Report to

Westinghouse Hanford Company
Richland, Washington

CONTAMINANT DEGRADATION STUDY AT THE 1100-EM-1 OPERABLE UNIT

Prepared by

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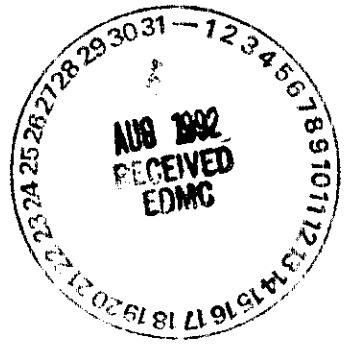

April 2, 1992

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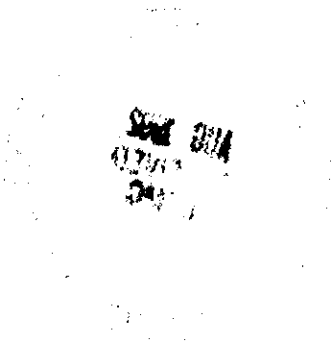

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1.0 INTRODUCTION

This report presents the results of a study conducted from December 1990 through December 1991 to evaluate the degradation of trichloroethene (TCE) in the ground water in the vicinity of Horn Rapids Landfill. The Horn Rapids Landfill is part of the 1100-EM-1 Operable Unit which is one of four operable units within the 1100 Area of the Hanford Site. The 1100 Area was placed on the National Priorities List (NPL) in July 1989. This report is part of the work described in the draft Remedial Investigation Phase 2 Supplemental Work Plan for the 1100-EM-1 Operable Unit (DOE-RL 1990a).

1.1 OBJECTIVE

The objective of this study was to evaluate the degradation of TCE present in the ground water in the vicinity of the Horn Rapids Landfill. Contaminant degradation was studied in ground water from monitoring wells known to have detectable TCE.

1.2 ORGANIZATION OF THE REPORT

This report presents information pertaining to the project site and the physical setting, a description of the study, the results of the laboratory analyses and a summary and conclusions. Appendix A presents copies of the laboratory reports.

2.0 SITE BACKGROUND AND PHYSICAL SETTING

The 1100 Area is the central warehousing, vehicle maintenance, and transportation operations center for the Hanford Site. This area was designated an NPL site in July, 1989, and is divided into four operable units. The first equipment maintenance operable unit, 1100-EM-1, was assigned the highest RI/FS priority within both the 1100 Area and the Hanford Site as a whole.

2.1 1100-EM-1 OPERABLE UNIT

A detailed description of the regional and physical characteristics of the operable unit may be found in the Phase I Remedial Investigation Report (DOE-RL 1990b). The Horn Rapids Landfill is a solid waste facility used primarily for the disposal of office and construction waste and the burning of classified documents; asbestos, sewage sludge, fly ash, and potentially, drums of unidentified organic liquids (presumably carbon tetrachloride) were also disposed at this site. Figure 2-1 shows the location of the 1100-EM-1 Operable Unit and Horn Rapids Landfill.

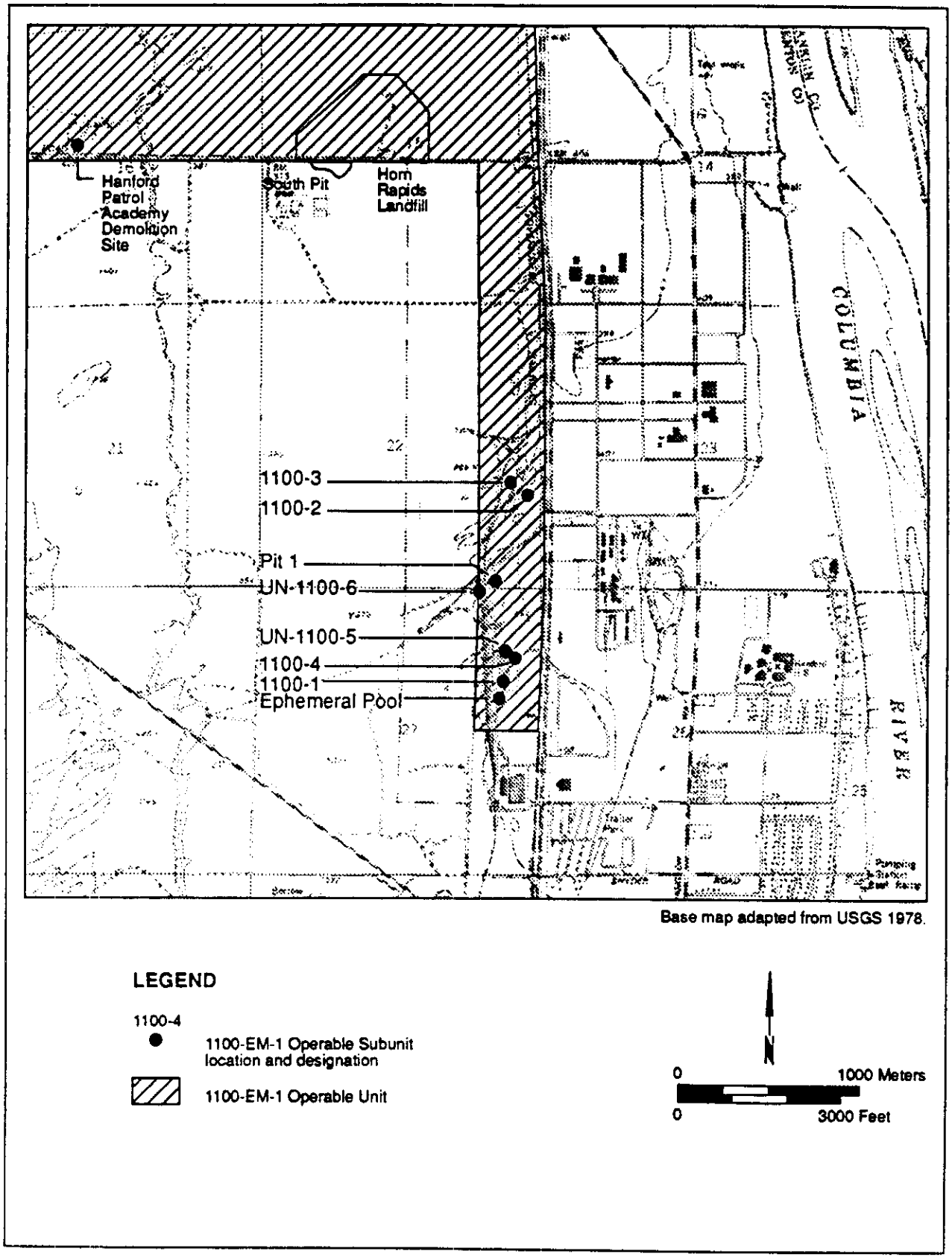

Figure 2-1. 1100-EM-1 Operable Unit.

3.0 SAMPLING AND ANALYSIS

Samples of ground water were collected from three groundwater monitoring wells (MW-11, MW-12, and MW-15) located in the vicinity of Horn Rapids Landfill. The well locations are identified in Figure 3-1. The samples were collected by WHC personnel into 40 mL volatile organic analysis (VOA) bottles in sufficient quantity to allow for repeated analysis of the samples at frequencies of 1, 2, 4, 8 and 12 months from the date of collection. The VOA bottles were not preserved with mineral acid as is customary for volatile organic samples so as not to inhibit degradation of the organic compounds. The samples were stored in the dark at room temperature (approximately 25°C) throughout the duration of the study.

Following sample collection, the samples were cooled and placed into a shipping container for shipment under chain-of-custody to the analytical laboratory. The laboratory used for analysis of the samples was Pacific Northwest Environmental Laboratories Inc. (PNELI) of Redmond, Washington.

Sample analysis was conducted for volatile organic components in accordance with the U.S. EPA Contract Laboratory Program, Statement of Work for Organics Analyses, (EPA 1988a) with the exception that the laboratory reported the following compounds to a lower quantitation limit as opposed to the usual quantitation limit of 5 or 10 µg/L: vinyl chloride, 1,1-dichloroethene, 1,2-dichloroethane, and trichloroethene.

3.1 DATA VALIDATION

The laboratory results were validated upon receipt in accordance with the EPA data validation guidelines (Bleyler 1988a). A summary of the validation is provided below.

3.1.1 Completeness

The laboratory reported each round of analysis in CLP format with all raw data. All data packages were complete for the requested analyses.

3.1.2 Holding Times

Sample holding times were not evaluated as part of this study since the samples were stored and analyzed over the course of a year.

3.1.3 Calibrations

The laboratory conducted initial and continuing calibrations during the time of analysis of the samples. No major deficiencies were identified in the calibration results that required rejection of data. Minor deficiencies were identified in the percent relative standard deviation (%RSD) and percent difference (%D) results for the relative response factors (RRF) in the initial and continuing calibrations however these deficiencies were unrelated to the target compounds of interest, TCE, vinyl chloride and dichloroethene.

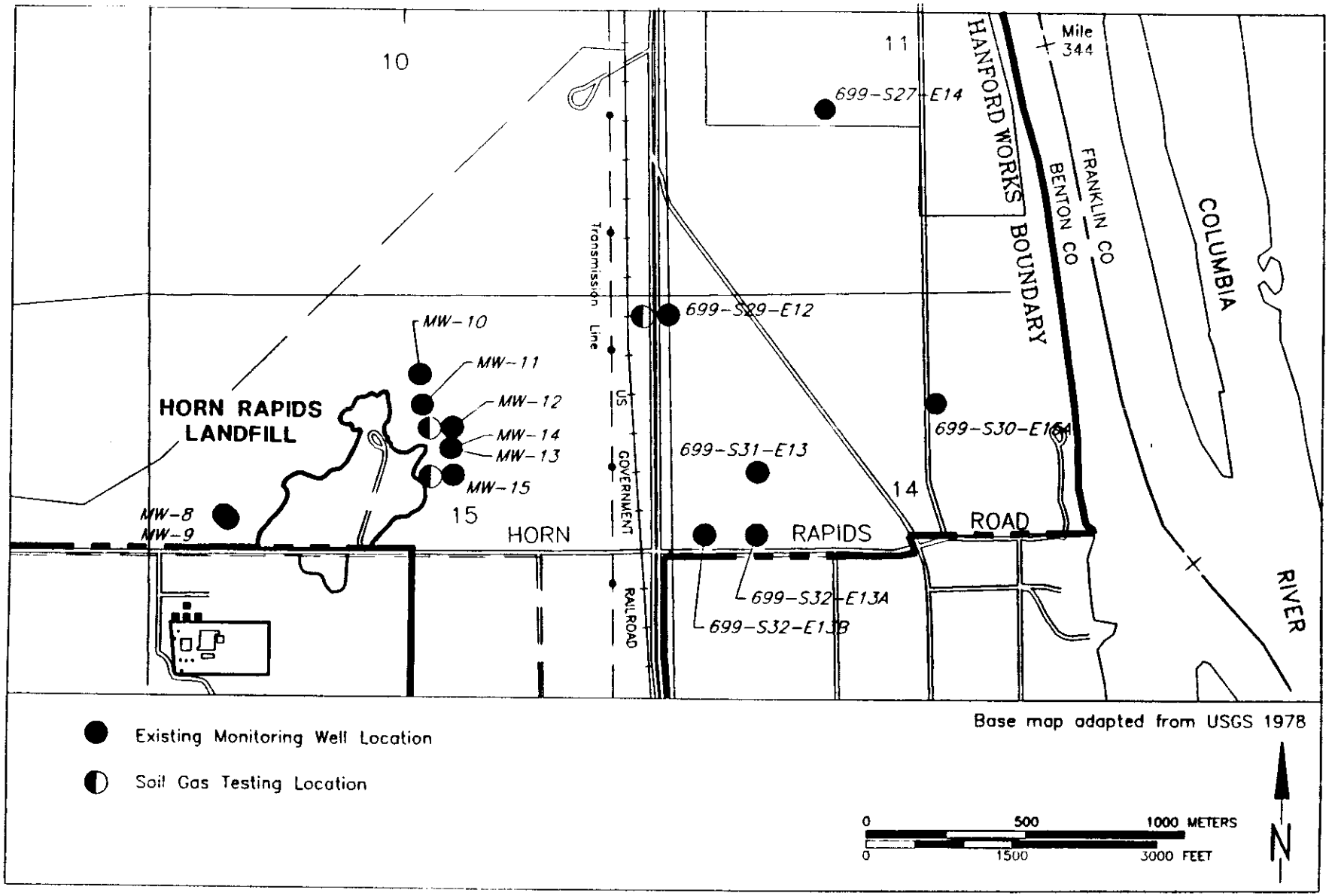

Figure 3-1. Location of Ground Water Monitoring Wells.

3.1.4 Surrogate Recovery

Surrogates were added to all standards, samples, blanks and spikes in accordance with the analytical SOW. All surrogate recoveries were within the control limits specified in the SOW.

3.1.5 Matrix Spike/Matrix Spike Duplicates

At least one MS/MSD analysis was conducted during each analysis series. All MS/MSD recoveries and relative percent differences were within the control limits specified in the analytical SOW.

4.0 RESULTS OF CONTAMINANT DEGRADATION STUDY

This section presents the results of the contaminant degradation study. Each well was initially sampled in late November 1990. Analyses were undertaken at intervals of two weeks, 1, 2, 4, 8, and 12 months after the initial sampling. Table 4-1 presents a summary of the compounds detected and the resulting contaminant concentrations for each of the wells.

4.1 MONITORING WELL MW-11

For the six sets of analysis data, 1,1,1-trichloroethane (TCA) was detected in four of the analyses. During the December 28, 1990 (1 month) analysis and the December 4, 1991 (12 months) analysis, TCA was not detected at a quantitation limit of 5 µg/L. Trichloroethene (TCE) was detected during all six analyses beginning at a concentration of 3 µg/L and then dropping to a concentration of 2 µg/L, where it remained through the completion of the study (see Figure 4-1). The degradation products, vinyl chloride and dichloroethene were not detected in any of the samples.

4.2 MONITORING WELL MW-12

TCA was detected at concentrations of 2 and 1 µg/L during the first five sets of analyses (up to 8 months), and during the final set of analysis (12 months), was not detected at a quantitation limit of 5 µg/L. TCE was detected during all six analyses, beginning at a concentration of 74 µg/L and dropping to a concentration of 36 µg/L during the final analysis set (12 months), a reduction of 51% (see Figure 4-2). The degradation products vinyl chloride and dichloroethene were not detected in any of the samples.

4.3 MONITORING WELL MW-15

TCA was detected in all but one analysis at concentrations of 1 µg/L. TCE was detected at its highest concentration at 61 µg/L during the January 28, 1991 (2 month) analysis and at the conclusion of the test, was detected at a concentration of 45 µg/L, a reduction of 26% (see Figure 4-3). The degradation products vinyl chloride and dichloroethene were not detected in any of the samples.

4.4 DISCUSSION

TCE may be degraded or reduced in concentration in groundwater by a variety of processes including hydrolysis, oxidation, reduction, dehydrohalogenation, volatilization, and biodegradation. However, the major process effecting degradation is considered to be anaerobic biodegradation (Olsen et al. 1990). Anaerobic biodegradation of TCE generally results in the formation of the halogenated by-products, dichloroethene and vinyl chloride neither of which were detected during this study. In addition, neither dichloroethene nor vinyl chloride have been detected during routine groundwater monitoring of the wells sampled for this study (DOE 1990b).

Table 4-1. TCE Degradation Study Results

WELL:	MW-12					
DATE SAMPLED:	11/26/90					
DATE ANALYZED:	12/05/90	12/28/90	1/28/91	3/25/91	7/23/91	12/4/91
1,1,1-Trichloroethane	2 J	1 J	2 J	2 J	2 J	5 U
Trichloroethene	74	68	68	70	55	36
WELL:	MW-15					
DATE SAMPLED:	11/27/90					
DATE ANALYZED:	12/05/90	12/28/90	1/28/91	3/25/91	7/23/91	12/4/91
1,1,1-Trichloroethane	1 J	5 U	1 J	1 J	1 J	1 J
Trichloroethene	59	58	61	54	43	45
WELL:	MW-11					
DATE SAMPLED:	11/28/90					
DATE ANALYZED:	12/05/90	12/28/90	1/28/91	3/25/91	7/23/91	12/4/91
1,1,1-Trichloroethane	1 J	5 U	1 J	1 J	1 J	5 U
Trichloroethene	3	2	2	2	2	2

U - Indicates the compound was analyzed for but not detected. The value reported is the sample quantitation limit.
J - Indicates the concentration reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit.

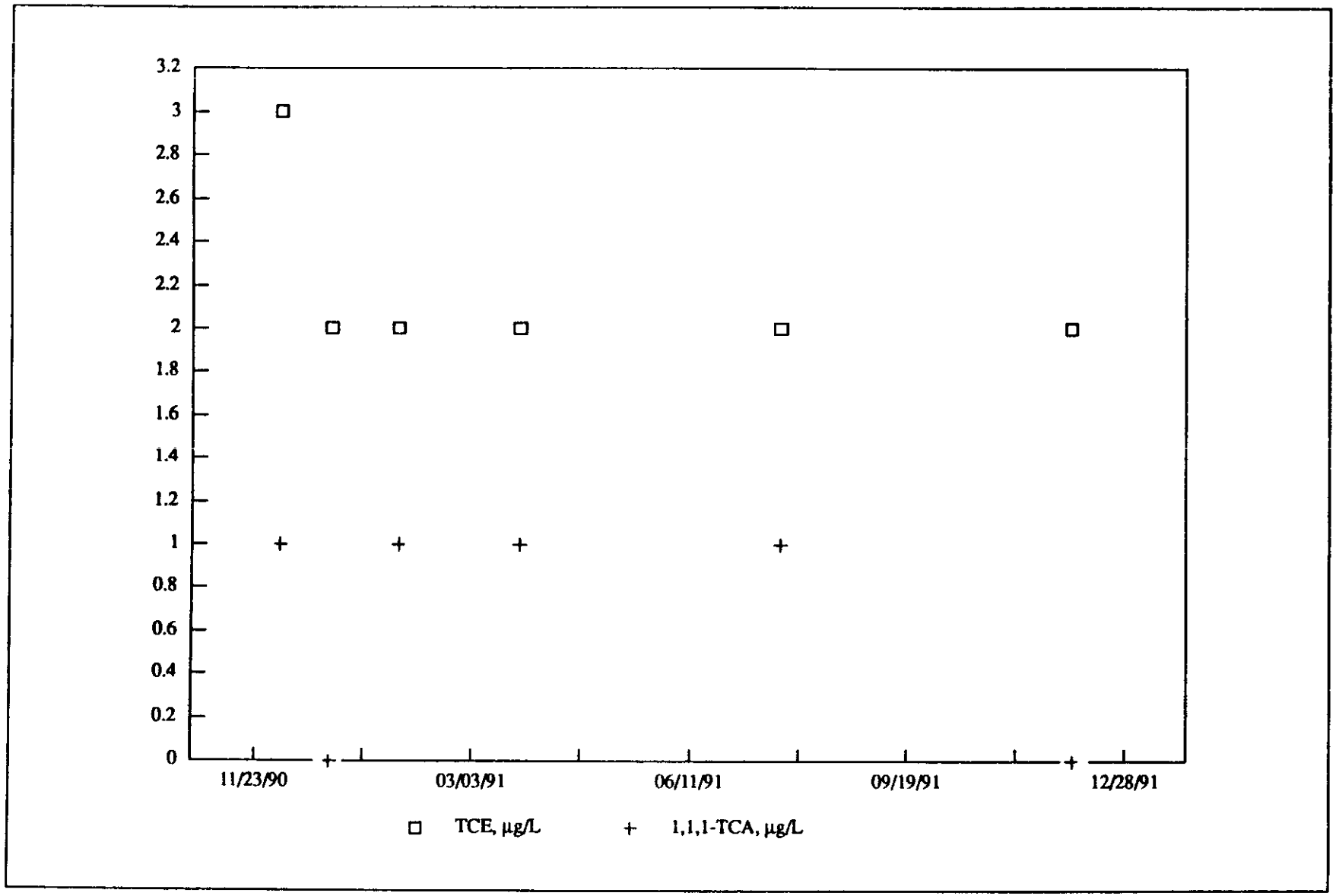

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Figure 4-1. Degradation Study Results, Groundwater Monitoring Well MW-11

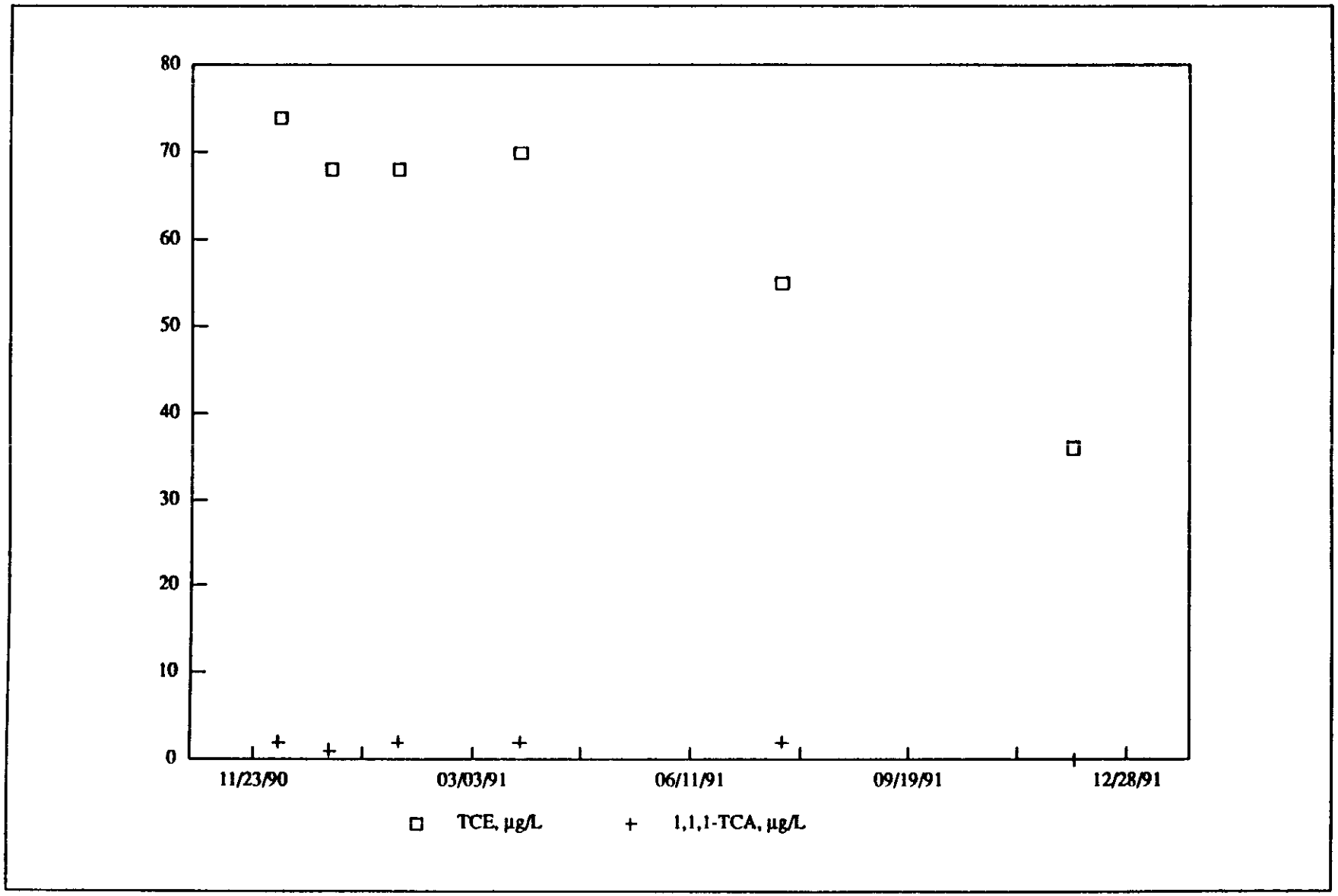

Figure 4-2. Degradation Study Results,
Groundwater Monitoring Well MW-12

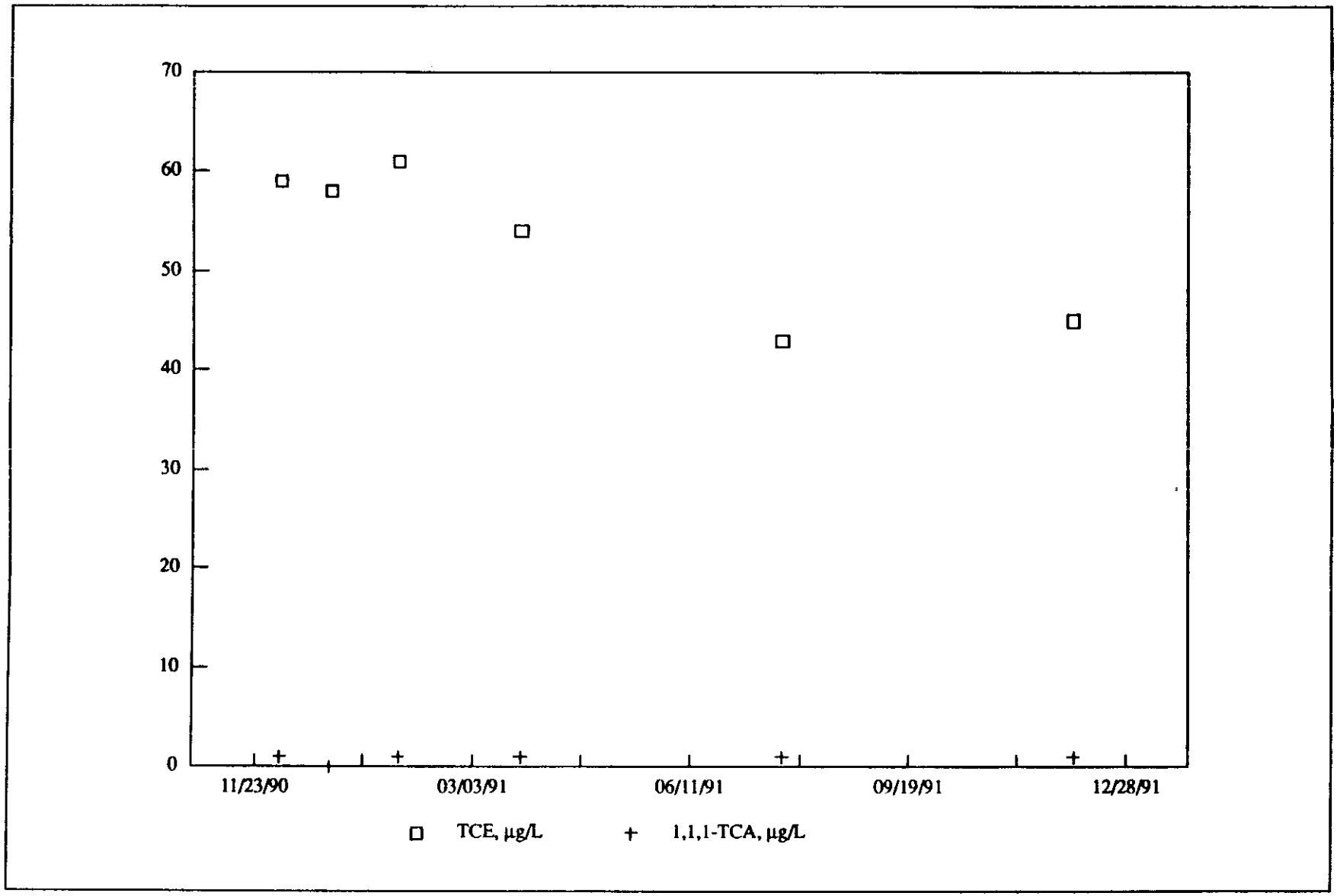

Figure 4-3. Degradation Study Results,
Groundwater Monitoring Well MW-15

The results of analysis on wells MW-12 and MW-15 indicate that TCE concentrations are reduced as much as 51% over the course of a year under the test conditions established for this study, yet no degradation products were detected. Possible explanations or refutations for the reduced TCE concentrations are summarized as follows:

- Hydrolysis may be a likely reaction pathway since this would result in the formation of intermediate degradation products (alcohols and free chlorine) which would not be detected using the analytical procedure used in this study. The half-life of TCE undergoing hydrolysis degradation is estimated at approximately 11 months (Olsen, et al., 1990), which is similar to the half-life of 12 months observed for TCE in the samples analyzed for well MW-12 (see Section 4.2),

- TCE may be undergoing oxidation, however for this process to occur oxidizing agents such a peroxides, ozone or chlorine are usually necessary to promote the reaction and these compounds do not occur naturally in groundwater. Because of this, oxidation would not be considered the likely process contributing to reduction of the TCE,

- Reduction reactions acting on the TCE present would most likely result in the formation of lesser chlorinated compounds such as dichloroethene which was not detected during this study,

- Biodegradation may be occurring, however, the common anaerobic reaction products would be dichloroethene and vinyl chloride which were not detected during this study. In addition, biodegradation half-lifes for TCE are estimated to range from 33 to 230 days (Olsen et al. 1990). A TCE half-life of 365 days was observed for MW-12 during this study (see Section 4.2),

- Dehydrohalogenation is a possible reaction pathway, however, only the chlorinated ethane compounds (1,1,1-TCA) are susceptible to this process since it results in the removal of chlorine and hydrogen atoms from the molecule and the formation of an ethene compound (dichloroethene, DCE). Since DCE was not detected in this study this reaction process is not likely contributing to the reduction of TCE, and

- Volatilization of TCE through the septum seal in the sample containers may be causing the reduction in concentrations, however, laboratory studies on the stability of TCE under similar storage conditions indicate that losses due to volatilization through the container septa are insignificant (Maskarinec et al. 1990).

5.0 SUMMARY AND CONCLUSIONS

This section presents a summary and conclusions based on the results of the contaminant degradation study conducted at the 1100-EM-1 Operable Unit. A summary of the results is provided in Section 5.1 and conclusions based on the interpretation of the data is presented in Section 5.2.

5.1 SUMMARY

A contaminant degradation study was conducted at the 1100-EM-1 Operable Unit beginning in December 1990 and completed in December 1991. Three groundwater wells were sampled for volatile organic compounds and the samples were stored unpreserved, in the dark at room temperature and analyzed over the course of a year. Determination of degradation of TCE was made by analysis for its degradation products, dichloroethene and vinyl chloride. Results of the study are summarized below:

- In groundwater monitoring well MW-11, TCE was detected initially at a concentration of 3 µg/L and at the completion of the study, at a concentration of 2 µg/L.
- In groundwater monitoring well MW-12, TCE was detected initially at a concentration of 74 µg/L and at the completion of the study, at a concentration of 36 µg/L, a reduction of 51%.
- In groundwater monitoring well MW-15, TCE was detected at a concentration of 61 µg/L and at the completion of the study, at a concentration of 45 µg/L, a reduction of 26%.
- The degradation products, dichloroethene and vinyl chloride were not detected in any of the samples analyzed as part of this study,
- The half-life of TCE during this study was 12 months as indicated by the results of analysis on well MW-12 (see Section 4.2).

5.2 CONCLUSIONS

Results of the study indicate that the half-life of TCE present in the groundwater and analyzed under the storage conditions imposed by this study is approximately one-year as indicated by the results of the analysis for the samples collected from well MW-12. Rapid degradation of the TCE does not appear to be occurring based on the absence of it's degradation products. The reduction in TCE that was observed in this study may be due to natural hydrolysis that would result in the formation of alcohols and free chlorine which would not be detected by the analytical procedure employed during this study.

6.0 REFERENCES

Bleyler, 1988, Laboratory Data Validation Functional Guidelines for Evaluating Organics Analysis, U.S. Environmental Protection Agency, Washington, D.C.

DOE-RL, 1990a, Remedial Investigation Phase 2 Supplemental Work Plan for the Hanford Site 1100-EM-1 Operable Unit, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL 1990b, Phase I Remedial Investigation Report for the Hanford Site 1100-EM-1 Operable Unit, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Maskarinec, M.P.; Johnson, L.H.; Holladay, S.K.; Moody, R.L; Bayne, C.K.; Stability of Volatile Organic Compounds in Environmental Water Samples during Transport and Storage, Environ. Sci. Technol., 1990, Vol. 24, 1665-1670.

Olsen, R.L.; Davis, A; Predicting the Fate and Transport of Organic Compounds in Groundwater, Hazardous Materials Consultant, May/June 1990, pp. 39-64; July/August 1990, pp. 18-37.

APPENDIX A

LABORATORY RESULTS

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WELL: MW-11

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VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-11
B00035

Lab Name: PNELI_____ Contract: WESTINGHOUS

Lab Code: PNELI__ Case No.: 2795__ SAS No.: _____ SDG No.: 2795__

Matrix: (soil/water) WATER_ Lab Sample ID: 2803-07_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A5817_____

Date Sampled: 11/28/90

Level: (low/med) LOW___ Date Received: 11/30/90

% Moisture: not dec. ____ Date Analyzed: 12/06/90

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	3	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-11
B00D95

Lab Name: PNELI_____ Contract: WEST_HOUSE_

Lab Code: PNELI__ Case No.: 2843A_ SAS No.: _____ SDG No.: 2843A_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-03_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6029_____

Level: (low/med) LOW___ Date Sampled: 11/28/90

% Moisture: not dec. ____ Date Received: 11/30/90

Column: (pack/cap) CAP___ Date Analyzed: 12/28/90

Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	2	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
MW-11
B00D95

Lab Name: PNELI_____ Contract: WEST_HOUSE_

Lab Code: PNELI__ Case No.: 2843A_ SAS No.: _____ SDG No.: 2843A_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-03_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6029_____

Date Sampled: 11/28/90

Level: (low/med) LOW___ Date Received: 11/30/90

% Moisture: not dec. ____ Date Analyzed: 12/28/90

Column (pack/cap) CAP___ Dilution Factor: 1.0_____

Number TICs found: __1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown alkane	20.62	6.0	J

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-11
BOOD96

Lab Name: PNELI_____ Contract: WESTINGHOUS

Lab Code: PNELI__ Case No.: 2843B_ SAS No.: _____ SDG No.: 2843B_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843B-03_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6221_____

Level: (low/med) LOW___ Date Sampled: 11/28/90
Date Received: 11/30/90

% Moisture: not dec. ____ Date Analyzed: 01/28/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	2	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-11
B00D93

Lab Name: PNELI_____ Contract: WESTINGHSE_

Lab Code: PNELI__ Case No.: 2843C_ SAS No.: _____ SDG No.: 2843C_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843C-03_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6788_____

Level: (low/med) LOW___ Date Sampled: 11/28/90
Date Received: 11/30/90

% Moisture: not dec. ____ Date Analyzed: 03/25/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	2	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-11
B00D94

Lab Name: PNELI_____ Contract: WEST_DEGRAD

Lab Code: PNELI__ Case No.: 2843D_ SAS No.: _____ SDG No.: B00B61

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-03_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A7991_____

Level: (low/med) LOW___ Date Sampled: 11/28/90
Date Received: 11/30/90

% Moisture: not dec. ____ Date Analyzed: 07/23/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	2	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-11
B00D93

Lab Name: PNELI_____ Contract: WEST_DEGRAD

Lab Code: PNELI__ Case No.: 2843E_ SAS No.: _____ SDG No.: B00B62

Matrix: (soil/water) WATER_ Lab Sample ID: 2843E-03_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A9531_____

Level: (low/med) LOW___ Date Sampled: 11/28/90
Date Received: 11/30/90

% Moisture: not dec. ____ Date Analyzed: 12/04/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	2	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	2	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-12
B00B45

Lab Name: FNELI_____ Contract: WESTINGHOUS

Lab Code: FNELI__ Case No.: 2795__ SAS No.: _____ SDG No.: 2795__

Matrix: (soil/water) WATER_ Lab Sample ID: 2795-01_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A5794_____

Level: (low/med) LOW___ Date Sampled: 11/26/90
Date Received: 11/28/90

% Moisture: not dec. ____ Date Analyzed: 12/05/90

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	2	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	74	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-12
B00B61

Lab Name: PNELI_____ Contract: WEST_HOUSE_

Lab Code: PNELI__ Case No.: 2843A_ SAS No.: _____ SDG No.: 2843A_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-01_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6025_____

Level: (low/med) LOW___ Date Sampled: 11/26/90
Date Received: 11/28/90

% Moisture: not dec. ____ Date Analyzed: 12/28/90

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	68	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
MW-12
B00B61

Lab Name: PNELI_____ Contract: WEST_HOUSE_

Lab Code: PNELI__ Case No.: 2843A_ SAS No.: _____ SDG No.: 2843A_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-01_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6025_____

Date Sampled: 11/26/90

Level: (low/med) LOW___ Date Received: 11/28/90

% Moisture: not dec. ____ Date Analyzed: 12/28/90

Column (pack/cap) CAP___ Dilution Factor: 1.0_____

Number TICs found: __1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L_

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown alkane	20.64	14	J

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-12
B00B61

Lab Name: PNELI_____ Contract: WESTINGHOUS

Lab Code: PNELI__ Case No.: 2843B_ SAS No.: _____ SDG No.: 2843B_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843B-01_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6217_____

Level: (low/med) LOW___ Date Sampled: 11/26/90
Date Received: 11/28/90

% Moisture: not dec. ____ Date Analyzed: 01/28/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	2	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	68	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-12
B00B61

Lab Name: PNELI_____ Contract: WESTINGHSE_

Lab Code: PNELI__ Case No.: 2843C_ SAS No.: _____ SDG No.: 2843C_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843C-01_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6784_____

Level: (low/med) LOW___ Date Sampled: 11/26/90
Date Received: 11/28/90

% Moisture: not dec. ____ Date Analyzed: 03/25/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	2	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	70	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: MW-12 B00CV3

Lab Name: PNELI_____ Contract: WEST_DEGRAD

Lab Code: PNELI__ Case No.: 2843D_ SAS No.: _____ SDG No.: B00B61

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-01_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A7989_____

Level: (low/med) LOW___ Date Sampled: 11/26/90

% Moisture: not dec. ____ Date Received: 11/28/90

Column: (pack/cap) CAP___ Date Analyzed: 07/23/91

Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	2	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	55	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-12
B00B62

Lab Name: PNELI_____ Contract: WEST_DEGRAD

Lab Code: PNELI__ Case No.: 2843E_ SAS No.: _____ SDG No.: B00B62

Matrix: (soil/water) WATER_ Lab Sample ID: 2843E-01_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A9529_____

Date Sampled: 11/26/90

Level: (low/med) LOW___ Date Received: 11/28/90

% Moisture: not dec. ____ Date Analyzed: 12/04/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	36	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	2	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-15
B00857

Lab Name: FNELI_____ Contract: WESTINGHOUS

Lab Code: FNELI__ Case No.: 2795__ SAS No.: _____ SDG No.: 2795__

Matrix: (soil/water) WATER_ Lab Sample ID: 2797-10_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A5806_____

Level: (low/med) LOW___ Date Sampled: 11/27/90
Date Received: 11/29/90

% Moisture: not dec. ____ Date Analyzed: 12/05/90

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	3	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	59	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-15
B00CV5

Lab Name: PNELI_____ Contract: WEST_HOUSE_

Lab Code: PNELI__ Case No.: 2843A_ SAS No.: _____ SDG No.: 2843A_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-02_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6028_____

Level: (low/med) LOW___ Date Sampled: 11/27/90

% Moisture: not dec. ____ Date Received: 11/29/90

Column: (pack/cap) CAP___ Date Analyzed: 12/28/90

Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	58	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
MW-15
B00CV5

Lab Name: PNELI_____ Contract: WEST_HOUSE_

Lab Code: PNELI__ Case No.: 2843A_ SAS No.: _____ SDG No.: 2843A_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-02_____

Sample wt/vol: __5.0 (g/mL) ML___ Lab File ID: A6028_____

Date Sampled: 11/27/90

Level: (low/med) LOW___ Date Received: 11/29/90

% Moisture: not dec. ____ Date Analyzed: 12/28/90

Column (pack/cap) CAP___ Dilution Factor: 1.0_____

Number TICs found: __1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown alkane	20.69	36	J

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-15
B00CV5

Lab Name: PNELI_____ Contract: WESTINGHOUS

Lab Code: PNELI__ Case No.: 2843B_ SAS No.: _____ SDG No.: 2843B_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843B-02_____

Sample wt/vol: __5.0 (g/mL) ML___ Lab File ID: A6220_____

Date Sampled: 11/27/90

Level: (low/med) LOW___ Date Received: 11/29/90

% Moisture: not dec. ____ Date Analyzed: 01/28/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	61	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-15
B00CZ4

Lab Name: PNELI_____ Contract: WESTINGHSE_

Lab Code: PNELI__ Case No.: 2843C_ SAS No.: _____ SDG No.: 2843C_

Matrix: (soil/water) WATER_ Lab Sample ID: 2843C-02_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A6787_____

Level: (low/med) LOW___ Date Sampled: 11/27/90
Date Received: 11/29/90

% Moisture: not dec. ____ Date Analyzed: 03/25/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	54	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-15
B00CV6

Lab Name: PNELI_____ Contract: WEST_DEGRAD

Lab Code: PNELI__ Case No.: 2843D_ SAS No.: _____ SDG No.: B00B61

Matrix: (soil/water) WATER_ Lab Sample ID: 2843-02_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A7990_____

Level: (low/med) LOW___ Date Sampled: 11/27/90
Date Received: 11/29/90

% Moisture: not dec. ____ Date Analyzed: 07/23/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	43	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	2	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-15
B00CV6

Lab Name: PNELI_____ Contract: WEST_DEGRAD

Lab Code: PNELI__ Case No.: 2843E_ SAS No.: _____ SDG No.: B00B62

Matrix: (soil/water) WATER_ Lab Sample ID: 2843E-02_____

Sample wt/vol: __5.0 (g/mL) ML__ Lab File ID: A9530_____

Date Sampled: 11/27/90

Level: (low/med) LOW___ Date Received: 11/29/90

% Moisture: not dec. ____ Date Analyzed: 12/04/91

Column: (pack/cap) CAP___ Dilution Factor: 1.0_____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L_	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	3	U
75-34-3	1,1-Dichloroethane	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	2	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	45	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	2	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
----------	Total Trihalomethanes (THMs)	5	U

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