous studies showed that drawdowns occur in shallow monitoring wells drilled in the Steilacoom gravel when H1 and H2 are pumping (EPA, 1985). This indicates possible hydraulic interconnection between the Steilacoom gravel and the Advanced Outwash. The Advance Outwash overlies the Colvos Sand.

METHODS

Ground Water Sampling

Figure 2 shows the locations of the sampled wells. Prior to sample collection, static water level measurements were obtained from all wells using an electronic water level indicator which was rinsed with deionized water after use at each location. All monitoring wells were purged until a minimum of three well volumes had been removed and pH, temperature, and conductivity readings stabilized. Purge water was discharged to storm drains or to the ground near each monitoring well. All wells but one were purged and sampled using dedicated bladder pumps. Well MW-20B is not equipped with a dedicated pump and was purged and sampled with a decontaminated teflon bailer. Table 1 lists field observation data including well depth, geologic unit, static water level, pH, specific conductance, temperature, and purged volume in order the wells were sampled.

Wells were sampled from the least to most contaminated. Samples collected for volatile organics were free of headspace and preserved with two drops of 1:1 hydrochloric acid. Samples for dissolved metals analysis were filtered in the field through a 0.45 μm polycarbonate membrane in-line filter and preserved with 1 mL of nitric acid to a $\text{pH} < 2$. Chemical analyses, analytical methods, and detection limits are shown in Table 2.

Prior to sample collection, field equipment (i.e., bailers) were precleaned with sequential washes of a Liquinox[®] wash, hot tap water rinse, 10 percent nitric acid, distilled/deionized water, and pesticide-grade acetone, then air-dried and wrapped in aluminum until being used in the field. Chain-of-custody procedures were followed in accordance with Manchester Laboratory protocol (Huntamer, 1986).

Quality Assurance Samples

In addition to laboratory calibration standards and method blanks, field quality assurance samples consisted of a blind duplicate, replicate, transfer blank, filtration blank, transport blank, matrix spikes, and matrix spike duplicates.

Blind duplicate samples, labeled MW-16B, were collected for all parameters from well MW-16A. Duplicate samples are two sets of samples collected from a well at the same time and submitted to the laboratory blind. A replicate sample was collected from well MW-20A and tested for volatile organics. Replicate samples are two sets of samples collected from a well at different times during the sample investigation. A transfer blank and filter blank were collected and tested for volatile organics only. A transfer blank was collected by pouring organic-free water through a decontaminated bailer. A filter blank was obtained by pumping organic-free water through a peristaltic pump and an in-line filter. A transport blank for volatile organics was carried throughout the sample investigation.

Table 1: Field Parameter Results for May 15-16, 1991

Monitoring Well	TD From Top of PVC Casing As Measured	Geologic Unit Screened	Depth to Water	pH (st. units)	Specific Conductance (umhos/cm)	Temperature (C)	Purge Volume (gallons)
MW-19A	97.5	Advance Outwash	34.51	7.27	143	11.7	39
MW-41	96.8	Advance Outwash	27.26	7.53	155	11.9	35
MW-27	96.4	Advance Outwash	49.80+	7.08	152	13.0	21
MW-20A	97.3	Advance Outwash	29.93	9.75	192	14.5	34
MW-32	114.4	Advance Outwash	58.66	7.04	152	11.8	28
MW-31	91.5	Advance Outwash	29.5+	7.12	142	12.1	31
MW-21	92.1	Advance Outwash	38.01	7.36	160	12.9	27
MW-16A	109	Advance Outwash	39.48	7.58	188	13.7	135
MW-20B	50.4	Vashon Till	30.57	7.49	412	14.6	10

TD = Total Depth

+ = Probe hit obstruction above water level.

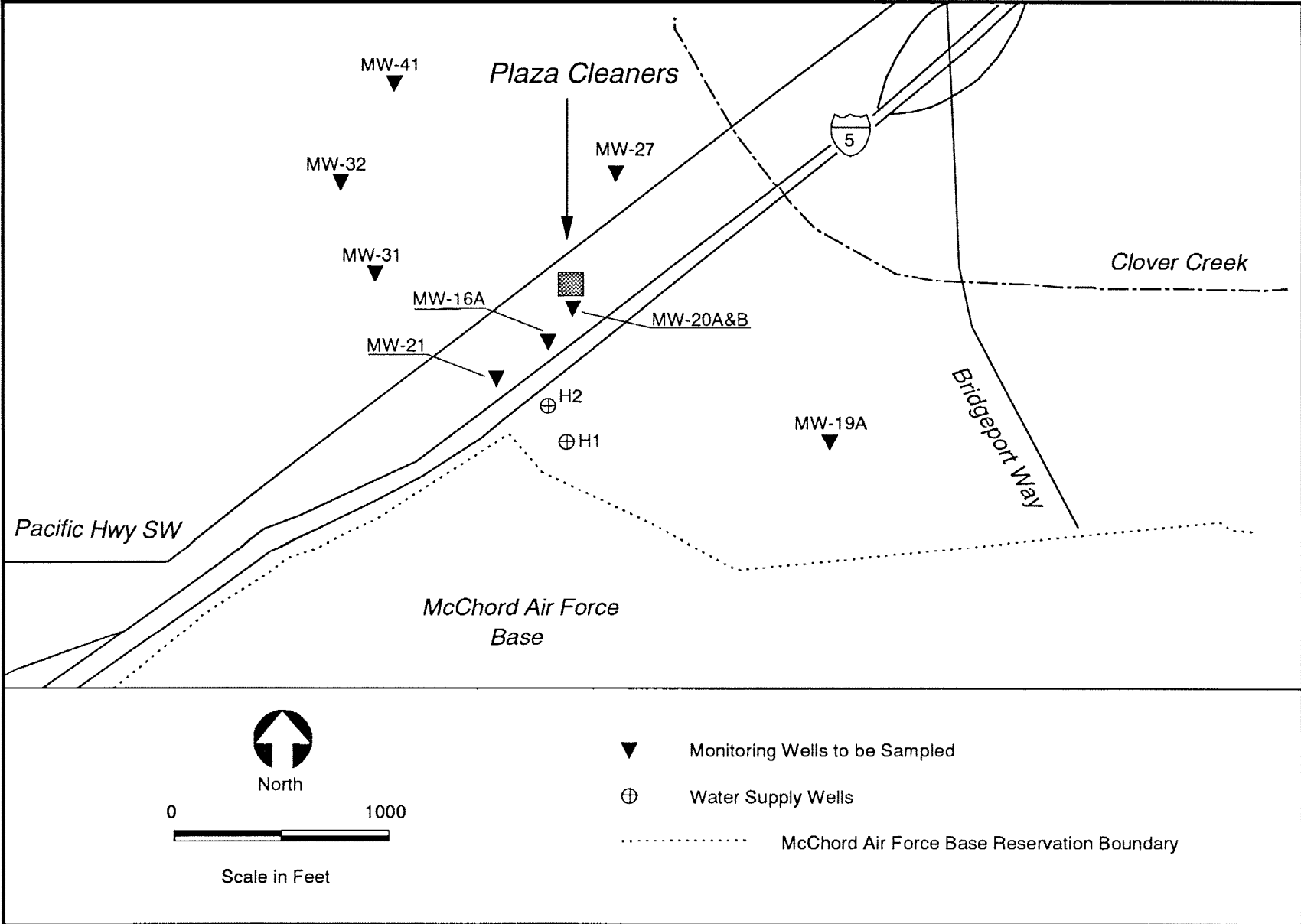


Figure 2: Lakewood/Plaza Cleaners Sample Locations for May 1991

Table 2: Parameters, Analytical Methods and Detection Limits

Parameters	Analytical Method	Reference	Detection Limit
Field Parameters:			
Water Level	Slope Indicator Well Probe	NA	0.05 ft.
pH	Beckman pH Meter	NA	0.1 Std Units
Specific Conductance	Beckman RC-15C Conductivity Bridge	NA	10 μ mhos/cm
Temperature	Precision Thermometer	NA	0.1°C
Volatile Organics:	#624	EPA 1983	1-10 μ g/L
Major Cations:			
Sodium	#200.7	EPA 1983	10.0 μ g/L
Calcium	#200.7	EPA 1983	1.0 μ g/L
Magnesium	#200.7	EPA 1983	1.0 μ g/L
Major Anions:			
Chloride	#429	APHA 1985	0.1 mg/L
Carbonate	#406C	APHA 1985	1.0 mg/L
Bicarbonate	#406C	APHA 1985	1.0 mg/L
Sulfate	#429	APHA 1985	0.05 mg/L
Indicator Parameters:			
Hardness	#314B	APHA 1985	1.0 mg/L
Nitrate/Nitrite	#353.2	EPA 1983	0.01 mg/L
Total Dissolved Solids	#160.1	EPA 1983	10.0 mg/L
Metals (Total Recoverable):			
Arsenic	#206.2	EPA 1983	1.0 μ g/L
Barium	#200.7	EPA 1983	2.0 μ g/L
Cadmium	#200.7	EPA 1983	2.0 μ g/L
Chromium	#200.7	EPA 1983	3.0 μ g/L
Copper	#200.7	EPA 1983	3.0 μ g/L
Iron	#200.7	EPA 1983	3.0 μ g/L
Lead	#239.2	EPA 1983	1.0 μ g/L
Manganese	#200.7	EPA 1983	2.0 μ g/L
Mercury	#245.1	EPA 1983	0.2 μ g/L
Nickel	#200.7	EPA 1983	4.0 μ g/L
Selenium	#270.2	EPA 1983	2.0 μ g/L
Silver	#200.7	EPA 1983	3.0 μ g/L
Zinc	#200.7	EPA 1983	2.0 μ g/L

NA = Not Applicable

American Public Health Association, 1985. Standard Methods for the Examination of Water and Wastewater.

U.S. EPA, 1983. Methods for the Chemical Analysis of Water and Wastes. Environmental Monitoring and Support Laboratory, March 1983.

Quality assurance results for volatile organics are summarized below. Estimated concentrations of chloromethane, acetone, methylene chloride, 2-butanone, toluene, and naphthalene were detected in the transfer, transport, and laboratory method blanks, at concentrations at or near the detection limit. The presence of these compounds is attributed to laboratory contamination and are not reported in the tables.

Total dissolved solids analysis was performed after the recommended holding time, therefore the results are qualified with an "H".

Quality assurance results for metals are discussed in a memo from Randy Knox (Appendix A) and are summarized below. Trace amounts of calcium, iron, magnesium, and sodium were detected in the metals method blank. Sample results less than ten times the blank value are flagged with a "B". Sodium results are flagged with an "E" because of analytical interference. Results flagged with a "J" indicate an estimated concentration. Barium, copper, manganese, and zinc are qualified with a "P" because the observed concentration was between the instrumental detection limit and the practical quantitation limit.

Data for this project are acceptable for use. Overall, precision (sampling and laboratory) calculated from detected values in blind duplicate samples was good (relative percent difference being $\pm 10\%$) for all analysis; organics, conventionals, and metals; with the exceptions of 1,2-dichloroethylene (40%), barium (64%), and zinc (57%). Generally, most of the matrix spike and spike duplicate recoveries for volatile organics and metals were within the acceptable limits of $\pm 25\%$ for water sample analysis. Acetone (47%), chloroethane (239%), tetrachloroethene (35%), calcium (67%), iron (66%) and lead (70%) did not meet the acceptable limits for one or both spiked analyses.

Originally the results from sample MW-20B and the replicate sample MW-20A** collected on May 16 were transposed. This was probably due to incorrect labeling of the bottles at the time of sampling. Wells MW-20A and MW-20B were resampled on August 22, and results from these samples were consistent with historical data. The results from May 16 are reported in Table 3 with the appropriate well.

RESULTS

Analytical results are presented in Appendix A. Data were managed using the ENVIS database software package. Tables 3 and 4 are summaries of contaminants found during Sampling Round II conducted on May 15-16, 1991.

Volatile Organics

Volatile organics results are listed in Table 3. Tetrachloroethylene (PERC), trichloroethylene (TCE) and 1,2-dichloroethylene (1,2-DCE) were detected primarily in the main plume. Maximum concentrations of these compounds were detected in wells MW-20B (752 ppb, 16 ppb, and 30 ppb respectively) and MW-16A (26 ppb, 0.6J ppb, and 2 ppb respectively). Low levels

of PERC and 1,2-DCE were detected in wells MW-20A, MW-21, MW-31 and MW-32, all of which were at or near the detection limit. Trans-1,2-dichloroethene, 1,1,1-trichloroethane, and chloroform were also detected as estimated values below the detection limit in well MW-20B.

Samples collected from wells MW-20A and MW-20B on August 22 show consistent results with the historical data. PERC (920 ppb), TCE (16J ppb), and 1,2-DCE (22 ppb), were detected in MW-20B, in addition to low concentrations of trans-1,2-dichloroethene (0.8J ppb), 1,1,1-trichloroethane (0.3J ppb), chloroform (0.2J ppb), vinyl chloride (0.3J ppb), and chlorobenzene (0.1J ppb). 1,1,1-trichloroethane was detected in MW-20A at a concentration of 0.2J ppb.

Conventional Constituents and Metals

Water quality results for conventionals and metals samples collected from MW-16A, MW-19A, and MW-32 are shown in Table 4.

Maximum observed concentrations for both conventionals and metals are as follows: total dissolved solids (219H mg/L), hardness (95.9 mg/L), nitrite/nitrate-N (2.2 mg/L), chloride (7.2 mg/L), sulfate (14.8 mg/L), bicarbonate (82 mg/L), barium (4.3P $\mu\text{g/L}$), calcium (21.8J mg/L), copper (3.5P $\mu\text{g/L}$), iron (5.5JB $\mu\text{g/L}$), magnesium (9.29J mg/L), manganese (1.5P $\mu\text{g/L}$), mercury 0.05J $\mu\text{g/L}$, sodium (8.3E mg/L), and zinc (8.8J $\mu\text{g/L}$).

DISCUSSION AND CONCLUSIONS

Volatile Organics

Concentrations of volatile organic contaminants found in the main plume are similar to past results. Appendix B presents concentrations of TCE and PERC measured in monitoring wells at the Lakewood site over the history of the project. The historical maximum concentrations for TCE and PERC were recorded in March 1985 in well MW-20B at 103 ppb and 4,856 ppb respectively. During this sample round, the highest concentrations of PERC, TCE and 1,2-DCE were found in well MW-20B, with maximum concentrations of 752 ppb, 16 ppb, and 30 ppb respectively. This well is close to Plaza Cleaners, is centrally located over the main plume, and is screened in the Vashon Till. Low concentrations of PERC, TCE, and 1,2-DCE were also detected in MW-16A with concentrations of 26 ppb, 0.6J ppb, and 2 ppb respectively. MW-16A is screened in the main aquifer below the more highly contaminated Vashon Till.

Although MW-16A is further from the source, the concentration of PERC and 1,2-DCE have consistently been higher in this well than that measured in MW-20A (See Figure 2). This may be due to the location of lenses of higher conductive material in the overlying contaminated Vashon Till that would allow downward migration of contaminants to the main aquifer.

Table 3: Summary of Analytes Detected in Samples Collected During May 15-16, 1991

	Main Plume									Uncaptured Plume	MCAFB
	MW-16A	MW-16B*	MW-20A	MW-20A**	MW-20B	MW-21	MW-27	MW-31	MW-32	MW-41	MW-19A
<u>Volatile Organics: (ug/L)</u>											
Tetrachloroethylene (PERC)	26	28	0.4 J	0.4 J	752	2	1.0 U	0.6 J	1	1.0 U	--
Trichloroethylene (TCE)	0.6 J	0.6 J	1.0 U	1.0 U	16	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,2-Dichloroethylene (1,2-DCE)	2	3	1.0 U	1.0 U	30	0.7 J	1.0 U	2	2	1.0 U	--
Trans-1,2-Dichloroethene	1.0 U	1.0 U	1.0 U	1.0 U	0.5 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,1,1-Trichloroethane	1.0 U	1.0 U	1.0 U	1.0 U	0.3 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Chloroform	1.0 U	1.0 U	1.0 U	1.0 U	0.2 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	

* = Duplicate

** = Replicate

-- = Not analyzed

U = Not detected at detection limit shown

J = Observed concentration between instrumental detection limit and practical quantitation limit

Table 4: Summary of Sample Results Collected During May 15–16, 1991

	Main Plume		Uncaptured Plume	MCAFB
	MW-16A	MW-16B*	MW-32	MW-19A
Indicator Parameters: (mg/L)				
TDS	149 H	157 H	219 H	138 H
Hardness	96	94	86	90
NO ₂ -NO ₃	2.2	2.2	2.1	1.4
Major Anions: (mg/L)				
Chloride	6.9	6.9	7.2	4.7
Sulfate	14	15	11	11
Bicarbonate	82	81	74	78
Carbonate	1 U	1 U	1 U	1 U
Trace Metals: (ug/L)				
Arsenic	30 UJ	30 UJ	30 UJ	30 UJ
Barium	2.2 P	4.3 P	1.6 P	1.7 P
Cadmium	2.0 U	2.0 U	2.0 U	2.0 U
Calcium (mg/L)	21 J	22 J	20	18
Chromium	5.0 U	5.0 U	5.0 U	5.0 U
Copper	3.0 U	3.5 P	3.0 U	3.0 U
Iron	2.0 UJ	5.5 JB	2.0 UJ	2.0 UJ
Lead	20 UJ	20 UJ	20 UJ	20 UJ
Magnesium (mg/L)	8.9	9.3 J	8	8.6
Manganese	1.0 U	1.5 P	1.0 U	1.0 U
Mercury	0.04 U	0.04 U	0.04 U	0.05 J
Nickel	10 U	10 U	10 U	10 U
Selenium	50 UJ	50 UJ	50 UJ	50 UJ
Sodium (mg/L)	7.5 E	8.3 E	6.6 E	6.3 E
Zinc	4.7 P	8.5 P	8.8 J	6.9 P

* = Duplicate

H = Exceeded recommended holding time

U = Not detected at detection limit shown

J = Estimated value

P = Observed concentration between instrumental detection limit and practical quantitation limit

B = Analyte detected in method blank

E = Estimated value due to presence of interference

Monitoring wells MW-41 and MW-32 were sampled to assess the quality of ground water in the uncaptured portion of the plume. PERC and 1,2-DCE were detected at low concentrations in MW-32 only.

Conventional Constituents and Metals

Water quality samples were collected from wells MW-16A, MW-32 and MW-19A. Results for both conventionals and metals tended to be slightly higher in well MW-16A, located in the main plume, but were still well below state and federal drinking water criteria. Of the three wells sampled for metals analysis, barium, calcium, copper, iron, magnesium, manganese, mercury, sodium, and zinc were detected at low concentrations.

Proposed baseline water quality sampling is completed with this sampling event.

REFERENCES

APHA, AWWA, WPCF. Standard Methods for the Examination of Water and Wastewater. 16th ed., Washington, D.C., 1985.

EPA. Final Draft Remedial Investigation Report - Ponder's Corner, Washington. EPA 112-0L22, 1985.

EPA. Methods for Chemical Analysis of Water and Wastes. EMSL Cincinnati, Ohio, EPA 600/4-79-020, 1983.

Huntamer. Department of Ecology Laboratory Users Manual. 1986.

PM:blt

cc: Bill Yake
Nancy Winters

APPENDIX A

Analytical Results
Lakewood/Plaza Cleaners
May 15-16, 1991

WASHINGTON STATE DEPARTMENT OF ECOLOGY
ENVIRONMENTAL INVESTIGATIONS AND LABORATORY SERVICES
MANCHESTER LABORATORY

July 23, 1991

TO: Pamela Marti

FROM: Randy Knox ^{DPK}

SUBJECT: QA Summary on Dissolved Water Samples

SAMPLE RECEIPT:

The samples from the Lakewood Plaza Cleaners project were received by the Manchester Laboratory on 5/17/91 in good condition.

HOLDING TIMES:

All analyses were performed within the specified holding times for metals analysis (28 days for mercury, 180 days for all other metals).

INSTRUMENT CALIBRATION:

Instrument calibration was performed before each analytical run and checked by initial calibration verification standards and blanks. Continuing calibration standards and blanks were analyzed at a frequency of 10% during the run and again at the end of the analytical run. All initial and continuing calibration verification standards were within the control limits of +/- 10%. AA calibration gave correlation coefficients greater than the criteria of 0.995. A correlation coefficient of 0.995 or higher means that the calibration is acceptable.

PROCEDURAL BLANKS:

The procedural blanks associated with these samples showed no detectable levels of analytes other than calcium, iron, magnesium, and sodium. Where these elements are detected at concentrations <10X the blank level, the analysis is flagged with a B to indicate blank contamination.

SPIKED SAMPLE ANALYSIS:

Spiked sample and duplicate spiked sample analysis were performed on sample number(s) 208093 and 208092 for mercury. All spike recoveries were within the acceptable limits of +/- 25% for water sample analysis except those for calcium, iron and lead on one duplicate (67%, 66%, and 70% respectively). Lead is low likely due to the fact it was spiked at levels more appropriate to furnace work than ICP analysis. Data on these elements are flagged with a

J to indicate they are estimated quantities. Arsenic, selenium and manganese were not spiked at ICP levels and recovery is not calculated. These elements are also flagged with a J.

PRECISION DATA:

The duplicate results of the spiked and duplicate spiked sample were used to calculate precision related to the analysis of these samples. The % RPD for all parameters was within the +/- 20% window for duplicate analysis with the exception of iron and magnesium.

ICP SERIAL DILUTION ANALYSIS:

The Relative Percent Difference (RPD) between sample results and the results for a serial dilution of the same sample were less than 10%. Sodium is an exception. Data is flagged with an E to indicate interference.

SUMMARY:

The data generated by the analysis of the above referenced samples can be used with qualification of results on arsenic, manganese, arsenic, selenium, iron and lead for low spike recovery or the absence of recovery data. Sodium is qualified for interference problems and two samples have qualified data for calcium, magnesium sodium and iron due to blank contamination.

If you have any questions about the results or the methods used to obtain these results please call me at SCAN 744-4737.

cc Bill Kammin

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208080

Description: MW-41

Source: Well (Test/Observation)

Begin Date: 91/05/15 :

VOA - PP Scan (GCMS)	Water-Total Result Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result Units
Carbon Tetrachloride	1U ug/l	Bromobenzene	1U ug/l
Acetone	2UJ ug/l	Toluene	1U ug/l
Chloroform	1U ug/l	Chlorobenzene	1U ug/l
Benzene	1U ug/l	1,2,4-Trichlorobenzene	1U ug/l
1,1,1-Trichloroethane	1U ug/l	Dibromochloromethane	1U ug/l
Chloromethane	1UJ ug/l	Tetrachloroethene	1U ug/l
Dibromomethane	1U ug/l	Sec-Butylbenzene	1U ug/l
Bromochloromethane	1U ug/l	1,3-Dichloropropane	1U ug/l
Chloroethane	1U ug/l	Cis-1,2-Dichloroethene	1U ug/l
Vinyl Chloride	1U ug/l	trans-1,2-Dichloroethene	1U ug/l
Methylene Chloride	1U ug/l	1,3-Dichlorobenzene	1U ug/l
Carbon Disulfide	1U ug/l	1,1-Dichloropropene	1U ug/l
Bromoform	1U ug/l	2,2-Dichloropropane	1U ug/l
Bromodichloromethane	1U ug/l	2-Hexanone	1U ug/l
1,1-Dichloroethane	1U ug/l	Ethane, 1,1,1,2-Tetrac+	1U ug/l
1,1-Dichloroethene	1U ug/l	cis-1,3-Dichloropropene	1U ug/l
Trichlorofluoromethane	1U ug/l	trans-1,3-Dichloroprop+	1U ug/l
Methane, Dichlorodiflu+	1U ug/l	p-Bromofluorobenzene	100 % Recov
1,2-Dichloropropane	1U ug/l	Surrog: 1-Bromo-2-Fluo+	104 % Recov
2-Butanone	2UJ ug/l	D4-1,2-Dichlorobenzene	99 % Recov
1,1,2-Trichloroethane	1U ug/l	d8-Toluene	99 % Recov
Trichloroethene	1U ug/l	d4-1,2-Dichloroethane	102 % Recov
ETHANE, 1,1,2,2-TETRAC+	1U ug/l		
1,2,3-Trichlorobenzene	1U ug/l		
Hexachlorobutadiene	1U ug/l		
Naphthalene	1UJ ug/l		
Benzene, 1,2-Dimethyl	1U ug/l		
2-Chlorotoluene	1U ug/l		
1,2-Dichlorobenzene	1U ug/l		
1,2,4-Trimethylbenzene	1U ug/l		
1,2-Dibromo-3-chloropr+	1U ug/l		
1,2,3-Trichloropropane	1U ug/l		
Tert-Butylbenzene	1U ug/l		
Isopropylbenzene (Cume+	1U ug/l		
p-Isopropyltoluene	1U ug/l		
Ethylbenzene	1U ug/l		
BENZENE, ETHENYL-(STYR+	1U ug/l		
BENZENE, PROPYL-	1U ug/l		
Butylbenzene	1U ug/l		
4-Chlorotoluene	1U ug/l		
1,4-Dichlorobenzene	1U ug/l		
1,2-Dibromoethane (EDB)	1U ug/l		
1,2-Dichloroethane	1U ug/l		
4-Methyl-2-Pentanone	1U ug/l		
1,3,5-Trimethylbenzene	1U ug/l		

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208081

Description: MW-27

Source: Well (Test/Observation)

Begin Date: 91/05/15 :

VOA - PP Scan (GCMS)		Water-Total		VOA - PP Scan (GCMS)		Water-Total	
		Result	Units	*** Continued ***		Result	Units
Carbon Tetrachloride		1U	ug/l	Bromobenzene		1U	ug/l
Acetone		3UJ	ug/l	Toluene		1U	ug/l
Chloroform		1U	ug/l	Chlorobenzene		1U	ug/l
Benzene		1U	ug/l	1,2,4-Trichlorobenzene		1U	ug/l
1,1,1-Trichloroethane		1U	ug/l	Dibromochloromethane		1U	ug/l
Chloromethane		1UJ	ug/l	Tetrachloroethene		1U	ug/l
Dibromomethane		1U	ug/l	Sec-Butylbenzene		1U	ug/l
Bromochloromethane		1U	ug/l	1,3-Dichloropropane		1U	ug/l
Chloroethane		1U	ug/l	Cis-1,2-Dichloroethene		1U	ug/l
Vinyl Chloride		1U	ug/l	trans-1,2-Dichloroethe+		1U	ug/l
Methylene Chloride		1U	ug/l	1,3-Dichlorobenzene		1U	ug/l
Carbon Disulfide		1U	ug/l	1,1-Dichloropropene		1U	ug/l
Bromoform		1U	ug/l	2,2-Dichloropropane		1U	ug/l
Bromodichloromethane		1U	ug/l	2-Hexanone		1U	ug/l
1,1-Dichloroethane		1U	ug/l	Ethane, 1,1,1,2-Tetrac+		1U	ug/l
1,1-Dichloroethene		1U	ug/l	cis-1,3-Dichloropropene		1U	ug/l
Trichlorofluoromethane		1U	ug/l	trans-1,3-Dichloroprop+		1U	ug/l
Methane, Dichlorodiflu+		1U	ug/l	p-Bromofluorobenzene		100	% Recov
1,2-Dichloropropane		1U	ug/l	Surrog: 1-Bromo-2-Fluo+		97	% Recov
2-Butanone		1UJ	ug/l	D4-1,2-Dichlorobenzene		98	% Recov
1,1,2-Trichloroethane		1U	ug/l	d8-Toluene		97	% Recov
Trichloroethene		1U	ug/l	d4-1,2-Dichloroethane		104	% Recov
ETHANE, 1,1,2,2-TETRAC+		1U	ug/l				
1,2,3-Trichlorobenzene		1U	ug/l				
Hexachlorobutadiene		1U	ug/l				
Naphthalene		1UJ	ug/l				
Benzene, 1,2-Dimethyl		1U	ug/l				
2-Chlorotoluene		1U	ug/l				
1,2-Dichlorobenzene		1U	ug/l				
1,2,4-Trimethylbenzene		1U	ug/l				
1,2-Dibromo-3-chloropr+		1U	ug/l				
1,2,3-Trichloropropane		1U	ug/l				
Tert-Butylbenzene		1U	ug/l				
Isopropylbenzene (Cume+		1U	ug/l				
p-Isopropyltoluene		1U	ug/l				
Ethylbenzene		1U	ug/l				
BENZENE, ETHENYL-(STYR+		1U	ug/l				
BENZENE, PROPYL-		1U	ug/l				
Butylbenzene		1U	ug/l				
4-Chlorotoluene		1U	ug/l				
1,4-Dichlorobenzene		1U	ug/l				
1,2-Dibromoethane (EDB)		1U	ug/l				
1,2-Dichloroethane		1U	ug/l				
4-Methyl-2-Pentanone		1U	ug/l				
1,3,5-Trimethylbenzene		1U	ug/l				

(Sample Complete)

13:14:04

Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208082

Description: MW-20A

Source: Well (Test/Observation)

Begin Date: 91/05/15 :

VOA - PP Scan (GCMS)	Water-Total Result	Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Carbon Tetrachloride	1U	ug/l	Bromobenzene	1U	ug/l
Acetone	3UJ	ug/l	Toluene	1U	ug/l
Chloroform	1U	ug/l	Chlorobenzene	1U	ug/l
Benzene	1U	ug/l	1,2,4-Trichlorobenzene	1U	ug/l
1,1,1-Trichloroethane	1U	ug/l	Dibromochloromethane	1U	ug/l
Chloromethane	1UJ	ug/l	Tetrachloroethene	0.4J*	ug/l
Dibromomethane	1U	ug/l	Sec-Butylbenzene	1U	ug/l
Bromochloromethane	1U	ug/l	1,3-Dichloropropane	1U	ug/l
Chloroethane	1U	ug/l	Cis-1,2-Dichloroethene	1U	ug/l
Vinyl Chloride	1U	ug/l	trans-1,2-Dichloroethene	1U	ug/l
Methylene Chloride	1U	ug/l	1,3-Dichlorobenzene	1U	ug/l
Carbon Disulfide	1U	ug/l	1,1-Dichloropropene	1U	ug/l
Bromoform	1U	ug/l	2,2-Dichloropropane	1U	ug/l
Bromodichloromethane	1U	ug/l	2-Hexanone	1U	ug/l
1,1-Dichloroethane	1U	ug/l	Ethane, 1,1,1,2-Tetrac	1U	ug/l
1,1-Dichloroethene	1U	ug/l	cis-1,3-Dichloropropene	1U	ug/l
Trichlorofluoromethane	1U	ug/l	trans-1,3-Dichloroprop	1U	ug/l
Methane, Dichlorodiflu	1U	ug/l	p-Bromofluorobenzene	96	% Recov
1,2-Dichloropropane	1U	ug/l	Surrog: 1-Bromo-2-Fluo	104	% Recov
2-Butanone	2UJ	ug/l	D4-1,2-Dichlorobenzene	99	% Recov
1,1,2-Trichloroethane	1U	ug/l	d8-Toluene	96	% Recov
Trichloroethene	1U	ug/l	d4-1,2-Dichloroethane	100	% Recov
ETHANE, 1,1,2,2-TETRAC	1U	ug/l			
1,2,3-Trichlorobenzene	1U	ug/l			
Hexachlorobutadiene	1U	ug/l			
Naphthalene	1UJ	ug/l			
Benzene, 1,2-Dimethyl	1U	ug/l			
2-Chlorotoluene	1U	ug/l			
1,2-Dichlorobenzene	1U	ug/l			
1,2,4-Trimethylbenzene	1U	ug/l			
1,2-Dibromo-3-chloropr	1U	ug/l			
1,2,3-Trichloropropane	1U	ug/l			
Tert-Butylbenzene	1U	ug/l			
Isopropylbenzene (Cume	1U	ug/l			
p-Isopropyltoluene	1U	ug/l			
Ethylbenzene	1U	ug/l			
BENZENE, ETHENYL-(STYR	1U	ug/l			
BENZENE, PROPYL-	1U	ug/l			
Butylbenzene	1U	ug/l			
4-Chlorotoluene	1U	ug/l			
1,4-Dichlorobenzene	1U	ug/l			
1,2-Dibromoethane (EDB)	1U	ug/l			
1,2-Dichloroethane	1U	ug/l			
4-Methyl-2-Pentanone	1U	ug/l			
1,3,5-Trimethylbenzene	1U	ug/l			

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208083

Description: MW-32

Source: Well (Test/Observation)

Begin Date: 91/05/15 :

VOA - PP Scan (GCMS)		Water-Total		VOA - PP Scan (GCMS)		Water-Total	
		Result	Units	*** Continued ***		Result	Units
Carbon Tetrachloride		1U	ug/l	Bromobenzene		1U	ug/l
Acetone		5UJ	ug/l	Toluene	/	1U	ug/l
Chloroform		1U	ug/l	Chlorobenzene		1U	ug/l
Benzene		1U	ug/l	1,2,4-Trichlorobenzene		1U	ug/l
1,1,1-Trichloroethane		1U	ug/l	Dibromochloromethane		1U	ug/l
Chloromethane		1UJ	ug/l	Tetrachloroethene		1 *	ug/l
Dibromomethane		1U	ug/l	Sec-Butylbenzene		1U	ug/l
Bromochloromethane		1U	ug/l	1,3-Dichloropropane		1U	ug/l
Chloroethane		1U	ug/l	Cis-1,2-Dichloroethene		2 *	ug/l
Vinyl Chloride		1U	ug/l	trans-1,2-Dichloroethe+		1U	ug/l
Methylene Chloride		1U	ug/l	1,3-Dichlorobenzene		1U	ug/l
Carbon Disulfide		1U	ug/l	1,1-Dichloropropene		1U	ug/l
Bromoform		1U	ug/l	2,2-Dichloropropane		1U	ug/l
Bromodichloromethane		1U	ug/l	2-Hexanone		1U	ug/l
1,1-Dichloroethane		1U	ug/l	Ethane, 1,1,1,2-Tetrac+		1U	ug/l
1,1-Dichloroethene		1U	ug/l	cis-1,3-Dichloropropene		1U	ug/l
Trichlorofluoromethane		1U	ug/l	trans-1,3-Dichloroprop+		1U	ug/l
Methane, Dichlorodiflu+		1U	ug/l	p-Bromofluorobenzene		97	% Recov
1,2-Dichloropropane		1U	ug/l	Surrog: 1-Bromo-2-Fluo+		105	% Recov
2-Butanone		2UJ	ug/l	D4-1,2-Dichlorobenzene		101	% Recov
1,1,2-Trichloroethane		1U	ug/l	d8-Toluene		101	% Recov
Trichloroethene		1U	ug/l	d4-1,2-Dichloroethane		104	% Recov
ETHANE, 1,1,2,2-TETRAC+		1U	ug/l				
1,2,3-Trichlorobenzene		1U	ug/l				
Hexachlorobutadiene		1U	ug/l				
Naphthalene		1UJ	ug/l				
Benzene, 1,2-Dimethyl		1U	ug/l				
2-Chlorotoluene		1U	ug/l				
1,2-Dichlorobenzene		1U	ug/l				
1,2,4-Trimethylbenzene		1U	ug/l				
1,2-Dibromo-3-chloropr+		1U	ug/l				
1,2,3-Trichloropropane		1U	ug/l				
Tert-Butylbenzene		1U	ug/l				
Isopropylbenzene (Cume+		1U	ug/l				
p-Isopropyltoluene		1U	ug/l				
Ethylbenzene		1U	ug/l				
BENZENE, ETHENYL-(STYR+		1U	ug/l				
BENZENE, PROPYL-		1U	ug/l				
Butylbenzene		1U	ug/l				
4-Chlorotoluene		1U	ug/l				
1,4-Dichlorobenzene		1U	ug/l				
1,2-Dibromoethane (EDB)		1U	ug/l				
1,2-Dichloroethane		1U	ug/l				
4-Methyl-2-Pentanone		1U	ug/l				
1,3,5-Trimethylbenzene		1U	ug/l				

(Sample Complete)

29-JUL-91
13:14:04

Washington State Department of Ecology
Sample/Project Analysis Results

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Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208084

Description: MW-31

Source: Well (Test/Observation)

Begin Date: 91/05/16 :

VOA - PP Scan (GCMS)	Water-Total Result	Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Carbon Tetrachloride	1U	ug/l			
Acetone	3UJ	ug/l	Bromobenzene	1U	ug/l
Chloroform	1U	ug/l	Toluene	1U	ug/l
Benzene	1U	ug/l	Chlorobenzene	1U	ug/l
1,1,1-Trichloroethane	1U	ug/l	1,2,4-Trichlorobenzene	1U	ug/l
Chloromethane	1UJ	ug/l	Dibromochloromethane	1U	ug/l
Dibromomethane	1U	ug/l	Tetrachloroethene	0.6J*	ug/l
Bromochloromethane	1U	ug/l	Sec-Butylbenzene	1U	ug/l
Chloroethane	1U	ug/l	1,3-Dichloropropane	1U	ug/l
Vinyl Chloride	1U	ug/l	Cis-1,2-Dichloroethene	2 *	ug/l
Methylene Chloride	1U	ug/l	trans-1,2-Dichloroethe+	1U	ug/l
Carbon Disulfide	1U	ug/l	1,3-Dichlorobenzene	1U	ug/l
Bromoform	1U	ug/l	1,1-Dichloropropene	1U	ug/l
Bromodichloromethane	1U	ug/l	2,2-Dichloropropane	1U	ug/l
1,1-Dichloroethane	1U	ug/l	2-Hexanone	1U	ug/l
1,1-Dichloroethene	1U	ug/l	Ethane, 1,1,1,2-Tetrac+	1U	ug/l
Trichlorofluoromethane	1U	ug/l	cis-1,3-Dichloropropene	1U	ug/l
Methane, Dichlorodiflu+	1U	ug/l	trans-1,3-Dichloroprop+	1U	ug/l
1,2-Dichloropropane	1U	ug/l	p-Bromofluorobenzene	103	% Recov
2-Butanone	2UJ	ug/l	Surrog: 1-Bromo-2-Fluo+	106	% Recov
1,1,2-Trichloroethane	1U	ug/l	D4-1,2-Dichlorobenzene	95	% Recov
Trichloroethene	1U	ug/l	d8-Toluene	100	% Recov
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l	d4-1,2-Dichloroethane	99	% Recov
1,2,3-Trichlorobenzene	1U	ug/l			
Hexachlorobutadiene	1U	ug/l			
Naphthalene	1UJ	ug/l			
Benzene, 1,2-Dimethyl	1U	ug/l			
2-Chlorotoluene	1U	ug/l			
1,2-Dichlorobenzene	1U	ug/l			
1,2,4-Trimethylbenzene	1U	ug/l			
1,2-Dibromo-3-chloropr+	1U	ug/l			
1,2,3-Trichloropropane	1U	ug/l			
Tert-Butylbenzene	1U	ug/l			
Isopropylbenzene (Cume+	1U	ug/l			
p-Isopropyltoluene	1U	ug/l			
Ethylbenzene	1U	ug/l			
BENZENE, ETHENYL-(STYR+	1U	ug/l			
BENZENE, PROPYL-	1U	ug/l			
Butylbenzene	1U	ug/l			
4-Chlorotoluene	1U	ug/l			
1,4-Dichlorobenzene	1U	ug/l			
1,2-Dibromoethane (EDB)	1U	ug/l			
1,2-Dichloroethane	1U	ug/l			
4-Methyl-2-Pentanone	1U	ug/l			
1,3,5-Trimethylbenzene	1U	ug/l			

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208085

Description: MW-21

Source: Well (Test/Observation)

Begin Date: 91/05/16

VOA - PP Scan (GCMS)	Water-Total Result Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result Units
Carbon Tetrachloride	1U ug/l		
Acetone	4UJ ug/l	Bromobenzene	1U ug/l
Chloroform	1U ug/l	Toluene	1U ug/l
Benzene	1U ug/l	Chlorobenzene	1U ug/l
1,1,1-Trichloroethane	1U ug/l	1,2,4-Trichlorobenzene	1U ug/l
Chloromethane	1UJ ug/l	Dibromochloromethane	1U ug/l
Dibromomethane	1U ug/l	Tetrachloroethene	2 * ug/l
Bromochloromethane	1U ug/l	Sec-Butylbenzene	1U ug/l
Chloroethane	1U ug/l	1,3-Dichloropropane	1U ug/l
Vinyl Chloride	1U ug/l	Cis-1,2-Dichloroethene	0.7J* ug/l
Methylene Chloride	1U ug/l	trans-1,2-Dichloroethe+	1U ug/l
Carbon Disulfide	1U ug/l	1,3-Dichlorobenzene	1U ug/l
Bromoform	1U ug/l	1,1-Dichloropropene	1U ug/l
Bromodichloromethane	1U ug/l	2,2-Dichloropropane	1U ug/l
1,1-Dichloroethane	1U ug/l	2-Hexanone	1U ug/l
1,1-Dichloroethene	1U ug/l	Ethane, 1,1,1,2-Tetrac+	1U ug/l
Trichlorofluoromethane	1U ug/l	cis-1,3-Dichloropropene	1U ug/l
Methane, Dichlorodiflu+	1U ug/l	trans-1,3-Dichloroprop+	1U ug/l
1,2-Dichloropropane	1U ug/l	p-Bromofluorobenzene	106 % Recov
2-Butanone	2UJ ug/l	Surrog: 1-Bromo-2-Fluo+	104 % Recov
1,1,2-Trichloroethane	1U ug/l	D4-1,2-Dichlorobenzene	100 % Recov
Trichloroethene	1U ug/l	d8-Toluene	102 % Recov
ETHANE, 1,1,2,2-TETRAC+	1U ug/l	d4-1,2-Dichloroethane	97 % Recov
1,2,3-Trichlorobenzene	1U ug/l		
Hexachlorobutadiene	1U ug/l		
Naphthalene	1UJ ug/l		
Benzene, 1,2-Dimethyl	1U ug/l		
2-Chlorotoluene	1U ug/l		
1,2-Dichlorobenzene	1U ug/l		
1,2,4-Trimethylbenzene	1U ug/l		
1,2-Dibromo-3-chloropr+	1U ug/l		
1,2,3-Trichloropropane	1U ug/l		
Tert-Butylbenzene	1U ug/l		
Isopropylbenzene (Cume+	1U ug/l		
p-Isopropyltoluene	1U ug/l		
Ethylbenzene	1U ug/l		
BENZENE, ETHENYL-(STYR+	1U ug/l		
BENZENE, PROPYL-	1U ug/l		
Butylbenzene	1U ug/l		
4-Chlorotoluene	1U ug/l		
1,4-Dichlorobenzene	1U ug/l		
1,2-Dibromoethane (EDB)	1U ug/l		
1,2-Dichloroethane	1U ug/l		
4-Methyl-2-Pentanone	1U ug/l		
1,3,5-Trimethylbenzene	1U ug/l		

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208086

Description: MW-16A

Source: Well (Test/Observation)

Begin Date: 91/05/16

VOA - PP Scan (GCMS)			Water-Total		VOA - PP Scan (GCMS)			Water-Total		VOA - PP Scan (GCMS)			Water-Total	
			Result	Units	*** Continued ***			Result	Units	*** Continued ***			Result	Units
					Matrix Spike #1					Matrix Spike #1				
Carbon Tetrachloride	1U	ug/l			Bromobenzene	1U	ug/l			Trichlorofluoromethane	110	%	Recov	
Acetone	4UJ	ug/l			Toluene	1U	ug/l			Methane, Dichlorodiflu+	106	%	Recov	
Chloroform	1U	ug/l			Chlorobenzene	1U	ug/l			1,2-Dichloropropane	108	%	Recov	
Benzene	1U	ug/l			1,2,4-Trichlorobenzene	1U	ug/l			2-Butanone	84	%	Recov	
1,1,1-Trichloroethane	1U	ug/l			Dibromochloromethane	1U	ug/l			1,1,2-Trichloroethane	96	%	Recov	
Chloromethane	1UJ	ug/l			Tetrachloroethene	26 *	ug/l			Trichloroethene	105	%	Recov	
Dibromomethane	1U	ug/l			Sec-Butylbenzene	1U	ug/l			ETHANE, 1,1,2,2-TETRAC+	92	%	Recov	
Bromochloromethane	1U	ug/l			1,3-Dichloropropane	1U	ug/l			1,2,3-Trichlorobenzene	102	%	Recov	
Chloroethane	1UJ	ug/l			Cis-1,2-Dichloroethene	2 *	ug/l			Hexachlorobutadiene	96	%	Recov	
Vinyl Chloride	1U	ug/l			trans-1,2-Dichloroethe+	1U	ug/l			Naphthalene	91	%	Recov	
Methylene Chloride	1U	ug/l			1,3-Dichlorobenzene	1U	ug/l			Benzene, 1,2-Dimethyl	101	%	Recov	
Carbon Disulfide	1U	ug/l			1,1-Dichloropropene	1U	ug/l			2-Chlorotoluene	98	%	Recov	
Bromoform	1U	ug/l			2,2-Dichloropropane	1U	ug/l			1,2-Dichlorobenzene	101	%	Recov	
Bromodichloromethane	1U	ug/l			2-Hexanone	1U	ug/l			1,2,4-Trimethylbenzene	98	%	Recov	
1,1-Dichloroethane	1U	ug/l			Ethane, 1,1,1,2-Tetrac+	1U	ug/l			1,2-Dibromo-3-chloropr+	81	%	Recov	
1,1-Dichloroethene	1U	ug/l			cis-1,3-Dichloropropene	1U	ug/l			1,2,3-Trichloropropane	88	%	Recov	
Trichlorofluoromethane	1U	ug/l			trans-1,3-Dichloroprop+	1U	ug/l			Tert-Butylbenzene	96	%	Recov	
Methane, Dichlorodiflu+	1U	ug/l			p-Bromofluorobenzene	100	%	Recov		Isopropylbenzene (Cume+	100	%	Recov	
1,2-Dichloropropane	1U	ug/l			Surrog: 1-Bromo-2-Fluo+	97	%	Recov		p-Isopropyltoluene	93	%	Recov	
2-Butanone	2UJ	ug/l			D4-1,2-Dichlorobenzene	96	%	Recov		Ethylbenzene	103	%	Recov	
1,1,2-Trichloroethane	1U	ug/l			d8-Toluene	101	%	Recov		BENZENE, ETHENYL-(STYR+	98	%	Recov	
Trichloroethene	0.6J*	ug/l			d4-1,2-Dichloroethane	101	%	Recov		BENZENE, PROPYL-	94	%	Recov	
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l								Butylbenzene	98	%	Recov	
1,2,3-Trichlorobenzene	1U	ug/l								4-Chlorotoluene	103	%	Recov	
Hexachlorobutadiene	1U	ug/l								1,4-Dichlorobenzene	95	%	Recov	
Naphthalene	1UJ	ug/l								1,2-Dibromoethane (EDB)	92	%	Recov	
Benzene, 1,2-Dimethyl	1U	ug/l								1,2-Dichloroethane	109	%	Recov	
2-Chlorotoluene	1U	ug/l								4-Methyl-2-Pentanone	94	%	Recov	
1,2-Dichlorobenzene	1U	ug/l								1,3,5-Trimethylbenzene	96	%	Recov	
1,2,4-Trimethylbenzene	1U	ug/l								Bromobenzene	104	%	Recov	
1,2-Dibromo-3-chloropr+	1U	ug/l								Toluene	98	%	Recov	
1,2,3-Trichloropropane	1U	ug/l								Chlorobenzene	103	%	Recov	
Tert-Butylbenzene	1U	ug/l								1,2,4-Trichlorobenzene	97	%	Recov	
Isopropylbenzene (Cume+	1U	ug/l								Dibromochloromethane	92	%	Recov	
p-Isopropyltoluene	1U	ug/l								Tetrachloroethene	35	%	Recov	
Ethylbenzene	1U	ug/l								Sec-Butylbenzene	94	%	Recov	
BENZENE, ETHENYL-(STYR+	1U	ug/l								1,3-Dichloropropane	104	%	Recov	
BENZENE, PROPYL-	1U	ug/l								Cis-1,2-Dichloroethene	101	%	Recov	
Butylbenzene	1U	ug/l								trans-1,2-Dichloroethe+	106	%	Recov	
4-Chlorotoluene	1U	ug/l								1,3-Dichlorobenzene	100	%	Recov	
1,4-Dichlorobenzene	1U	ug/l								1,1-Dichloropropene	106	%	Recov	
1,2-Dibromoethane (EDB)	1U	ug/l								2,2-Dichloropropane	110	%	Recov	
1,2-Dichloroethane	1U	ug/l								2-Hexanone	87	%	Recov	
4-Methyl-2-Pentanone	1U	ug/l								Ethane, 1,1,1,2-Tetrac+	108	%	Recov	
1,3,5-Trimethylbenzene	1U	ug/l												

(Continued on next page)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208086

Description: MW-16A

Source: Well (Test/Observation)

Begin Date: 91/05/16 :

VOA - PP Scan (GCMS) *** Continued ***			VOA - PP Scan (GCMS) *** Continued ***		
Matrix Spike #1	Water-Total Result	Units	Matrix Spike #2	Water-Total Result	Units
D4-1,2-Dichlorobenzene	100	% Recov	1,2,3-Trichloropropane	99	% Recov
d8-Toluene	101	% Recov	Tert-Butylbenzene	108	% Recov
cis-1,3-Dichloropropene	92	% Recov	Isopropylbenzene (Cume+	104	% Recov
trans-1,3-Dichloroprop+	94	% Recov	p-Isopropyltoluene	96	% Recov
d4-1,2-Dichloroethane	111	% Recov	Ethylbenzene	106	% Recov
p-Bromofluorobenzene	104	% Recov	BENZENE, ETHENYL-(STYR+	102	% Recov
Surrog: 1-Bromo-2-Fluo+	98	% Recov	BENZENE, PROPYL-	103	% Recov
			Butylbenzene	104	% Recov
			4-Chlorotoluene	102	% Recov
			1,4-Dichlorobenzene	99	% Recov
			1,2-Dibromoethane (EDB)	97	% Recov
			1,2-Dichloroethane	108	% Recov
			4-Methyl-2-Pentanone	96	% Recov
			1,3,5-Trimethylbenzene	98	% Recov
			Bromobenzene	100	% Recov
			Toluene	103	% Recov
			Chlorobenzene	102	% Recov
			1,2,4-Trichlorobenzene	104	% Recov
			Dibromochloromethane	100	% Recov
			Tetrachloroethene	30	% Recov
			Sec-Butylbenzene	96	% Recov
			1,3-Dichloropropane	104	% Recov
			Cis-1,2-Dichloroethene	100	% Recov
			trans-1,2-Dichloroethe+	100	% Recov
			1,3-Dichlorobenzene	108	% Recov
			1,1-Dichloropropene	109	% Recov
			2,2-Dichloropropane	114	% Recov
			2-Hexanone	94	% Recov
			Ethane, 1,1,1,2-Tetrac+	106	% Recov
			D4-1,2-Dichlorobenzene	106	% Recov
			d8-Toluene	101	% Recov
			cis-1,3-Dichloropropene	96	% Recov
			trans-1,3-Dichloroprop+	102	% Recov
			d4-1,2-Dichloroethane	109	% Recov
			p-Bromofluorobenzene	103	% Recov
			Surrog: 1-Bromo-2-Fluo+	96	% Recov

VOA - PP Scan (GCMS) *** Continued ***		
Matrix Spike #2	Water-Total Result	Units
Carbon Tetrachloride	113	% Recov
Acetone	26	% Recov
Chloroform	102	% Recov
Benzene	104	% Recov
1,1,1-Trichloroethane	109	% Recov
Bromomethane	126	% Recov
Chloromethane	98	% Recov
Dibromomethane	101	% Recov
Bromochloromethane	98	% Recov
Chloroethane	239	% Recov
Vinyl Chloride	98	% Recov
Methylene Chloride	108	% Recov
Carbon Disulfide	96	% Recov
Bromoform	94	% Recov
Bromodichloromethane	104	% Recov
1,1-Dichloroethane	102	% Recov
1,1-Dichloroethene	100	% Recov
Trichlorofluoromethane	111	% Recov
Methane, Dichlorodiflu+	111	% Recov
1,2-Dichloropropane	106	% Recov
2-Butanone	82	% Recov
1,1,2-Trichloroethane	99	% Recov
Trichloroethene	106	% Recov
ETHANE, 1,1,2,2-TETRAC+	96	% Recov
1,2,3-Trichlorobenzene	114	% Recov
Hexachlorobutadiene	106	% Recov
Naphthalene	100	% Recov
Benzene, 1,2-Dimethyl	107	% Recov
2-Chlorotoluene	98	% Recov
1,2-Dichlorobenzene	100	% Recov
1,2,4-Trimethylbenzene	99	% Recov
1,2-Dibromo-3-chloropr+	90	% Recov

(Sample Complete)

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Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208087

Description: MW-16B

Source: Well (Test/Observation)

Begin Date: 91/05/16 :

VOA - PP Scan (GCMS)	Water-Total Result Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result Units
Carbon Tetrachloride	1U ug/l	Bromobenzene	1U ug/l
Acetone	30UJ ug/l	Toluene	1U ug/l
Chloroform	1U ug/l	Chlorobenzene	1U ug/l
Benzene	1U ug/l	1,2,4-Trichlorobenzene	1U ug/l
1,1,1-Trichloroethane	1U ug/l	Dibromochloromethane	1U ug/l
Chloromethane	1UJ ug/l	Tetrachloroethene	28 * ug/l
Dibromomethane	1U ug/l	Sec-Butylbenzene	1U ug/l
Bromochloromethane	1U ug/l	1,3-Dichloropropane	1U ug/l
Chloroethane	1U ug/l	Cis-1,2-Dichloroethene	3 * ug/l
Vinyl Chloride	1U ug/l	trans-1,2-Dichloroethene	1U ug/l
Methylene Chloride	1U ug/l	1,3-Dichlorobenzene	1U ug/l
Carbon Disulfide	1U ug/l	1,1-Dichloropropene	1U ug/l
Bromoform	1U ug/l	2,2-Dichloropropane	1U ug/l
Bromodichloromethane	1U ug/l	2-Hexanone	1U ug/l
1,1-Dichloroethane	1U ug/l	Ethane, 1,1,1,2-Tetrac	1U ug/l
1,1-Dichloroethene	1U ug/l	cis-1,3-Dichloropropene	1U ug/l
Trichlorofluoromethane	1U ug/l	trans-1,3-Dichloroprop	1U ug/l
Methane, Dichlorodiflu	1U ug/l	p-Bromofluorobenzene	98 % Recov
1,2-Dichloropropane	1U ug/l	Surrog: 1-Bromo-2-Fluo	97 % Recov
2-Butanone	2UJ ug/l	D4-1,2-Dichlorobenzene	100 % Recov
1,1,2-Trichloroethane	1U ug/l	d8-Toluene	101 % Recov
Trichloroethene	0.6J* ug/l	d4-1,2-Dichloroethane	106 % Recov
ETHANE, 1,1,2,2-TETRAC	1U ug/l		
1,2,3-Trichlorobenzene	1U ug/l		
Hexachlorobutadiene	1U ug/l		
Naphthalene	1UJ ug/l		
Benzene, 1,2-Dimethyl	1U ug/l		
2-Chlorotoluene	1U ug/l		
1,2-Dichlorobenzene	1U ug/l		
1,2,4-Trimethylbenzene	1U ug/l		
1,2-Dibromo-3-chloropr	1U ug/l		
1,2,3-Trichloropropane	1U ug/l		
Tert-Butylbenzene	1U ug/l		
Isopropylbenzene (Cume	1U ug/l		
p-Isopropyltoluene	1U ug/l		
Ethylbenzene	1U ug/l		
BENZENE, ETHENYL-(STYR	1U ug/l		
BENZENE, PROPYL-	1U ug/l		
Butylbenzene	1U ug/l		
4-Chlorotoluene	1U ug/l		
1,4-Dichlorobenzene	1U ug/l		
1,2-Dibromoethane (EDB)	1U ug/l		
1,2-Dichloroethane	1U ug/l		
4-Methyl-2-Pentanone	1U ug/l		
1,3,5-Trimethylbenzene	1U ug/l		

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208088

Description: MW-20B

Source: Well (Test/Observation)

Begin Date: 91/05/16 :

VOA - PP Scan (GCMS)	Water-Total Result	Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Carbon Tetrachloride	1U	ug/l			
Acetone	3UJ	ug/l	Bromobenzene	1U	ug/l
Chloroform	1U	ug/l	Toluene	1U	ug/l
Benzene	1U	ug/l	Chlorobenzene	1U	ug/l
1,1,1-Trichloroethane	1U	ug/l	1,2,4-Trichlorobenzene	1U	ug/l
Chloromethane	1UJ	ug/l	Dibromochloromethane	1U	ug/l
Dibromomethane	1U	ug/l	Tetrachloroethene	0.4J*	ug/l
Bromochloromethane	1U	ug/l	Sec-Butylbenzene	1U	ug/l
Chloroethane	1U	ug/l	1,3-Dichloropropane	1U	ug/l
Vinyl Chloride	1U	ug/l	Cis-1,2-Dichloroethene	1U	ug/l
Methylene Chloride	1U	ug/l	trans-1,2-Dichloroethe+	1U	ug/l
Carbon Disulfide	1U	ug/l	1,3-Dichlorobenzene	1U	ug/l
Bromoform	1U	ug/l	1,1-Dichloropropene	1U	ug/l
Bromodichloromethane	1U	ug/l	2,2-Dichloropropane	1U	ug/l
1,1-Dichloroethane	1U	ug/l	2-Hexanone	1U	ug/l
1,1-Dichloroethene	1U	ug/l	Ethane, 1,1,1,2-Tetrac+	1U	ug/l
Trichlorofluoromethane	1U	ug/l	cis-1,3-Dichloropropene	1U	ug/l
Methane, Dichlorodiflu+	1U	ug/l	trans-1,3-Dichloroprop+	1U	ug/l
1,2-Dichloropropane	1U	ug/l	p-Bromofluorobenzene	99	% Recov
2-Butanone	2UJ	ug/l	Surrog: 1-Bromo-2-Fluo+	101	% Recov
1,1,2-Trichloroethane	1U	ug/l	D4-1,2-Dichlorobenzene	97	% Recov
Trichloroethene	1U	ug/l	d8-Toluene	96	% Recov
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l	d4-1,2-Dichloroethane	104	% Recov
1,2,3-Trichlorobenzene	1U	ug/l			
Hexachlorobutadiene	1U	ug/l			
Naphthalene	1UJ	ug/l			
Benzene, 1,2-Dimethyl	1U	ug/l			
2-Chlorotoluene	1U	ug/l			
1,2-Dichlorobenzene	1U	ug/l			
1,2,4-Trimethylbenzene	1U	ug/l			
1,2-Dibromo-3-chloropr+	1U	ug/l			
1,2,3-Trichloropropane	1U	ug/l			
Tert-Butylbenzene	1U	ug/l			
Isopropylbenzene (Cume+	1U	ug/l			
p-Isopropyltoluene	1U	ug/l			
Ethylbenzene	1U	ug/l			
BENZENE, ETHENYL-(STYR+	1U	ug/l			
BENZENE, PROPYL-	1U	ug/l			
Butylbenzene	1U	ug/l			
4-Chlorotoluene	1U	ug/l			
1,4-Dichlorobenzene	1U	ug/l			
1,2-Dibromoethane (EDB)	1U	ug/l			
1,2-Dichloroethane	1U	ug/l			
4-Methyl-2-Pentanone	1U	ug/l			
1,3,5-Trimethylbenzene	1U	ug/l			

(Sample Complete)

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Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208089

Description: MW-20A

Source: Well (Test/Observation)

Begin Date: 91/05/16

VOA - PP Scan (GCMS)	Water-Total Result Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result Units
Carbon Tetrachloride	1U ug/l	Bromobenzene	1U ug/l
Acetone	3UJ ug/l	Toluene	1U ug/l
Chloroform	0.2J* ug/l	Chlorobenzene	1U ug/l
Benzene	1U ug/l	1,2,4-Trichlorobenzene	1U ug/l
1,1,1-Trichloroethane	0.3J* ug/l	Dibromochloromethane	1U ug/l
Chloromethane	1UJ ug/l	Tetrachloroethene	752 * ug/l
Dibromomethane	1U ug/l	Sec-Butylbenzene	1U ug/l
Bromochloromethane	1U ug/l	1,3-Dichloropropane	1U ug/l
Chloroethane	1U ug/l	Cis-1,2-Dichloroethene	30 * ug/l
Vinyl Chloride	1U ug/l	trans-1,2-Dichloroethe+	0.5J* ug/l
Methylene Chloride	1U ug/l	1,3-Dichlorobenzene	1U ug/l
Carbon Disulfide	1U ug/l	1,1-Dichloropropene	1U ug/l
Bromoform	1U ug/l	2,2-Dichloropropane	1U ug/l
Bromodichloromethane	1U ug/l	2-Hexanone	1U ug/l
1,1-Dichloroethane	1U ug/l	Ethane, 1,1,1,2-Tetrac+	1U ug/l
1,1-Dichloroethene	1U ug/l	cis-1,3-Dichloropropene	1U ug/l
Trichlorofluoromethane	1U ug/l	trans-1,3-Dichloroprop+	1U ug/l
Methane, Dichlorodiflu+	1U ug/l	p-Bromofluorobenzene	103 % Recov
1,2-Dichloropropane	1U ug/l	Surrog: 1-Bromo-2-Fluo+	94 % Recov
2-Butanone	2UJ ug/l	D4-1,2-Dichlorobenzene	102 % Recov
1,1,2-Trichloroethane	1U ug/l	d8-Toluene	103 % Recov
Trichloroethene	16 * ug/l	d4-1,2-Dichloroethane	102 % Recov
ETHANE, 1,1,2,2-TETRAC+	1U ug/l		
1,2,3-Trichlorobenzene	1U ug/l		
Hexachlorobutadiene	1U ug/l		
Naphthalene	1UJ ug/l		
Benzene, 1,2-Dimethyl	1U ug/l		
2-Chlorotoluene	1U ug/l		
1,2-Dichlorobenzene	1U ug/l		
1,2,4-Trimethylbenzene	1U ug/l		
1,2-Dibromo-3-chloropr+	1U ug/l		
1,2,3-Trichloropropane	1U ug/l		
Tert-Butylbenzene	1U ug/l		
Isopropylbenzene (Cume+	1U ug/l		
p-Isopropyltoluene	1U ug/l		
Ethylbenzene	1U ug/l		
BENZENE, ETHENYL-(STYR+	1U ug/l		
BENZENE, PROPYL-	1U ug/l		
Butylbenzene	1U ug/l		
4-Chlorotoluene	1U ug/l		
1,4-Dichlorobenzene	1U ug/l		
1,2-Dibromoethane (EDB)	1U ug/l		
1,2-Dichloroethane	1U ug/l		
4-Methyl-2-Pentanone	1U ug/l		
1,3,5-Trimethylbenzene	1U ug/l		

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208090

Description: TRANSFER

Source: Water (General)

Begin Date: 91/05/16 :

VOA - PP Scan (GCMS)	Water-Total Result	Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Carbon Tetrachloride	1U	ug/l	Bromobenzene	1U	ug/l
Acetone	3UJ	ug/l	Toluene	1U	ug/l
Chloroform	1U	ug/l	Chlorobenzene	1U	ug/l
Benzene	1U	ug/l	1,2,4-Trichlorobenzene	1U	ug/l
1,1,1-Trichloroethane	1U	ug/l	Dibromochloromethane	1U	ug/l
Chloromethane	1UJ	ug/l	Tetrachloroethene	1U	ug/l
Dibromomethane	1U	ug/l	Sec-Butylbenzene	1U	ug/l
Bromochloromethane	1U	ug/l	1,3-Dichloropropane	1U	ug/l
Chloroethane	1U	ug/l	Cis-1,2-Dichloroethene	1U	ug/l
Vinyl Chloride	1U	ug/l	trans-1,2-Dichloroethe+	1U	ug/l
Methylene Chloride	1U	ug/l	1,3-Dichlorobenzene	1U	ug/l
Carbon Disulfide	1U	ug/l	1,1-Dichloropropene	1U	ug/l
Bromoform	1U	ug/l	2,2-Dichloropropane	1U	ug/l
Bromodichloromethane	1U	ug/l	2-Hexanone	1U	ug/l
1,1-Dichloroethane	1U	ug/l	Ethane, 1,1,1,2-Tetrac+	1U	ug/l
1,1-Dichloroethene	1U	ug/l	cis-1,3-Dichloropropene	1U	ug/l
Trichlorofluoromethane	1U	ug/l	trans-1,3-Dichloroprop+	1U	ug/l
Methane, Dichlorodiflu+	1U	ug/l	p-Bromofluorobenzene	98	% Recov
1,2-Dichloropropane	1U	ug/l	Surrog: 1-Bromo-2-Fluo+	98	% Recov
2-Butanone	2UJ	ug/l	D4-1,2-Dichlorobenzene	101	% Recov
1,1,2-Trichloroethane	1U	ug/l	d8-Toluene	102	% Recov
Trichloroethene	1U	ug/l	d4-1,2-Dichloroethane	104	% Recov
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l			
1,2,3-Trichlorobenzene	1U	ug/l			
Hexachlorobutadiene	1U	ug/l			
Naphthalene	1UJ	ug/l			
Benzene, 1,2-Dimethyl	1U	ug/l			
2-Chlorotoluene	1U	ug/l			
1,2-Dichlorobenzene	1U	ug/l			
1,2,4-Trimethylbenzene	1U	ug/l			
1,2-Dibromo-3-chloropr+	1U	ug/l			
1,2,3-Trichloropropane	1U	ug/l			
Tert-Butylbenzene	1U	ug/l			
Isopropylbenzene (Cume+	1U	ug/l			
p-Isopropyltoluene	1U	ug/l			
Ethylbenzene	1U	ug/l			
BENZENE, ETHENYL-(STYR+	1U	ug/l			
BENZENE, PROPYL-	1U	ug/l			
Butylbenzene	1U	ug/l			
4-Chlorotoluene	1U	ug/l			
1,4-Dichlorobenzene	1U	ug/l			
1,2-Dibromoethane (EDB)	1U	ug/l			
1,2-Dichloroethane	1U	ug/l			
4-Methyl-2-Pentanone	1U	ug/l			
1,3,5-Trimethylbenzene	1U	ug/l			

(Sample Complete)

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Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208091

Description: TRANSPOR

Source: Water (General)

Begin Date: 91/05/16 :

VOA - PP Scan (GCMS)	Water-Total Result	Units	VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Carbon Tetrachloride	1U	ug/l	Bromobenzene	1U	ug/l
Acetone	3UJ	ug/l	Toluene	1U	ug/l
Chloroform	1U	ug/l	Chlorobenzene	1U	ug/l
Benzene	1U	ug/l	1,2,4-Trichlorobenzene	1U	ug/l
1,1,1-Trichloroethane	1U	ug/l	Dibromochloromethane	1U	ug/l
Chloromethane	1UJ	ug/l	Tetrachloroethene	1U	ug/l
Dibromomethane	1U	ug/l	Sec-Butylbenzene	1U	ug/l
Bromochloromethane	1U	ug/l	1,3-Dichloropropane	1U	ug/l
Chloroethane	1U	ug/l	Cis-1,2-Dichloroethene	1U	ug/l
Vinyl Chloride	1U	ug/l	trans-1,2-Dichloroethe+	1U	ug/l
Methylene Chloride	1U	ug/l	1,3-Dichlorobenzene	1U	ug/l
Carbon Disulfide	1U	ug/l	1,1-Dichloropropene	1U	ug/l
Bromoform	1U	ug/l	2,2-Dichloropropane	1U	ug/l
Bromodichloromethane	1U	ug/l	2-Hexanone	1U	ug/l
1,1-Dichloroethane	1U	ug/l	Ethane, 1,1,1,2-Tetrac+	1U	ug/l
1,1-Dichloroethene	1U	ug/l	cis-1,3-Dichloropropene	1U	ug/l
Trichlorofluoromethane	1U	ug/l	trans-1,3-Dichloroprop+	1U	ug/l
Methane, Dichlorodiflu+	1U	ug/l	p-Bromofluorobenzene	99	% Recov
1,2-Dichloropropane	1U	ug/l	Surrog: 1-Bromo-2-Fluo+	96	% Recov
2-Butanone	1UJ	ug/l	D4-1,2-Dichlorobenzene	100	% Recov
1,1,2-Trichloroethane	1U	ug/l	d8-Toluene	102	% Recov
Trichloroethene	1U	ug/l	d4-1,2-Dichloroethane	103	% Recov
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l			
1,2,3-Trichlorobenzene	1U	ug/l			
Hexachlorobutadiene	1U	ug/l			
Naphthalene	1UJ	ug/l			
Benzene, 1,2-Dimethyl	1U	ug/l			
2-Chlorotoluene	1U	ug/l			
1,2-Dichlorobenzene	1U	ug/l			
1,2,4-Trimethylbenzene	1U	ug/l			
1,2-Dibromo-3-chloropr+	1U	ug/l			
1,2,3-Trichloropropane	1U	ug/l			
Tert-Butylbenzene	1U	ug/l			
Isopropylbenzene (Cume+	1U	ug/l			
p-Isopropyltoluene	1U	ug/l			
Ethylbenzene	1U	ug/l			
BENZENE, ETHENYL-(STYR+	1U	ug/l			
BENZENE, PROPYL-	1U	ug/l			
Butylbenzene	1U	ug/l			
4-Chlorotoluene	1U	ug/l			
1,4-Dichlorobenzene	1U	ug/l			
1,2-Dibromoethane (EDB)	1U	ug/l			
1,2-Dichloroethane	1U	ug/l			
4-Methyl-2-Pentanone	1U	ug/l			
1,3,5-Trimethylbenzene	1U	ug/l			

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: P2M

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208092

Description: MW-19A

Source: Well (Test/Observation)

Begin Date: 91/05/15 :

Gen Inorg/Phys-Speci		Water-Total		Metals - ICP Scan		Water-Filtere	
		Result	Units	*** Continued ***		Result	Units
Alk-HCO3	CaCO3	77.8 *	mg/l	Copper	Cu-Diss	3.0U	ug/l
Alk-CO3	CaCO3	1U	mg/l	Iron	Fe-Diss	2.0UJ	ug/l
Hard-Tot	CaCO3	89.9 *	mg/l	Lead	Pb-Diss	20UJ	ug/l
Solids - Specified		Water-Total		Manganese	Mn-Diss	1.0U	ug/l
		Result	Units	Nickel	Ni-Diss	10U	ug/l
Solids	T-Dissol	138H*	mg/l	Silver	Ag-Diss	3.0U	ug/l
				Zinc	Zn-Diss	6.9P*	ug/l
				Selenium	Se-Diss	50UJ	ug/l
Nutrients - Specifie		Water-Total		Ion Chromatography		Water-Total	
		Result	Units			Result	Units
NO2NO3-N	Total	1.45 *	mg/l	Chloride		4.7 *	mg/l
				Sulfate	Total	10.7 *	mg/l
Metals - Specified		Water-Filtere					
		Result	Units				
Mercury	Hg-Diss	0.05J*	ug/l				
Metals - Specified		Water-Filtere					
Matrix Spike #1		Result	Units				
Mercury	Hg-Diss	96	% Recov				
Metals - Specified		Water-Filtere					
Matrix Spike #2		Result	Units				
Mercury	Hg-Diss	81	% Recov				
Metals - ICP Scan		Water-Filtere					
		Result	Units				
Calcium	Ca-Diss	18.5 *	mg/l				
Magnesium	Mg-Diss	8.62 *	mg/l				
Sodium	Na-Diss	6.26E*	mg/l				
Arsenic	As-Diss	30UJ	ug/l				
Barium	Ba-Diss	1.7P*	ug/l				
Cadmium	Cd-Diss	2.0U	ug/l				
Chromium	Cr-Diss	5.0U	ug/l				

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208093

Description: MW-32

Source: Well (Test/Observation)

Begin Date: 91/05/15 :

Gen Inorg/Phys-Speci		Water-Total		Metals - ICP Scan		Water-Filtere		Metals - ICP Scan		Water-Filtere	
		Result	Units	Matrix	Spike #1	Result	Units	*** Continued ***		Result	Units
Alk-HCO3	CaCO3	74.3 *	mg/l	Calcium	Ca-Diss	107	% Recov	Duplicate #1			
Alk-CO3	CaCO3	1U	mg/l	Mgnsium	Mg-Diss	114	% Recov	Cadmium	Cd-Diss	2.0U	ug/l
Hard-Tot	CaCO3	86.4 *	mg/l	Sodium	Na-Diss	NA	% Recov	Chromium	Cr-Diss	5.0U	ug/l
				Arsenic	As-Diss	NA	% Recov	Copper	Cu-Diss	3.0U	ug/l
				Barium	Ba-Diss	115	% Recov	Iron	Fe-Diss	4.3PB*	ug/l
				Cadmium	Cd-Diss	110	% Recov	Lead	Pb-Diss	20UJ	ug/l
				Chromium	Cr-Diss	100	% Recov	Manganese	Mn-Diss	1.0U	ug/l
				Copper	Cu-Diss	98	% Recov	Nickel	Ni-Diss	10U	ug/l
				Iron	Fe-Diss	103	% Recov	Silver	Ag-Diss	3.0U	ug/l
				Lead	Pb-Diss	80	% Recov	Zinc	Zn-Diss	6.5P*	ug/l
				Manganese	Mn-Diss	NOTSPIKED	% Recov	Selenium	Se-Diss	50UJ	ug/l
				Nickel	Ni-Diss	100	% Recov				
				Silver	Ag-Diss	99	% Recov	Ion Chromatography		Water-Total	
				Zinc	Zn-Diss	99	% Recov			Result	Units
				Selenium	Se-Diss	NA	% Recov				
Solids - Specified		Water-Total		Metals - ICP Scan		Water-Filtere		Chloride		7.2 * mg/l	
		Result	Units	Matrix	Spike #2	Result	Units	Sulfate	Total	11.3 * mg/l	
Solids		T-Dissol	219H*	Calcium	Ca-Diss	67	% Recov				
				Mgnsium	Mg-Diss	75	% Recov				
				Sodium	Na-Diss	NA	% Recov				
				Arsenic	As-Diss	NA	% Recov				
				Barium	Ba-Diss	115	% Recov				
				Cadmium	Cd-Diss	102	% Recov				
				Chromium	Cr-Diss	98	% Recov				
				Copper	Cu-Diss	100	% Recov				
				Iron	Fe-Diss	66	% Recov				
				Lead	Pb-Diss	70	% Recov				
				Manganese	Mn-Diss	NOTSPIKED	% Recov				
				Nickel	Ni-Diss	98	% Recov				
				Silver	Ag-Diss	98	% Recov				
				Zinc	Zn-Diss	100	% Recov				
				Selenium	Se-Diss	NA	% Recov				
Nutrients - Specifie		Water-Total		Metals - ICP Scan		Water-Filtere					
		Result	Units	Matrix	Spike #1	Result	Units				
NO2NO3-N		Total	2.13 *	Calcium	Ca-Diss	19.4 *	mg/l				
				Mgnsium	Mg-Diss	7.87 *	mg/l				
				Sodium	Na-Diss	6.46E*	mg/l				
				Arsenic	As-Diss	30UJ	ug/l				
				Barium	Ba-Diss	1.5P*	ug/l				
				Cadmium	Cd-Diss						
				Chromium	Cr-Diss						
				Copper	Cu-Diss						
				Iron	Fe-Diss						
				Lead	Pb-Diss						
				Manganese	Mn-Diss						
				Nickel	Ni-Diss						
				Silver	Ag-Diss						
				Zinc	Zn-Diss						
				Selenium	Se-Diss						
Metals - Specified		Water-Filtere		Metals - ICP Scan		Water-Filtere					
		Result	Units	Matrix	Spike #2	Result	Units				
Mercury		Hg-Diss	0.04U	Calcium	Ca-Diss	19.4 *	mg/l				
				Mgnsium	Mg-Diss	7.87 *	mg/l				
				Sodium	Na-Diss	6.46E*	mg/l				
				Arsenic	As-Diss	30UJ	ug/l				
				Barium	Ba-Diss	1.5P*	ug/l				
				Cadmium	Cd-Diss						
				Chromium	Cr-Diss						
				Copper	Cu-Diss						
				Iron	Fe-Diss						
				Lead	Pb-Diss						
				Manganese	Mn-Diss						
				Nickel	Ni-Diss						
				Silver	Ag-Diss						
				Zinc	Zn-Diss						
				Selenium	Se-Diss						

(Sample Complete)

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Washington State Department of Ecology,
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208094

Description: MW-16A

Source: Well (Test/Observation)

Begin Date: 91/05/16

Gen Inorg/Phys-Speci		Water-Total		Ion Chromatography		Water-Total	
		Result	Units			Result	Units
Alk-HCO3	CaCO3	82.0 *	mg/l	Chloride		6.9 *	mg/l
Alk-CO3	CaCO3	1U	mg/l	Sulfate	Total	14.0 *	mg/l
Hard-Tot	CaCO3	95.9 *	mg/l				
Solids - Specified		Water-Total					
		Result	Units				
Solids	T-Dissol	149H*	mg/l				
Nutrients - Specific		Water-Total					
		Result	Units				
NO2NO3-N	Total	2.19 *	mg/l				
Metals - Specified		Water-Filtere					
		Result	Units				
Mercury	Hg-Diss	0.04U	ug/l				
Metals - ICP Scan		Water-Filtere					
		Result	Units				
Calcium	Ca-Diss	21.1J*	mg/l				
Magnesium	Mg-Diss	8.86 *	mg/l				
Sodium	Na-Diss	7.47E*	mg/l				
Arsenic	As-Diss	30UJ	ug/l				
Barium	Ba-Diss	2.2P*	ug/l				
Cadmium	Cd-Diss	2.0U	ug/l				
Chromium	Cr-Diss	5.0U	ug/l				
Copper	Cu-Diss	3.0U	ug/l				
Iron	Fe-Diss	2.0UJ	ug/l				
Lead	Pb-Diss	20UJ	ug/l				
Manganese	Mn-Diss	1.0U	ug/l				
Nickel	Ni-Diss	10U	ug/l				
Silver	Ag-Diss	3.0U	ug/l				
Zinc	Zn-Diss	4.7P*	ug/l				
Selenium	Se-Diss	50UJ	ug/l				

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208095

Description: MW-16B

Source: Well (Test/Observation)

Begin Date: 91/05/16 :

Gen Inorg/Phys-Speci		Water-Total		Ion Chromatography		Water-Total	
		Result	Units			Result	Units
Alk-HCO3	CaCO3	81.1 *	mg/l	Chloride		6.9 *	mg/l
Alk-CO3	CaCO3	1U	mg/l	Sulfate	Total	14.8 *	mg/l
Hard-Tot	CaCO3	94.4 *	mg/l				

Solids - Specified		Water-Total	
		Result	Units
Solids	T-Dissol	157H*	mg/l

Nutrients - Specifie		Water-Total	
		Result	Units
NO2NO3-N	Total	2.17 *	mg/l

Metals - Specified		Water-Filtere	
		Result	Units
Mercury	Hg-Diss	0.04U	ug/l

Metals - ICP Scan		Water-Filtere	
		Result	Units
Calcium	Ca-Diss	21.8J*	mg/l
Mgnsium	Mg-Diss	9.29J*	mg/l
Sodium	Na-Diss	8.28E*	mg/l
Arsenic	As-Diss	30UJ	ug/l
Barium	Ba-Diss	4.3P*	ug/l
Cadmium	Cd-Diss	2.0U	ug/l
Chromium	Cr-Diss	5.0U	ug/l
Copper	Cu-Diss	3.5P*	ug/l
Iron	Fe-Diss	5.5JB*	ug/l
Lead	Pb-Diss	20UJ	ug/l
Manganese	Mn-Diss	1.5P*	ug/l
Nickel	Ni-Diss	10U	ug/l
Silver	Ag-Diss	3.0U	ug/l
Zinc	Zn-Diss	8.5P*	ug/l
Selenium	Se-Diss	50UJ	ug/l

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208096

Description: FILTERBL

Source: Well (Test/Observation)

Begin Date: 91/05/16

Metals - Specified		Water-Filtere	
		Result	Units
Mercury	Hg-Diss	0.04U	ug/l

Metals - ICP Scan		Water-Filtere	
		Result	Units
Calcium	Ca-Diss	0.137B*	mg/l
Mgnsium	Mg-Diss	0.0341B*	mg/l
Sodium	Na-Diss	0.583BE*	mg/l
Arsenic	As-Diss	30UJ	ug/l
Barium	Ba-Diss	1.0U	ug/l
Cadmium	Cd-Diss	2.0U	ug/l
Chromium	Cr-Diss	5.0U	ug/l
Copper	Cu-Diss	22 *	ug/l
Iron	Fe-Diss	2.0UJ	ug/l
Lead	Pb-Diss	20UJ	ug/l
Manganese	Mn-Diss	1.0U	ug/l
Nickel	Ni-Diss	44P*	ug/l
Silver	Ag-Diss	3.0U	ug/l
Zinc	Zn-Diss	15J*	ug/l
Selenium	Se-Diss	50UJ	ug/l

(Sample Complete)

29-JUL-91
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Washington State Department of Ecology
Sample/Project Analysis Results

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Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208097

Description: TRANSPOR

Source: Water (General)

Begin Date: 91/05/16 :

Metals - Specified		Water-Filtere	
		Result	Units
Mercury	Hg-Diss	0.04U	ug/l

Metals - ICP Scan		Water-Filtere	
		Result	Units
Calcium	Ca-Diss	0.016B*	mg/l
Magnesium	Mg-Diss	0.008BP*	mg/l
Sodium	Na-Diss	0.255BE*	mg/l
Arsenic	As-Diss	30UJ	ug/l
Barium	Ba-Diss	1.0U	ug/l
Cadmium	Cd-Diss	2.0U	ug/l
Chromium	Cr-Diss	5.0U	ug/l
Copper	Cu-Diss	3.0U	ug/l
Iron	Fe-Diss	16P*	ug/l
Lead	Pb-Diss	20UJ	ug/l
Manganese	Mn-Diss	1.0U	ug/l
Nickel	Ni-Diss	10U	ug/l
Silver	Ag-Diss	3.0U	ug/l
Zinc	Zn-Diss	4.0U	ug/l
Selenium	Se-Diss	50UJ	ug/l

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Blank ID: BW1140

VOA - PP Scan (GCMS)			Water-Total			VOA - PP Scan (GCMS)			Water-Total		
Blank #1	Result	Units	*** Continued ***			Blank #1	Result	Units			
Carbon Tetrachloride	1U	ug/l				Bromobenzene	1U	ug/l			
Acetone	4J*	ug/l				Toluene	1U	ug/l			
Chloroform	1U	ug/l				Chlorobenzene	1U	ug/l			
Benzene	1U	ug/l				1,2,4-Trichlorobenzene	1U	ug/l			
1,1,1-Trichloroethane	1U	ug/l				Dibromochloromethane	1U	ug/l			
Chloromethane	0.7J*	ug/l				Tetrachloroethene	1U	ug/l			
Dibromomethane	1U	ug/l				Sec-Butylbenzene	1U	ug/l			
Bromochloromethane	1U	ug/l				1,3-Dichloropropane	1U	ug/l			
Chloroethane	1U	ug/l				Cis-1,2-Dichloroethene	1U	ug/l			
Vinyl Chloride	1U	ug/l				trans-1,2-Dichloroethe+	1U	ug/l			
Methylene Chloride	1U	ug/l				1,3-Dichlorobenzene	1U	ug/l			
Carbon Disulfide	1U	ug/l				1,1-Dichloropropene	1U	ug/l			
Bromoform	1U	ug/l				2,2-Dichloropropane	1U	ug/l			
Bromodichloromethane	1U	ug/l				2-Hexanone	1U	ug/l			
1,1-Dichloroethane	1U	ug/l				Ethane, 1,1,1,2-Tetrac+	1U	ug/l			
1,1-Dichloroethene	1U	ug/l				cis-1,3-Dichloropropene	1U	ug/l			
Trichlorofluoromethane	1U	ug/l				trans-1,3-Dichloroprop+	1U	ug/l			
Methane, Dichlorodiflu+	1U	ug/l				p-Bromofluorobenzene	98	% Recov			
1,2-Dichloropropane	1U	ug/l				Surrog: 1-Bromo-2-Fluo+	102	% Recov			
2-Butanone	2J*	ug/l				D4-1,2-Dichlorobenzene	98	% Recov			
1,1,2-Trichloroethane	1U	ug/l				d8-Toluene	99	% Recov			
Trichloroethene	1U	ug/l				d4-1,2-Dichloroethane	98	% Recov			
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l									
1,2,3-Trichlorobenzene	1U	ug/l									
Hexachlorobutadiene	1U	ug/l									
Naphthalene	1UJ	ug/l									
Benzene, 1,2-Dimethyl	1U	ug/l									
2-Chlorotoluene	1U	ug/l									
1,2-Dichlorobenzene	1U	ug/l									
1,2,4-Trimethylbenzene	1U	ug/l									
1,2-Dibromo-3-chloropr+	1U	ug/l									
1,2,3-Trichloropropane	1U	ug/l									
Tert-Butylbenzene	1U	ug/l									
Isopropylbenzene (Cume+	1U	ug/l									
p-Isopropyltoluene	1U	ug/l									
Ethylbenzene	1U	ug/l									
BENZENE, ETHENYL-(STYR+	1U	ug/l									
BENZENE, PROPYL-	1U	ug/l									
Butylbenzene	1U	ug/l									
4-Chlorotoluene	1U	ug/l									
1,4-Dichlorobenzene	1U	ug/l									
1,2-Dibromoethane (EDB)	1U	ug/l									
1,2-Dichloroethane	1U	ug/l									
4-Methyl-2-Pentanone	1U	ug/l									
1,3,5-Trimethylbenzene	1U	ug/l									

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Blank ID: BW1143

VOA - PP Scan (GCMS)			Water-Total			VOA - PP Scan (GCMS)			Water-Total		
Blank #2	Result	Units				Blank #2	Result	Units			
Carbon Tetrachloride	1U	ug/l				Bromobenzene	1U	ug/l			
Acetone	4J*	ug/l				Toluene	0.3J*	ug/l			
Chloroform	1U	ug/l				Chlorobenzene	1U	ug/l			
Benzene	1U	ug/l				1,2,4-Trichlorobenzene	1U	ug/l			
1,1,1-Trichloroethane	1U	ug/l				Dibromochloromethane	1U	ug/l			
Chloromethane	0.5J*	ug/l				Tetrachloroethene	1U	ug/l			
Dibromomethane	1U	ug/l				Sec-Butylbenzene	1U	ug/l			
Bromochloromethane	1U	ug/l				1,3-Dichloropropane	1U	ug/l			
Chloroethane	1U	ug/l				Cis-1,2-Dichloroethene	1U	ug/l			
Vinyl Chloride	1U	ug/l				trans-1,2-Dichloroethe+	1U	ug/l			
Methylene Chloride	1 *	ug/l				1,3-Dichlorobenzene	1U	ug/l			
Carbon Disulfide	1U	ug/l				1,1-Dichloropropene	1U	ug/l			
Bromoform	1U	ug/l				2,2-Dichloropropane	1U	ug/l			
Bromodichloromethane	1U	ug/l				2-Hexanone	1U	ug/l			
1,1-Dichloroethane	1U	ug/l				Ethane, 1,1,1,2-Tetrac+	1U	ug/l			
1,1-Dichloroethene	1U	ug/l				cis-1,3-Dichloropropene	1U	ug/l			
Trichlorofluoromethane	1U	ug/l				trans-1,3-Dichloroprop+	1U	ug/l			
Methane, Dichlorodiflu+	1U	ug/l				p-Bromofluorobenzene	97	% Recov			
1,2-Dichloropropane	1U	ug/l				Surrog: 1-Bromo-2-Fluo+	99	% Recov			
2-Butanone	2J*	ug/l				D4-1,2-Dichlorobenzene	99	% Recov			
1,1,2-Trichloroethane	1U	ug/l				d8-Toluene	100	% Recov			
Trichloroethene	1U	ug/l				d4-1,2-Dichloroethane	104	% Recov			
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l									
1,2,3-Trichlorobenzene	1U	ug/l									
Hexachlorobutadiene	1U	ug/l									
Naphthalene	1UJ	ug/l									
Benzene, 1,2-Dimethyl	1U	ug/l									
2-Chlorotoluene	1U	ug/l									
1,2-Dichlorobenzene	1U	ug/l									
1,2,4-Trimethylbenzene	1U	ug/l									
1,2-Dibromo-3-chloropr+	1U	ug/l									
1,2,3-Trichloropropane	1U	ug/l									
Tert-Butylbenzene	1U	ug/l									
Isopropylbenzene (Cume+	1U	ug/l									
p-Isopropyltoluene	1U	ug/l									
Ethylbenzene	1U	ug/l									
BENZENE, ETHENYL-(STYR+	1U	ug/l									
BENZENE, PROPYL-	1U	ug/l									
Butylbenzene	1U	ug/l									
4-Chlorotoluene	1U	ug/l									
1,4-Dichlorobenzene	1U	ug/l									
1,2-Dibromoethane (EDB)	1U	ug/l									
1,2-Dichloroethane	1U	ug/l									
4-Methyl-2-Pentanone	1U	ug/l									
1,3,5-Trimethylbenzene	1U	ug/l									

Tent Ident - VOA Sca			Water-Total		
Blank #1	Result	Units			
BENZALDEHYDE (ACN) (DO+	0.38NJ*	ug/l			
BENZENE, 1,1'-OXYBIS-	0.42NJ*	ug/l			

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Blank ID: BW1144

VOA - PP Scan (GCMS)			Water-Total			VOA - PP Scan (GCMS)			Water-Total		
Blank #1	Result	Units				Blank #1	Result	Units			
Carbon Tetrachloride	1U	ug/l				Bromobenzene	1U	ug/l			
Acetone	3J*	ug/l				Toluene	0.3J*	ug/l			
Chloroform	1U	ug/l				Chlorobenzene	1U	ug/l			
Benzene	1U	ug/l				1,2,4-Trichlorobenzene	1U	ug/l			
1,1,1-Trichloroethane	1U	ug/l				Dibromochloromethane	1U	ug/l			
Chloromethane	0.4J*	ug/l				Tetrachloroethene	1U	ug/l			
Dibromomethane	1U	ug/l				Sec-Butylbenzene	1U	ug/l			
Bromochloromethane	1U	ug/l				1,3-Dichloropropane	1U	ug/l			
Chloroethane	1U	ug/l				Cis-1,2-Dichloroethene	1U	ug/l			
Vinyl Chloride	1U	ug/l				trans-1,2-Dichloroethe+	1U	ug/l			
Methylene Chloride	1 *	ug/l				1,3-Dichlorobenzene	1U	ug/l			
Carbon Disulfide	1U	ug/l				1,1-Dichloropropene	1U	ug/l			
Bromoform	1U	ug/l				2,2-Dichloropropane	1U	ug/l			
Bromodichloromethane	1U	ug/l				2-Hexanone	1U	ug/l			
1,1-Dichloroethane	1U	ug/l				Ethane, 1,1,1,2-Tetrac+	1U	ug/l			
1,1-Dichloroethene	1U	ug/l				cis-1,3-Dichloropropene	1U	ug/l			
Trichlorofluoromethane	1U	ug/l				trans-1,3-Dichloroprop+	1U	ug/l			
Methane, Dichlorodiflu+	1U	ug/l				p-Bromofluorobenzene	102	% Recov			
1,2-Dichloropropane	1U	ug/l				Surrog: 1-Bromo-2-Fluo+	101	% Recov			
2-Butanone	2J*	ug/l				D4-1,2-Dichlorobenzene	103	% Recov			
1,1,2-Trichloroethane	1U	ug/l				d8-Toluene	104	% Recov			
Trichloroethene	1U	ug/l				d4-1,2-Dichloroethane	102	% Recov			
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l									
1,2,3-Trichlorobenzene	1U	ug/l									
Hexachlorobutadiene	1U	ug/l									
Naphthalene	1UJ	ug/l									
Benzene, 1,2-Dimethyl	1U	ug/l									
2-Chlorotoluene	1U	ug/l									
1,2-Dichlorobenzene	1U	ug/l									
1,2,4-Trimethylbenzene	1U	ug/l									
1,2-Dibromo-3-chloropr+	1U	ug/l									
1,2,3-Trichloropropane	1U	ug/l									
Tert-Butylbenzene	1U	ug/l									
Isopropylbenzene (Cume+	1U	ug/l									
p-Isopropyltoluene	1U	ug/l									
Ethylbenzene	1U	ug/l									
BENZENE, ETHENYL-(STYR+	1U	ug/l									
BENZENE, PROPYL-	1U	ug/l									
Butylbenzene	1U	ug/l									
4-Chlorotoluene	1U	ug/l									
1,4-Dichlorobenzene	1U	ug/l									
1,2-Dibromoethane (EDB)	1U	ug/l									
1,2-Dichloroethane	1U	ug/l									
4-Methyl-2-Pentanone	1U	ug/l									
1,3,5-Trimethylbenzene	1U	ug/l									

(Sample Complete)

13:14:04

WASHINGTON STATE DEPARTMENT OF ECOLOGY
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM

Account: D3P11

Blank ID: PB 22.88

Metals - ICP Scan		Water-Filtere	
Blank #1		Result	Units
Calcium	Ca-Diss	0.167 *	mg/l
Mgnsium	Mg-Diss	0.0606 *	mg/l
Sodium	Na-Diss	0.110P*	mg/l
Arsenic	As-Diss	30U	ug/l
Barium	Ba-Diss	1.0U	ug/l
Cadmium	Cd-Diss	2.0U	ug/l
Chromium	Cr-Diss	5.0U	ug/l
Copper	Cu-Diss	3.0U	ug/l
Iron	Fe-Diss	9.2P*	ug/l
Lead	Pb-Diss	20U	ug/l
Manganese	Mn-Diss	1.0U	ug/l
Nickel	Ni-Diss	10U	ug/l
Silver	Ag-Diss	3.0U	ug/l
Zinc	Zn-Diss	4.0U	ug/l
Selenium	Se-Diss	50U	ug/l

(Sample Complete)

*** Lab Analysis Report ***

Transaction #: 06041007 Seq #: 01 (10) Gen Inorg/Phys-Specified
(WE) Ecology, Manchester Lab
Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
Param: (425 S) Alk-HCO3 CaCO3 mg/l

QA Code: () Normal Data
Instrument: (TITRIT) Titrimetric Measurement
Method: (SM16-403) Alkalinity, Titrimetric (pH 8.3, 4.5)
Chemist: (MPS) Sankiewicz, Marek DOE Hours Worked:
Lab Prep: () Unspecified
Matrix: (10) Water-Total Date Preprd:
Units: (10) mg/l Date Anlyzd: 910531

Partial

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	91 208092	77.8	MW-19A	910515 (16)
2	91 208093	74.3	MW-32	910515 (16)
3	91 208094	82.0	MW-16A	910516 (15)
4	91 208095	81.1	MW-16B	910516 (15)

Record Type: TRNIN2 Date Verified: 6/6/91 By: *DC*
Transaction Status: Edited Transaction...First Printing...Unverified.
*** Verified and Transferred to VERTRANS ***
Processed: 6-JUN-91 14:35:25 Status: E Batch: A (In CUR DB)

Transaction #: 05290730 Seq #: 01 (15) Solids - Specified
(WE) Ecology, Manchester Lab
Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
Param: (70300 S) Solids T-Dissol mg/l

QA Code: () Normal Data
Instrument: (GRAV) Gravimetric Measurement
Method: (EP1-160.1) Residue, Filterable, Gravimetric, Dried at 180 Deg
Chemist: (MLE) Elling, Michelle DOE Hours Worked:
Lab Prep: () Unspecified
Matrix: (10) Water-Total Date Preprd:
Units: (10) mg/l Date Anlyzd: 910523

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	91 208092	138H	MW-19A	910515 (8)
2	91 208093	219H	MW-32	910515 (8)
3	91 208094	149H	MW-16A	910516 (7)
4	91 208095	157H	MW-16B	910516 (7)

Record Type: TRNIN2 Date Verified: 5-29-91 By: *[Signature]*
Transaction Status: New Transaction...First Printing...Unverified.
Processed: 29-MAY-91 07:57:52 Status: N Batch: (In CUR DB)

Transaction #: 05300744 Seq #: 01 (10) Gen Inorg/Phys-Specified
(WE) Ecology, Manchester Lab
Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
Param: (900 S) Hard-Tot CaCO3 mg/l

QA Code: () Normal Data
Instrument: (TITRIT) Titrimetric Measurement
Method: (EP1-130.2) Hardness, Total (mg/l as CaCO3), Titrimetric, EDTA
Chemist: (MLE) Elling, Michelle DOE Hours Worked:
Lab Prep: () Unspecified
Matrix: (10) Water-Total Date Preprd:
Units: (10) mg/l Date Anlyzd: 910528

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	91 208092	89.9	MW-19A	910515 (13)
2	91 208093	86.4	MW-32	910515 (13)
3	91 208094	95.9	MW-16A	910516 (12)
4	91 208095	94.4	MW-16B	910516 (12)

Record Type: TRNIN2

Date Verified: 5-30-91

By: [Signature]

Transaction Status: New Transaction...First Printing...Unverified.

Processed: 30-MAY-91 07:47:10 Status: N Batch: (In CUR DB)

Transaction #: 05220659 Seq #: 01 (20) Nutrients - Specified
Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS (WE) Ecology, Manchester Lab
Param: (630 S) NO2NO3-N Total mg/l D3P11 PZM

QA Code: () Normal Data
Instrument: (ALPKEM) Auto Analyzer, ALPKEM 303 (DOE)
Method: (EP1-353.2) Nitrogen, (Nitrate-Nitrite), Colorimetric, Automat
Chemist: (DXT) Thomson, Dave DOE Hours Worked:
Lab Prep: () Unspecified
Matrix: (10) Water-Total Date Preprd:
Units: (10) mg/l Date Anlyzd: 910521

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	91 208092	1.45 ✓	MW-19A	910515 (6)
2	91 208093	2.13 ✓	MW-32	910515 (6)
3	91 208094	2.19 ✓	MW-16A	910516 (5)
4	91 208095	2.17 ✓	MW-16B	910516 (5)

Record Type: TRNIN2 Date Verified: 5/24/91 By: [Signature]
Transaction Status: New Transaction...First Printing...Unverified.
Processed: 22-MAY-91 10:54:51 Status: N Batch: (In CUR DB)

Transaction #: 05300709 Seq #: 01 (80) Ion Chromatography
(WE) Ecology, Manchester Lab
Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
Param: (940 S) Chloride mg/l

QA Code: () Normal Data
Instrument: (IC-2020I) Dionex #IC-2020 Ion Chromatograph
Method: (EP1-300.0) Inorganic Anions, Ion Chromatography
Chemist: (MPS) Sankiewicz, Marek DOE Hours Worked:
Lab Prep: () Unspecified
Matrix: (10) Water-Total Date Preprd:
Units: (10) mg/l Date Anlyzd: 910528

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	91 208092	4.7	MW-19A	910515 (13)
2	91 208093	7.2	MW-32	910515 (13)
3	91 208094	6.9	MW-16A	910516 (12)
4	91 208095	6.9	MW-16B	910516 (12)

Record Type: TRNIN2 Date Verified: 5/30/91 By: [Signature]
Transaction Status: New Transaction...Reprint...Unverified.
Processed: 30-MAY-91 07:47:10 Status: P Batch: (In CUR DB)

Transaction #: 05300708 Seq #: 01 (80) Ion Chromatography
 (WE) Ecology, Manchester Lab
 Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
 Param: (945 S) Sulfate Total mg/l

QA Code: () Normal Data
 Instrument: (IC-2020I) Dionex #IC-2020 Ion Chromatograph
 Method: (EP1-300.0) Inorganic Anions, Ion Chromatography
 Chemist: (MPS) Sankiewicz, Marek DOE Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (10) Water-Total Date Preprd:
 Units: (10) mg/l Date Analyzd: 910528

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	91 208092	10.7	MW-19A	910515 (13)
2	91 208093	11.3	MW-32	910515 (13)
3	91 208094	14.0	MW-16A	910516 (12)
4	91 208095	14.8	MW-16B	910516 (12)

Record Type: TRNIN2 Date Verified: 5/30/91 By: *[Signature]*
 Transaction Status: New Transaction...Reprint...Unverified.
 Processed: 30-MAY-91 07:47:10 Status: P Batch: (In CUR DB)



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Post Office Box 307 • Manchester, Washington 98353-0346 • (206) 895-4740

August 12, 1991

TO: Pam Marty, Project Officer
EILS

THROUGH: Dick Huntamer *DH*

FROM: Greg Perez, Chemist *GP*
Manchester Lab

SUBJECT: Lakewood/Plaza Cleaners

The two samples marked MW-20A (Lab #91208089) and MW-20B (Lab #91208088) were reanalyzed at your request. High levels of tetrachloroethene were found in MW-20A, none in MW-20B.

This reanalysis confirms the initial analysis of the samples. Both samples were collected in duplicate. Only one of these vials was analyzed leaving one unopened vial. The opened vial was retained with some sample remaining and stored under refrigeration. This vial was reanalyzed. The preliminary data for MW-20A indicates an approximate 20% loss compared to the original analysis. This is actually a better agreement than I would have expected after this length of time. I found no target compounds in MW-20B. This is to be expected in a low level sample.

I will review the data as soon as possible. If you need actual results immediately, please call and I can give you preliminary verbal results.

If you have any more questions, feel free to call.

GP:mb

cc: Bill Kammin

MANCHESTER ENVIRONMENTAL LABORATORY
7411 Beach Drive SE , Port Orchard Washington 98366

CASE NARRATIVE

September 9, 1991

Subject: Lakewood /Plaza Cleaners Reanalysis
Samples: 91- 208088 - 208089
Case No. DOE-003D
Officer: Pam Marti
By: Dickey D. Huntamer
Organics Analysis Unit

VOLATILE ORGANIC ANALYSIS

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using Manchester modification of the EPA CLP and SW 846 Method 8240 purge-trap procedure with capillary GC/MS analysis. Normal CLP QA/QC procedures were performed on the samples.

HOLDING TIMES:

These samples were previously analyzed within holding times. Reanalysis was requested by the Project Officer after 86 days had elapsed. All analytical results were given the "J" qualifier because recommended holding times were exceeded by 72 days.

BLANKS:

No significant blank contamination was detected.

SURROGATES:

Surrogate recoveries were within acceptable CLP limits for the sample and blank.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

No matrix spikes were analyzed with these samples.

SPECIAL ANALYTICAL PROBLEMS:

The analysis results were consistent with the previous analysis. In sample 91-208089 a 20% to 31% loss of analyte occurred over the seventy plus days, most likely due to volatilization into the headspace left over from the original analysis. All data was given the "J" qualifier for being over holding times.

DATA QUALIFIER CODES:

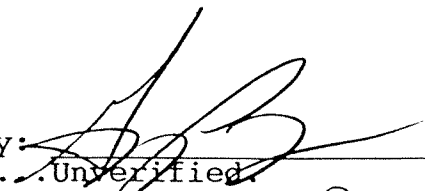
- U - The analyte was not detected at or above the reported value.
- J - The analyte was positively identified. The associated numerical value is an estimate.
- UJ - The analyte was not detected at or above the reported estimated result.
- REJ - The data are unusable for all purposes.
- EXP - The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6 .
- NAF - Not analyzed for.
- N - For organic analytes there is evidence the analyte is present in this 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.
- * - The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

=> Transaction #: 09269907 Laboratory: (WE) Ecology, Manchester Lab
 Work Group: (51) VOA - PP Scan (GCMS)
 Instrument: (GCMS-E1) EPA1 GC/MS INCOS-5100 Capillary Colu
 Method: (EP2-624) GC/MS Purge and Trap Scan
 Chemist: (LAB) Lab (General R/O) Hours Worked: _____

Project: DOE-003E LAKEWOOD/PLAZA CLEANERS Prg Ele#: D3P11
 Proj Off: Marti, Pam DOE Analysis Due: 910823 Revised Due:

*** Sample Records in Transaction ***

Seq#	Sample #	QA	Date/Time	Description	Alternate Keys
01	91347210		910822	MW-20A	
02	91347211		910822	MW-20B	
04	91347211	LMX1	910822	MW-20B	
05	91347211	LMX2	910822	MW-20B	
06	91347211	LBK1	910822	MW-20B	
07	91347211	LBK2	910822	MW-20B	

Record Type: TRNIN3 Date Verified: 9/30/91 By: 
 Transaction Status: Edited Transaction...First Printing...Unverified
 Processed: 30-SEP-91 10:28:17 Status: E Batch: (In CUR DB) GREGORY PEREZ

Transaction #: 09269907 Seq #: 01 (51) VOA - PP Scan (GCMS)
 Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Sample No.: 91 347210 Alternate Keys:

Sample Matrix: (10) Water-Total Units: (11) ug/l %Slds: _____
 VOA Code: () Unspecified Peaks Total: _____
 Volume Extracted: Date Analyzed: 910904 # Days to Ext/Anal: 07 / 13

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1U
2	75718	Methane, Dichlorodifluoro-	ug/l	1U
3	74839	Bromomethane	ug/l	1U
4	75014	Vinyl Chloride	ug/l	1U
5	75003	Chloroethane	ug/l	1U
6	75694	Trichlorofluoromethane	ug/l	1U
7	75092	Methylene Chloride	ug/l	1U
8	67641	Acetone	ug/l	1UJ
9	75150	Carbon Disulfide	ug/l	1U
10	75354	1,1-Dichloroethene	ug/l	1U
11	75343	1,1-Dichloroethane	ug/l	1U
12	156605	trans-1,2-Dichloroethene	ug/l	1UJ
13	156592	Cis-1,2-Dichloroethene	ug/l	1U
14	590207	2,2-Dichloropropane	ug/l	1U
15	74975	Bromochloromethane	ug/l	1U
16	67663	Chloroform	ug/l	1U
17	107062	1,2-Dichloroethane	ug/l	1U
18	78933	2-Butanone	ug/l	1U
19	71556	1,1,1-Trichloroethane	ug/l	0.2J
20	56235	Carbon Tetrachloride	ug/l	1U
21	563586	1,1-Dichloropropene	ug/l	1U
22	75274	Bromodichloromethane	ug/l	1U
23	78875	1,2-Dichloropropane	ug/l	1U
24	74953	Dibromomethane	ug/l	1U
25	10061026	trans-1,3-Dichloropropene	ug/l	1U
26	79016	Ethene, trichloro-	ug/l	1U
27	124481	Dibromochloromethane	ug/l	1U
28	106934	1,2-Dibromoethane (EDB)	ug/l	1U
29	79005	1,1,2-Trichloroethane	ug/l	1U
30	142289	1,3-Dichloropropane	ug/l	1U
31	71432	Benzene	ug/l	1U
32	10061015	cis-1,3-Dichloropropene	ug/l	1U
33	75252	Bromoform	ug/l	1U
34	591786	2-Hexanone	ug/l	1U
35	108101	4-Methyl-2-Pentanone	ug/l	1U
36	127184	Tetrachloroethene	ug/l	1U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1U
39	108883	Toluene	ug/l	1U
40	108907	Chlorobenzene	ug/l	1U
41	100414	Ethylbenzene	ug/l	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1U
43	108861	Bromobenzene	ug/l	1U
44	96184	1,2,3-Trichloropropane	ug/l	1U
45	95498	2-Chlorotoluene	ug/l	1U
46	106434	4-Chlorotoluene	ug/l	1U
47	1330207	Total Xylenes	ug/l	1U
48	95636	1,2,4-Trimethylbenzene	ug/l	1U
49	98066	Tert-Butylbenzene	ug/l	1U
50	108678	1,3,5-Trimethylbenzene	ug/l	1U

(continued on next page)

Transaction #: 09269907 Seq #: 01 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347210 (continued from previous page)

Line	Par #	Parameter Description	Units	Value		
51	135988	Sec-Butylbenzene	ug/l	1U		
52	99876	p-Isopropyltoluene	ug/l	1U		
53	104518	Butylbenzene	ug/l	1U		
54	96128	1,2-Dibromo-3-chloropropane	ug/l	1U		
55	87616	1,2,3-Trichlorobenzene	ug/l	1U		
56	98828	Isopropylbenzene (Cumene)	ug/l	1U		
57	103651	BENZENE, PROPYL-	ug/l	1U		
58	541731	1,3-Dichlorobenzene	ug/l	1U		
59	106467	1,4-Dichlorobenzene	ug/l	1U		
60	95501	1,2-Dichlorobenzene	ug/l	1U		
61	120821	1,2,4-Trichlorobenzene	ug/l	1U		
62	91203	Naphthalene	ug/l	1U		
63	87683	Hexachlorobutadiene	ug/l	1U		
64	-762492	Surrog: 1-Bromo-2-Fluoroetha	% Recov	146	(Surr)	PR
65	2747582	d8-Toluene	% Recov	95	(Surr)	PR
66	-460004	p-Bromofluorobenzene	% Recov	92	(Surr)	PR
67	17070070	d4-1,2-Dichloroethane	% Recov	96	(Surr)	PR
68	2199691	D4-1,2-Dichlorobenzene	% Recov	102	(Surr)	PR

Transaction #: 09269907 Seq #: 02 (51) VOA - PP Scan (GCMS)
 Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Sample No.: 91 347211 Alternate Keys:

Sample Matrix: (10) Water-Total Units: (11) ug/l %Slds: _____
 QA Code: () Unspecified Peaks Total: _____
 Date Extracted: Date Analyzed: 910904 # Days to Ext/Anal: 07/13

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1U
2	75718	Methane, Dichlorodifluoro-	ug/l	1U
3	74839	Bromomethane	ug/l	1U
4	75014	Vinyl Chloride	ug/l	0.3J
5	75003	Chloroethane	ug/l	1U
6	75694	Trichlorofluoromethane	ug/l	1U
7	75092	Methylene Chloride	ug/l	1U
8	67641	Acetone	ug/l	1UJ
9	75150	Carbon Disulfide	ug/l	1U
10	75354	1,1-Dichloroethene	ug/l	1U
11	75343	1,1-Dichloroethane	ug/l	1U
12	156605	trans-1,2-Dichloroethene	ug/l	0.8J
13	156592	Cis-1,2-Dichloroethene	ug/l	22
14	590207	2,2-Dichloropropane	ug/l	1U
15	74975	Bromochloromethane	ug/l	1U
16	67663	Chloroform	ug/l	0.2J
17	107062	1,2-Dichloroethane	ug/l	1U
18	78933	2-Butanone	ug/l	1U
19	71556	1,1,1-Trichloroethane	ug/l	0.3J
20	56235	Carbon Tetrachloride	ug/l	1U
21	563586	1,1-Dichloropropene	ug/l	1U
22	75274	Bromodichloromethane	ug/l	1U
23	78875	1,2-Dichloropropane	ug/l	1U
24	74953	Dibromomethane	ug/l	1U
25	10061026	trans-1,3-Dichloropropene	ug/l	1U
26	79016	Ethene, trichloro-	ug/l	16J
27	124481	Dibromochloromethane	ug/l	1U
28	106934	1,2-Dibromoethane (EDB)	ug/l	1U
29	79005	1,1,2-Trichloroethane	ug/l	1U
30	142289	1,3-Dichloropropane	ug/l	1U
31	71432	Benzene	ug/l	1UJ
32	10061015	cis-1,3-Dichloropropene	ug/l	1U
33	75252	Bromoform	ug/l	1U
34	591786	2-Hexanone	ug/l	1U
35	108101	4-Methyl-2-Pentanone	ug/l	1U
36	127184	Tetrachloroethene	ug/l	920
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1U
39	108883	Toluene	ug/l	1U
40	108907	Chlorobenzene	ug/l	0.1J
41	100414	Ethylbenzene	ug/l	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1U
43	108861	Bromobenzene	ug/l	1U
44	96184	1,2,3-Trichloropropane	ug/l	1U
45	95498	2-Chlorotoluene	ug/l	1U
46	106434	4-Chlorotoluene	ug/l	1U
47	1330207	Total Xylenes	ug/l	1U
48	95636	1,2,4-Trimethylbenzene	ug/l	1U
49	98066	Tert-Butylbenzene	ug/l	1U
50	108678	1,3,5-Trimethylbenzene	ug/l	1U

(continued on next page)

Transaction #: 09269907 Seq #: 02 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

Line	Par #	Parameter Description	Units	Value		
51	135988	Sec-Butylbenzene	ug/l	1U		
52	99876	p-Isopropyltoluene	ug/l	1U		
53	104518	Butylbenzene	ug/l	1U		
54	96128	1,2-Dibromo-3-chloropropane	ug/l	1U		
55	87616	1,2,3-Trichlorobenzene	ug/l	1U		
56	98828	Isopropylbenzene (Cumene)	ug/l	1U		
57	103651	BENZENE, PROPYL-	ug/l	1U		
58	541731	1,3-Dichlorobenzene	ug/l	1U		
59	106467	1,4-Dichlorobenzene	ug/l	1U		
60	95501	1,2-Dichlorobenzene	ug/l	1U		
61	120821	1,2,4-Trichlorobenzene	ug/l	1U		
62	91203	Naphthalene	ug/l	1U		
63	87683	Hexachlorobutadiene	ug/l	1U		
64	-762492	Surrog: 1-Bromo-2-Fluoroetha	% Recov	101	(Surr)	PR
65	2747582	d8-Toluene	% Recov	93	(Surr)	PR
66	-460004	p-Bromofluorobenzene	% Recov	94	(Surr)	PR
67	17070070	d4-1,2-Dichloroethane	% Recov	98	(Surr)	PR
68	2199691	D4-1,2-Dichlorobenzene	% Recov	106	(Surr)	PR

Transaction #: 09269907 Seq #: 04 (51) VOA - PP Scan (GCMS)
 Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Sample No.: 91 347211 Alternate Keys:

Samp Matrix: (10) Water-Total Units: (94) % Recov %Slds: _____
 QA Code: (LMX1) Lab Mtrx Spike #1 (% Rec Peaks Total: _____
 Date Extracted: Date Analyzed: 910905 # Days to Ext/Anal: 0/ 14

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	% Recov	91
2	75718	Methane, Dichlorodifluoro-	% Recov	83
3	74839	Bromomethane	% Recov	95
4	75014	Vinyl Chloride	% Recov	89
5	75003	Chloroethane	% Recov	85
6	75694	Trichlorofluoromethane	% Recov	103
7	75092	Methylene Chloride	% Recov	88
8	67641	Acetone	% Recov	22J
9	75150	Carbon Disulfide	% Recov	90
10	75354	1,1-Dichloroethene	% Recov	101
11	75343	1,1-Dichloroethane	% Recov	103
12	156605	trans-1,2-Dichloroethene	% Recov	104J
13	156592	Cis-1,2-Dichloroethene	% Recov	105
14	590207	2,2-Dichloropropane	% Recov	108
15	74975	Bromochloromethane	% Recov	108
16	67663	Chloroform	% Recov	104
17	107062	1,2-Dichloroethane	% Recov	104
18	78933	2-Butanone	% Recov	67
19	71556	1,1,1-Trichloroethane	% Recov	109
20	56235	Carbon Tetrachloride	% Recov	110
21	563586	1,1-Dichloropropene	% Recov	105
22	75274	Bromodichloromethane	% Recov	106
23	78875	1,2-Dichloropropane	% Recov	107
24	74953	Dibromomethane	% Recov	105
25	10061026	trans-1,3-Dichloropropene	% Recov	96
26	79016	Ethene, trichloro-	% Recov	109
27	124481	Dibromochloromethane	% Recov	110
28	106934	1,2-Dibromoethane (EDB)	% Recov	118
29	79005	1,1,2-Trichloroethane	% Recov	109
30	142289	1,3-Dichloropropane	% Recov	111
31	71432	Benzene	% Recov	106
32	10061015	cis-1,3-Dichloropropene	% Recov	79
33	75252	Bromoform	% Recov	119
34	591786	2-Hexanone	% Recov	110
35	108101	4-Methyl-2-Pentanone	% Recov	110
36	127184	Tetrachloroethene	% Recov	109
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	% Recov	110
38	630206	Ethane, 1,1,1,2-Tetrachloro-	% Recov	111
39	108883	Toluene	% Recov	103
40	108907	Chlorobenzene	% Recov	105
41	100414	Ethylbenzene	% Recov	100
42	100425	BENZENE, ETHENYL-(STYRENE)	% Recov	101
43	108861	Bromobenzene	% Recov	106
44	96184	1,2,3-Trichloropropane	% Recov	113
45	95498	2-Chlorotoluene	% Recov	102
46	106434	4-Chlorotoluene	% Recov	98
47	1330207	Total Xylenes	% Recov	99
48	95636	1,2,4-Trimethylbenzene	% Recov	99
49	98066	Tert-Butylbenzene	% Recov	99
50	108678	1,3,5-Trimethylbenzene	% Recov	99

(continued on next page)

Transaction #: 09269907 Seq #: 04 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	% Recov	97	
52	99876	p-Isopropyltoluene	% Recov	99	
53	104518	Butylbenzene	% Recov	98	
54	96128	1,2-Dibromo-3-chloropropane	% Recov	110	
55	87616	1,2,3-Trichlorobenzene	% Recov	111	
56	98828	Isopropylbenzene (Cumene)	% Recov	101	
57	103651	BENZENE, PROPYL-	% Recov	101	
58	541731	1,3-Dichlorobenzene	% Recov	103	
59	106467	1,4-Dichlorobenzene	% Recov	101	
60	95501	1,2-Dichlorobenzene	% Recov	102	
61	120821	1,2,4-Trichlorobenzene	% Recov	109	
62	91203	Naphthalene	% Recov	109	
63	87683	Hexachlorobutadiene	% Recov	105	
64	-762492	Surrog: 1-Bromo-2-Fluoroetha	% Recov	102	(Surr) PR
65	2747582	d8-Toluene	% Recov	100	(Surr) PR
66	-460004	p-Bromofluorobenzene	% Recov	98	(Surr) PR
67	17070070	d4-1,2-Dichloroethane	% Recov	100	(Surr) PR
68	2199691	D4-1,2-Dichlorobenzene	% Recov	97	(Surr) PR

Transaction #: 09269907 Seq #: 05 (51) VOA - PP Scan (GCMS)
 Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Sample No.: 91 347211 Alternate Keys:

Sample Matrix: (10) Water-Total Units: (94) % Recov %Slids: _____
 A Code: (LMX2) Lab Mtrx Spike #2 (% Rec Peaks Total: _____
 Sample Extracted: Date Analyzed: 910905 # Days to Ext/Anal: 07 14

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	% Recov	77
2	75718	Methane, Dichlorodifluoro-	% Recov	64
3	74839	Bromomethane	% Recov	82
4	75014	Vinyl Chloride	% Recov	76
5	75003	Chloroethane	% Recov	79
6	75694	Trichlorofluoromethane	% Recov	84
7	75092	Methylene Chloride	% Recov	90
8	67641	Acetone	% Recov	30J
9	75150	Carbon Disulfide	% Recov	87
10	75354	1,1-Dichloroethene	% Recov	103
11	75343	1,1-Dichloroethane	% Recov	108
12	156605	trans-1,2-Dichloroethene	% Recov	108J
13	156592	Cis-1,2-Dichloroethene	% Recov	108
14	590207	2,2-Dichloropropane	% Recov	108
15	74975	Bromochloromethane	% Recov	108
16	67663	Chloroform	% Recov	109
17	107062	1,2-Dichloroethane	% Recov	113
18	78933	2-Butanone	% Recov	83
19	71556	1,1,1-Trichloroethane	% Recov	123
20	56235	Carbon Tetrachloride	% Recov	125
21	563586	1,1-Dichloropropene	% Recov	121
22	75274	Bromodichloromethane	% Recov	121
23	78875	1,2-Dichloropropane	% Recov	124
24	74953	Dibromomethane	% Recov	122
25	10061026	trans-1,3-Dichloropropene	% Recov	111
26	79016	Ethene, trichloro-	% Recov	122
27	124481	Dibromochloromethane	% Recov	127
28	106934	1,2-Dibromoethane (EDB)	% Recov	136
29	79005	1,1,2-Trichloroethane	% Recov	127
30	142289	1,3-Dichloropropane	% Recov	129
31	71432	Benzene	% Recov	120
32	10061015	cis-1,3-Dichloropropene	% Recov	92
33	75252	Bromoform	% Recov	136
34	591786	2-Hexanone	% Recov	130
35	108101	4-Methyl-2-Pentanone	% Recov	130
36	127184	Tetrachloroethene	% Recov	125
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	% Recov	123
38	630206	Ethane, 1,1,1,2-Tetrachloro-	% Recov	124
39	108883	Toluene	% Recov	110
40	108907	Chlorobenzene	% Recov	108
41	100414	Ethylbenzene	% Recov	107
42	100425	BENZENE, ETHENYL-(STYRENE)	% Recov	105
43	108861	Bromobenzene	% Recov	112
44	96184	1,2,3-Trichloropropane	% Recov	127
45	95498	2-Chlorotoluene	% Recov	106
46	106434	4-Chlorotoluene	% Recov	106
47	1330207	Total Xylenes	% Recov	103
48	95636	1,2,4-Trimethylbenzene	% Recov	106
49	98066	Tert-Butylbenzene	% Recov	106
50	108678	1,3,5-Trimethylbenzene	% Recov	106

(continued on next page)

Transaction #: 09269907 Seq #: 05 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

Line	Par #	Parameter Description	Units	Value	
51	135988	Sec-Butylbenzene	% Recov	104	
52	99876	p-Isopropyltoluene	% Recov	106	
53	104518	Butylbenzene	% Recov	106	
54	96128	1,2-Dibromo-3-chloropropane	% Recov	118	
55	87616	1,2,3-Trichlorobenzene	% Recov	113	
56	98828	Isopropylbenzene (Cumene)	% Recov	108	
57	103651	BENZENE, PROPYL-	% Recov	106	
58	541731	1,3-Dichlorobenzene	% Recov	108	
59	106467	1,4-Dichlorobenzene	% Recov	109	
60	95501	1,2-Dichlorobenzene	% Recov	110	
61	109	Unknown	% Recov	115	
62	91203	Naphthalene	% Recov	119	
63	87683	Hexachlorobutadiene	% Recov	110	
64	-762492	Surrog: 1-Bromo-2-Fluoroetha	% Recov	113	(Surr) PR
65	2747582	d8-Toluene	% Recov	102	(Surr) PR
66	-460004	p-Bromofluorobenzene	% Recov	98	(Surr) PR
67	17070070	d4-1,2-Dichloroethane	% Recov	102	(Surr) PR
68	2199691	D4-1,2-Dichlorobenzene	% Recov	100	(Surr) PR

Transaction #: 09269907 Seq #: 06 (51) VOA - PP Scan (GCMS)
 Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Blank ID : BW1247
 Sample No.: 91 347211

Alternate Keys:

Sample Matrix: (10) Water-Total Units: (11) ug/l %Slds: _____
 Lab Code: (LBK1) Lab Blank Sample #1 Peaks Total: _____
 Sample Extracted: Date Analyzed: 910904 # Days to Ext/Anal: 07 13

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1U
2	75718	Methane, Dichlorodifluoro-	ug/l	1U
3	74839	Bromomethane	ug/l	1U
4	75014	Vinyl Chloride	ug/l	1U
5	75003	Chloroethane	ug/l	1U
6	75694	Trichlorofluoromethane	ug/l	1U
7	75092	Methylene Chloride	ug/l	0.3J
8	67641	Acetone	ug/l	1UJ
9	75150	Carbon Disulfide	ug/l	1U
10	75354	1,1-Dichloroethene	ug/l	1U
11	75343	1,1-Dichloroethane	ug/l	1U
12	156605	trans-1,2-Dichloroethene	ug/l	1UJ
13	156592	Cis-1,2-Dichloroethene	ug/l	1U
14	590207	2,2-Dichloropropane	ug/l	1U
15	74975	Bromochloromethane	ug/l	1U
16	67663	Chloroform	ug/l	1U
17	107062	1,2-Dichloroethane	ug/l	1U
18	78933	2-Butanone	ug/l	32
19	71556	1,1,1-Trichloroethane	ug/l	1U
20	56235	Carbon Tetrachloride	ug/l	1U
21	563586	1,1-Dichloropropene	ug/l	1U
22	75274	Bromodichloromethane	ug/l	1U
23	78875	1,2-Dichloropropane	ug/l	1U
24	74953	Dibromomethane	ug/l	1U
25	10061026	trans-1,3-Dichloropropene	ug/l	1U
26	79016	Ethene, trichloro-	ug/l	1U
27	124481	Dibromochloromethane	ug/l	1U
28	106934	1,2-Dibromoethane (EDB)	ug/l	1U
29	79005	1,1,2-Trichloroethane	ug/l	1U
30	142289	1,3-Dichloropropane	ug/l	1U
31	71432	Benzene	ug/l	1U
32	10061015	cis-1,3-Dichloropropene	ug/l	1U
33	75252	Bromoform	ug/l	1U
34	591786	2-Hexanone	ug/l	1U
35	108101	4-Methyl-2-Pentanone	ug/l	1U
36	127184	Tetrachloroethene	ug/l	0.3J
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1U
39	108883	Toluene	ug/l	1U
40	108907	Chlorobenzene	ug/l	1U
41	100414	Ethylbenzene	ug/l	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1U
43	108861	Bromobenzene	ug/l	1U
44	96184	1,2,3-Trichloropropane	ug/l	1U
45	95498	2-Chlorotoluene	ug/l	1U
46	106434	4-Chlorotoluene	ug/l	1U
47	1330207	Total Xylenes	ug/l	1U
48	95636	1,2,4-Trimethylbenzene	ug/l	1U
49	98066	Tert-Butylbenzene	ug/l	1U
50	108678	1,3,5-Trimethylbenzene	ug/l	1U

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Transaction #: 09269907 Seq #: 06 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

Line	Par #	Parameter Description	Units	Value		
51	135988	Sec-Butylbenzene	ug/l	1U		
52	99876	p-Isopropyltoluene	ug/l	1U		
53	104518	Butylbenzene	ug/l	1U		
54	96128	1,2-Dibromo-3-chloropropane	ug/l	1U		
55	87616	1,2,3-Trichlorobenzene	ug/l	1U		
56	98828	Isopropylbenzene (Cumene)	ug/l	1U		
57	103651	BENZENE, PROPYL-	ug/l	1U		
58	541731	1,3-Dichlorobenzene	ug/l	1U		
59	106467	1,4-Dichlorobenzene	ug/l	1U		
60	95501	1,2-Dichlorobenzene	ug/l	1U		
61	120821	1,2,4-Trichlorobenzene	ug/l	1U		
62	91203	Naphthalene	ug/l	1U		
63	87683	Hexachlorobutadiene	ug/l	1U		
64	-762492	Surrog: 1-Bromo-2-Fluoroetha	% Recov	108	(Surr)	PR
65	2747582	d8-Toluene	% Recov	95	(Surr)	PR
66	-460004	p-Bromofluorobenzene	% Recov	92	(Surr)	PR
67	17070070	d4-1,2-Dichloroethane	% Recov	102	(Surr)	PR
68	2199691	D4-1,2-Dichlorobenzene	% Recov	106	(Surr)	PR

Transaction #: 09269907 Seq #: 07 (51) VOA - PP Scan (GCMS)
 roj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Blank ID : BW1248
 Sample No.: 91 347211

Alternate Keys:

Sample Matrix: (10) Water-Total Units: (11) ug/l %Slds: _____
 A Code: (LBK2) Lab Blank Sample #2 Peaks Total: _____
 Sample Extracted: Date Analyzed: 910905 # Days to Ext/Anal: 07 / 14

Line	Par #	Parameter Description	Units	Value
1	74873	Chloromethane	ug/l	1U
2	75718	Methane, Dichlorodifluoro-	ug/l	1U
3	74839	Bromomethane	ug/l	1U
4	75014	Vinyl Chloride	ug/l	1U
5	75003	Chloroethane	ug/l	1U
6	75694	Trichlorofluoromethane	ug/l	1U
7	75092	Methylene Chloride	ug/l	0.3J
8	67641	Acetone	ug/l	2J
9	75150	Carbon Disulfide	ug/l	1U
10	75354	1,1-Dichloroethene	ug/l	1U
11	75343	1,1-Dichloroethane	ug/l	1U
12	156605	trans-1,2-Dichloroethene	ug/l	1UJ
13	156592	Cis-1,2-Dichloroethene	ug/l	1U
14	590207	2,2-Dichloropropane	ug/l	1U
15	74975	Bromochloromethane	ug/l	1U
16	67663	Chloroform	ug/l	1U
17	107062	1,2-Dichloroethane	ug/l	1U
18	78933	2-Butanone	ug/l	1
19	71556	1,1,1-Trichloroethane	ug/l	1U
20	56235	Carbon Tetrachloride	ug/l	1U
21	563586	1,1-Dichloropropene	ug/l	1U
22	75274	Bromodichloromethane	ug/l	1U
23	78875	1,2-Dichloropropane	ug/l	1U
24	74953	Dibromomethane	ug/l	1U
25	10061026	trans-1,3-Dichloropropene	ug/l	1U
26	79016	Ethene, trichloro-	ug/l	1U
27	124481	Dibromochloromethane	ug/l	1U
28	106934	1,2-Dibromoethane (EDB)	ug/l	1U
29	79005	1,1,2-Trichloroethane	ug/l	1U
30	142289	1,3-Dichloropropane	ug/l	1U
31	71432	Benzene	ug/l	1U
32	10061015	cis-1,3-Dichloropropene	ug/l	1U
33	75252	Bromoform	ug/l	1U
34	591786	2-Hexanone	ug/l	1U
35	108101	4-Methyl-2-Pentanone	ug/l	1U
36	127184	Tetrachloroethene	ug/l	1U
37	79345	ETHANE, 1,1,2,2-TETRACHLORO-	ug/l	1U
38	630206	Ethane, 1,1,1,2-Tetrachloro-	ug/l	1U
39	108883	Toluene	ug/l	1U
40	108907	Chlorobenzene	ug/l	1U
41	100414	Ethylbenzene	ug/l	1U
42	100425	BENZENE, ETHENYL-(STYRENE)	ug/l	1U
43	108861	Bromobenzene	ug/l	1U
44	96184	1,2,3-Trichloropropane	ug/l	1U
45	95498	2-Chlorotoluene	ug/l	1U
46	106434	4-Chlorotoluene	ug/l	1U
47	1330207	Total Xylenes	ug/l	1U
48	95636	1,2,4-Trimethylbenzene	ug/l	1U
49	98066	Tert-Butylbenzene	ug/l	1U
50	108678	1,3,5-Trimethylbenzene	ug/l	1U

Transaction #: 09269907 Seq #: 07 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

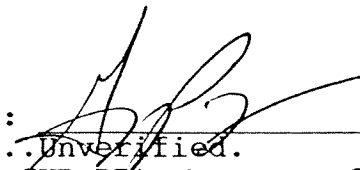
Line	Par #	Parameter Description	Units	Value		
51	135988	Sec-Butylbenzene	ug/l	1U		
52	99876	p-Isopropyltoluene	ug/l	1U		
53	104518	Butylbenzene	ug/l	1U		
54	96128	1,2-Dibromo-3-chloropropane	ug/l	1U		
55	87616	1,2,3-Trichlorobenzene	ug/l	1U		
56	98828	Isopropylbenzene (Cumene)	ug/l	1U		
57	103651	BENZENE, PROPYL-	ug/l	1U		
58	541731	1,3-Dichlorobenzene	ug/l	1U		
59	106467	1,4-Dichlorobenzene	ug/l	1U		
60	95501	1,2-Dichlorobenzene	ug/l	1U		
61	120821	1,2,4-Trichlorobenzene	ug/l	1U		
62	91203	Naphthalene	ug/l	1U		
63	87683	Hexachlorobutadiene	ug/l	1U		
64	-762492	Surrog: 1-Bromo-2-Fluoroetha	% Recov	105	(Surr)	PR
65	2747582	d8-Toluene	% Recov	95	(Surr)	PR
66	-460004	p-Bromofluorobenzene	% Recov	86	(Surr)	PR
67	17070070	d4-1,2-Dichloroethane	% Recov	97	(Surr)	PR
68	2199691	D4-1,2-Dichlorobenzene	% Recov	103	(Surr)	PR

=> Transaction #: 09269906 Laboratory: (WE) Ecology, Manchester Lab
 Work Group: (52) Tent Ident - VOA Scan (GCMS)
 Instrument: (GCMS-E1) EPA1 GC/MS INCOS-5100 Capillary Colu
 Method: (EP2-624) GC/MS Purge and Trap Scan
 Chemist: (LAB) Lab (General R/O) Hours Worked: _____

Project: DOE-003E LAKEWOOD/PLAZA CLEANERS Prg Ele#: D3P11
 Prj Off: Marti, Pam DOE Analysis Due: 910823 Revised Due:

*** Sample Records in Transaction ***

Seq#	Sample #	QA	Date/Time	Description	Alternate Keys
01	91347210	LBK1	910822	MW-20A	

Record Type: TRNIN3 Date Verified: 9/30/91 By: 
 Transaction Status: Edited Transaction...~~First Printing...~~Unverified.
 Processed: 30-SEP-91 10:28:17 Status: E Batch: (In CUR DB) GREGORY PEREZ

Transaction #: 09269906 Seq #: 01 (52) Tent Ident - VOA Scan (GCMS)
Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Blank ID : BW1247
Sample No.: 91 347210

Alternate Keys:

Samp Matrix: (10) Water-Total Units: (11) ug/l %Slds:
QA Code: (LBK1) Lab Blank Sample #1 Peaks Total:
Date Extracted: Date Analyzed: 910926 # Days to Ext/Anal: 0/ 35

Line	Par #	Parameter Description	Units	Value
1	109999	Tetrahydrofuran	ug/l	2.5J

Data Qualifiers

<u>Code</u>	<u>Definition</u>
B	Analyte was also found in the analytical method blank indicating the sample may have been contaminated.
EXP	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6 .
E	Reported result is an estimate because of the presence of interference.
J	The analyte was positively identified. The associated numerical result is an estimate.
N	For organic analytes there is evidence the analyte is present in this sample. For metals analytes the spike sample recovery is not within control limits.
NJ	There is evidence that the analyte is present. The associated numerical result is an estimate.
NAF	Not analyzed for.
P	The analyte was detected above the instrument detection limit but below the established minimum quantitation limit.
REJ	The data are unusable for all purposes.
U	The analyte was not detected at or above the reported result.
UJ	The analyte was not detected at or above the reported estimated result.
"*"	The analyte was present in the sample. Used as a visual aid to locate detected compounds on the report sheet.

APPENDIX B

Historical TCE and PERC Data

Table B-1
TCE Concentrations Measured in Monitoring Wells
Ponders Corner, Washington

Well No.	2/12/85 Through 2/14/85	3/18/85 Through 3/22/85	4/25/85	5/16/85 Through 5/20/85	6/17/85 Through 6/21/85	8/20/85 Through 8/23/85 ^a	11/5/85 Through 11/7/85 ^a	8/25/86 Through 8/28/87	12/16/86 Through 12/17/86	3/17/87 Through 3/20/87	7/7/87	10/5/87 Through 10/6/87	1/28/88 Through 1/29/88	4/25/88 Through 4/26/88	10/4/88 Through 11/28/88	5/22/89 Through 5/25/89	4/23/90 Through 4/24/90
11A	ND	ND	NM	ND	ND	D	ND	ND	NM	NM		NM	NM	NM	NM	NM	
11B	NM	NM	NM	NM	NM	ND	NM	NM	NM	NM		NM	NM	NM	NM	NM	
12	ND	ND	ND	ND	ND	ND	ND	1 ^d	ND	ND	ND	ND	ND	ND	ND	NM	NM
13A	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
13B	NM	NM	NM	NM	NM	D	ND	1 ^d	1 ^d	2	ND	D	J	ND	NM	NM	
14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
15A	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
15B	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
16A	6.3	3.9	NM	3.4	2.0	D/D ^b	2 ^d	1 ^d	1 ^d	ND	NM	ND	NM	D	NM	ND	1
16B	NM	ND	NM	ND	ND	NM	NM	ND	NM	NM	NM	NM	NM	NM	NM	NM	
17A	ND	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
17B	NM	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
18	ND	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
19A	ND	ND	NM	ND	ND	ND	ND	ND	NM	ND	ND	ND	J	ND	ND	ND	ND
19B	NM	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
19C												NM	J	ND	NM	NM	
20A	NM	ND	NM	NM	ND	D	ND	ND	ND	ND	NM	ND	NM	D	NM	ND	ND
20B	NM	103	32	12	ND	D ^c	29	100	NM	NM	NM	ND	NM	NM	NM	29	24/23
21	1.5	ND	NM	ND	ND	D	6	1 ^d	1 ^d	1 ^d	NM	ND	NM	D	NM	ND	0.21
22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
24A	ND	ND	NM	ND	ND	1.2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
24B	NM	ND	NM	ND	ND	D	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
25	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
26	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
27	ND	NM	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
28A	ND	ND	NM	ND	ND	NM	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
29	ND	ND	NM	ND	ND	ND	ND	ND	1	ND	1 ^d	ND	NM	D	ND	ND	ND
30	1.6	ND	NM	ND	D	NM	ND	1 ^d	ND	ND	NM	ND	NM	D	ND	NM	ND
31	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
32	ND	ND	ND	ND	ND	D	ND	1 ^d	ND	ND	NM	ND	NM	ND	ND	ND	ND

Table B-1
TCE Concentrations Measured in Monitoring Wells
Panders Corner, Washington

Well No.	2/12/85 Through 2/14/85	3/18/85 Through 3/22/85	4/25/85	5/16/85 Through 5/20/85	6/17/85 Through 6/21/85	8/20/85 Through 8/23/85 ^a	11/5/85 Through 11/7/85 ^a	8/25/86 Through 8/28/87	12/16/86 Through 12/17/86	3/17/87 Through 3/20/87	7/7/87	10/5/87 Through 10/6/87	1/28/88 Through 1/29/88	4/25/88 Through 4/26/88	10/4/88 Through 11/28/88	5/22/89 Through 5/25/89	4/23/90 Through 4/24/90
33	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM
34	ND	NM	NM	NM	NM	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
35	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM
36	42	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
37 ^c										ND	ND	ND	J	ND	ND	ND	ND
38 ^c										15	ND	NM	NM	NM	NM	NM	NM
39A ^c										1	ND	ND	ND	ND	ND	ND	NM
39B ^c										ND	ND	NM	ND	ND	ND	ND	NM
39C												NM	NM	ND	NM	NM	
40 ^c										ND	ND	ND	ND	ND	ND	ND	ND
41 ^c										ND		NM	NM	NM	NM	ND	ND

^aExceeded acceptable holding time.

^bDuplicate analysis.

^cDetection limit = 100 µg/l.

^dEstimated value. Compound present but at less than the specified detection limit.

^eWells constructed 2/87 through 3/87.

Notes: Units in parts per billion.

NM = Not measured.

ND = Not detected.

D = Detected, not quantified.

J = Estimated value. Value not accurate.

aca8870/059.51

aca8870/059.51/2
 8/29/90

Table B-2
 PFC Concentrations Measured in Monitoring Wells
 Penders Corner, Washington

Well No.	2/12/85 Through 2/14/85	3/18/85 Through 3/22/85	4/25/85	5/16/85 Through 5/20/85	6/17/85 Through 6/21/85	8/20/85 Through 8/23/85 ^a	11/5/85 Through 11/7/85 ^a	8/25/86 Through 8/28/86	12/16/86 Through 12/17/87	3/17/87 Through 3/20/87	7/7/87	10/5/87 Through 10/6/87	1/28/88 Through 1/29/88	4/25/88 Through 4/26/88	10/7/88 Through 11/28/88	5/22/89 Through 5/25/89	4/23/90 Through 4/24/90
11A	6.2	5.6	NM	6.1	2.7	4.3	2	1.4	NM	NM	NM	NM	NM	NM	NM	NM	
11B	NM	NM	NM	NM	NM	2.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NM	NM	
13A	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
13B	NM	NM	NM	NM	NM	ND	ND	ND	ND	ND	ND	ND	J	ND	NM	NM	
14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
15A	NM	0.5	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
15B	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
16A	110	70	NM	46	33	12/11 ^b	19	16	17	49	NM	8	NM	7.3-8.0	NM	5(16)	74
16B	NM	15	NM	13	5	NM	4 ^c	4.5	NM	NM	NM	NM	NM	NM	NM	NM	
17A	ND	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
17B	NM	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
18	ND	ND	NM	ND	ND	D	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
19A	ND	ND	NM	ND	ND	ND	ND	ND	NM	ND	ND	ND	J	ND	ND	ND	ND
19B	NM	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
19C												NM	J	ND	NM	NM	
20A	NM	5.1	NM	NM	2.8	4.0	ND	2.1	1.5	ND	NM	ND	NM	1.2	NM	ND	0.6J
20B	NM	4,856	2,200	570	1,220	1,060	350	745	NM	NM	NM	ND	NM	NM	NM	1,100 (880)	550 (1,300)
21	27	2.2	NM	13	11	10	ND	ND	4.6	4	NM	6	NM	4.0	NM	2 J	3
22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
24A	8.5	1.5	NM	7.2	4.4	16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
24B	NM	9.5	NM	0.9	4.0	4.9	ND	2.9	NM	NM	NM	NM	NM	NM	NM	NM	
25	ND	ND	NM	ND	ND	ND	13	ND	NM	NM	NM	NM	NM	NM	NM	NM	
26	ND	ND	NM	NM	ND	ND	9	ND	NM	NM	NM	NM	NM	NM	NM	NM	
27	ND	NM	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
28A	ND	0.7	NM	ND	ND	NM	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
29	5.8	0.9	NM	5.4	1.1	3.4	ND	1.2	2.8	ND	NM	ND	NM	1.8	ND	1J	0.8J
30	38	24.1	NM	17.2	13	NM	10	5.3	2.2	ND	NM	5	NM	3.8-4.7	3J	NM	
31	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
32	ND	4.3	5	6.9	3.3	3.7	ND	2	1.5	2	NM	ND	NM	D	ND	1J	1

Table B-2
PERC Concentrations Measured in Monitoring Wells
Ponders Corner, Washington

Well No.	2/12/85 Through 2/14/85	3/18/85 Through 3/22/85	4/25/85	5/16/85 Through 5/20/85	6/17/85 Through 6/21/85	8/20/85 Through 8/23/85 ^a	11/5/85 Through 11/7/85 ^b	8/25/86 Through 8/28/86	12/16/86 Through 12/17/87	3/17/87 Through 3/20/87	7/7/87	10/5/87 Through 10/6/87	1/28/88 Through 1/29/88	4/25/88 Through 4/26/88	10/7/88 Through 11/28/88	5/22/89 Through 5/25/89	4/23/90 Through 4/24/90
33	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
34	R3	NM	NM	NM	NM	1.2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
35	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
36	139	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
37 ^d										ND	ND	ND	J	ND	ND	ND	D
38 ^d										ND	ND	NM	NM	NM	NM	NM	
39A ^d										ND	ND	ND	J	D	ND	NM	
39B ^d										ND	ND	NM	NM	J	ND	ND	
39C												NM	NM	ND	NM	NM	
40 ^d										ND	ND	ND	J	ND	ND	ND	ND
41 ^d										ND	ND	NM	NM	NM	NM	ND	ND

^aExceeded acceptable holding time.

^bDuplicate analysis.

^cEstimated value. Compound present but at less than the specified detection limit.

^dWells constructed 2/87 through 3/87.

Notes: Units in µg/l.

NM = Not measured.

ND = Not detected.

D = Detected, not quantified.

J = Estimated value. Value not accurate.

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8/29/90