

**REPORT ON
GEOPROBE DRILLING/GROUNDWATER SAMPLING
BOVANO SITE
830 SOUTH MAIN STREET
CHESHIRE, CONNECTICUT**

by

**Haley & Aldrich, Inc.
Bedford, New Hampshire**

for

**Bovano of Cheshire
Cheshire, Connecticut**

**August 1997
File No. 91017-402**



Haley & Aldrich, Inc.
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13 August 1997
File No. 91017-402

Mr. David Lim, Project Manager
RCRA Corrective Action Section
US Environmental Protection Agency
John F. Kennedy Building
Boston, Massachusetts 02203-2211

Subject: Geoprobe Drilling/Groundwater Sampling
Bovano Site
830 South Main Street
Cheshire, Connecticut

Dear Mr. Lim:

This letter report is submitted to provide you with the July 1997 geoprobe drilling/groundwater sampling results for the Bovano Site in Cheshire. The report addresses the following action taken by the site owner, Mr. James Flood and its consultant, Haley & Aldrich, Inc. of Glastonbury, Connecticut:

- Collection of a groundwater sample adjacent to Jinny Hill Road via a geoprobe drill rig. The groundwater sample was collected within the projected downgradient plume to assess off-site groundwater quality.

SUMMARY

This report is prepared on behalf of Bovano of Cheshire. As a result of our on-site activities, review of the recent groundwater quality results as compared to previous historic reports, and results of the off-site groundwater sample, it is Haley & Aldrich's opinion that the site poses a very minimal threat to the environment.

Groundwater modeling summarized in our June 1997 report predicted that the advective front of a TCE contaminant plume would be located approximately 786 to 858 ft downgradient of the former source area (chemical storage shed). Trichloroethene (TCE) concentrations would range from approximately 31 to 34 parts per billion (ppb) near the former source area, 15 to 20 ppb in the mid point of the contaminant plume (400 to 500 ft downgradient of the former source) and 1 ppb near the advective front of the contaminant plume (750 to 858 ft downgradient of the former source area).

To address your requirements for an offsite groundwater sample in the projected plume, Haley & Aldrich collected a groundwater sample in the right-of-way off Jinny Hill Road (approximately 500 ft downgradient of the former source area) using Geoprobe sampling techniques which do not leave a permanent well installation (see Figure 1 for off-site location

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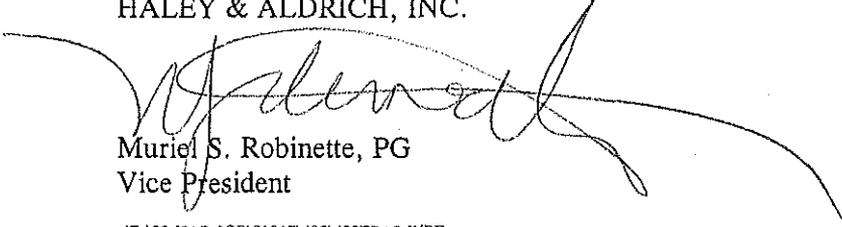
Washington
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US EPA
13 August 1997
Page 2

of groundwater sample). Chemical analysis of this groundwater sample did not detect volatile organic compounds (VOCs) above their respective detection limits. This indicates that no active source exists on the Bovano site and TCE concentrations predicted by the groundwater model are a conservative estimate. Based on the recent on-site chemical analytical results and the off-site chemical analytical result, Haley & Aldrich recommends that the Bovano site be removed from the voluntary corrective action program.

If you have any questions about the report or its attachments, please don't hesitate to call me.

Sincerely yours,
HALEY & ALDRICH, INC.



Muriel S. Robinette, PG
Vice President

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Attachments





MEMORANDUM

13 August 1997
File No. 91017-402

TO: James Flood, President
Bovano of Cheshire

FROM: Muriel Robinette and Nancy Reid
Haley & Aldrich, Inc.

SUBJECT: Results of Geoprobe Drilling/Groundwater Sampling
Bovano Site
830 South Main Street
Cheshire, Connecticut

This memorandum summarizes the results of geoprobe drilling/groundwater sampling to assess off-site groundwater quality in the projected plume area. This work was performed to assist you with complying with the 21 February 1996 letter Bovano of Cheshire received from the United States Environmental Protection Agency (EPA).

BACKGROUND

Due to the presence of the contaminant, trichloroethene (TCE), at the site, groundwater modeling was performed to predict the potential contaminant concentrations in groundwater downgradient of the site and summarized in a Haley & Aldrich report dated June 1997. The transport model was calibrated based on groundwater quality data obtained from on-site monitoring wells on several different monitoring dates which included September 1982, June 1984, and May 1997. Transport parameters, including dispersion and retardation, were adjusted until the model predictions closely matched the temporal trend of TCE detected at the site in a representative downgradient monitoring well (MW-3). Contaminant source concentrations were based on historical data from Well B, adjacent to the former chemical storage shed. The calibrated model was then used to predict travel time and the approximate location of the maximum concentration of TCE downgradient of the source area (maximum concentrations remain near the source).

The transport model results indicate that with TCE concentrations of 1,200 parts per billion (ppb) in September 1982 (prior to source remediation) and 34 ppb in June 1984 (post removal of drums of TCE in storage shed) at the source area, and groundwater velocity ranging from

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0.14 ft/day to 0.16 ft/day, the contaminant plume advective front would have migrated approximately 786 ft to 858 ft downgradient of the source area by May 1997. TCE contaminant concentrations within the contaminant plume would range from approximately 1 to 34 ppb, with the higher concentrations (15 to 34 ppb) located at distances approximately 50 to 500 ft. downgradient of Well B. The model results also indicated the contaminant plume ranges from approximately 70 ft to 96 ft in width.

The model results indicate the TCE concentration in groundwater located adjacent to Jinny Hill Road, 490 to 560 ft downgradient (south), would conservatively be approximately 12 to 18 ppb, if the initial source of 1,200 ppb (June 1982) and 34 ppb (June 1984), are representative.

GROUNDWATER MONITORING

On 24 July 1997, one geoprobe sampling point was completed in the right-of-way for Jinny Hill Road approximately 500 ft downgradient of the former source area. The Geoprobe sampling point was installed to a depth of 15 ft where a groundwater sample was collected. The sample was placed in 40 ml glass VOA vials with teflon septa, preserved in accordance with standard methods and submitted to a state-certified laboratory for chemical testing for the presence of volatile organic compounds (VOCs) by EPA Method 8260.

RESULTS OF CHEMICAL TESTING

The results of chemical testing are included in Appendix A and indicated the following:

- VOCs were not detected in the off-site groundwater sample above their respective detection limits.

CONCLUSIONS

Groundwater modeling summarized in our June 1997 report predicted the TCE concentration in the groundwater adjacent to Jinny Hill Road located approximately 490 to 560 ft. downgradient (south) of the former source area would be approximately 12 to 18 ppb. A groundwater sample was collected adjacent to Jinny Hill Road via a Geoprobe sampling point within the projected downgradient plume to assess off-site groundwater quality. The results indicate VOCs were not detected in the off-site groundwater sample above their respective detection limits.

RECOMMENDATIONS

The off-site groundwater sampling and analysis indicate TCE concentrations are below detection limits and no active source remains on the Bovano property. Based on the results of

Bovano of Cheshire
13 August 1997
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the on-site groundwater and off-site groundwater results, Haley & Aldrich recommends the site should be removed from the voluntary corrective action program.

LIMITATIONS

This memorandum has been prepared for the use of the Bovano of Cheshire in connection with voluntary corrective action measures taken at the Bovano of Cheshire property in Cheshire, Connecticut. The conclusions provided by Haley & Aldrich, Inc. are based solely on the scope of work conducted and the sources of information described in our memorandum. Any additional information that becomes available concerning this site should be provided to Haley & Aldrich, Inc. so that our conclusions may be reviewed and modified, as necessary.

The work performed by Haley & Aldrich, Inc. is subject to the terms and conditions stated in our proposal dated 19 March 1997. This work has been undertaken in accordance with generally accepted consulting practices. No other warranty, express or implied, is made.

Our memorandum is prepared for your exclusive use, solely for the purpose of rendering an opinion as to the likely liability due to contamination at the site. The report may not be circulated or conveyed, in whole or part, to any other party, nor used by any other party, except your attorneys, without the prior written permission of Haley & Aldrich, Inc.

Enclosures:

Figure 1 - Site Plan
Appendix A - Groundwater Laboratory Results

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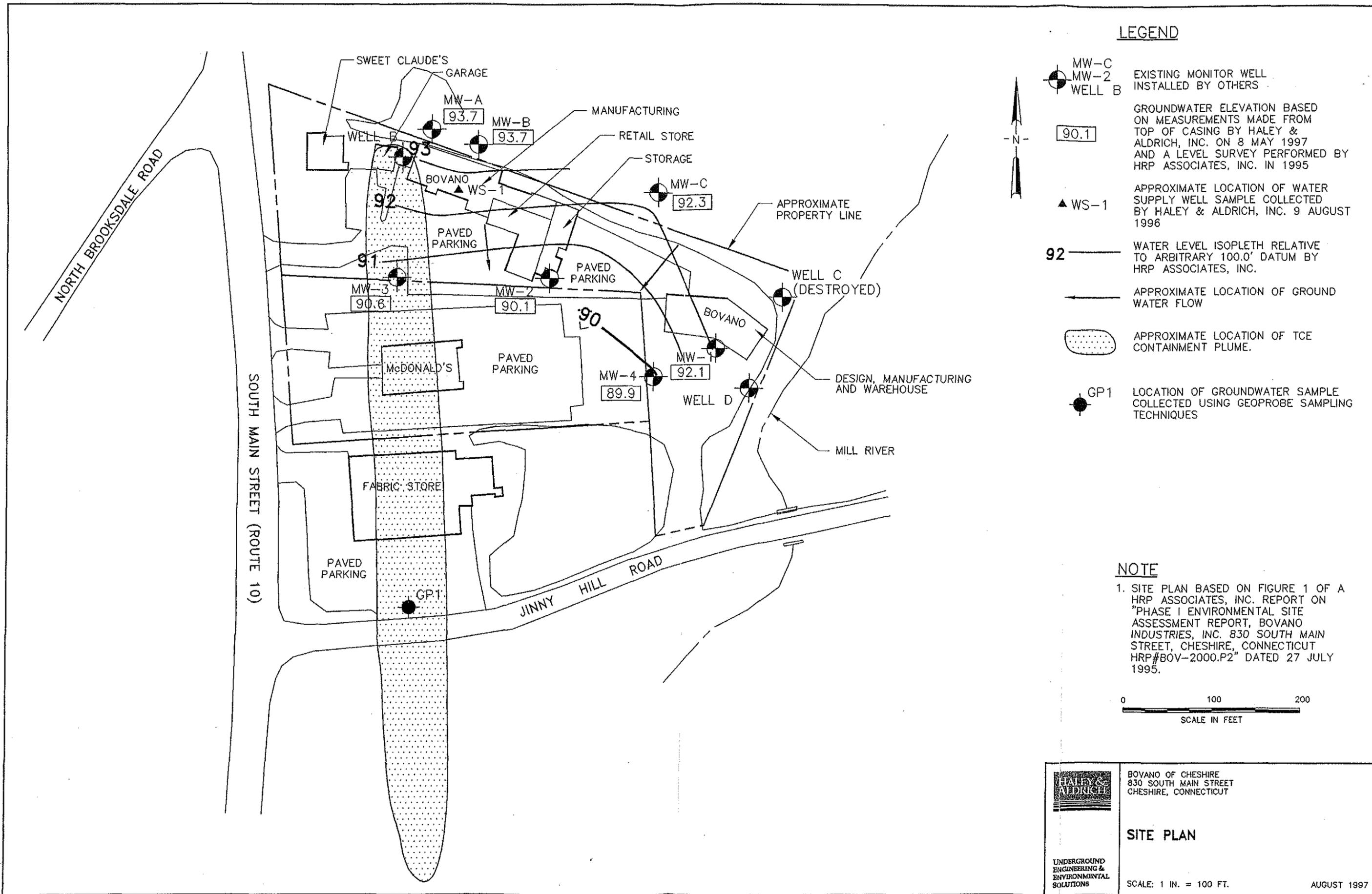


FIGURE 1

APPENDIX A

Groundwater Laboratory Results



Matrix Analytical, Inc.
 106 South Street
 Hopkinton, MA 01748-2295
 1 (800) 362-8749

F I N A L R E P O R T

Client Information

Account: Haley & Aldrich, Inc.
 Address: 110 National Drive
 Glastonbury, CT 06033

Project Name: Groundwater Monitoring (7-25-97)
 Project Number: 91017-402
 Project Manager: Nancy Reid
 Sampler Name: Jeff Duigou

Sample Information

Lab ID: 72063256-001
 Client ID: GP-1
 Matrix: Water

Date Sampled: 07/24/97 10:15
 Date Received: 07/25/97 :0
 Date Reported: 07/30/97

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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VOLATILE ORGANICS

Acetone	ND	ug/l	100	8260A	sh	07/29/97
Acrolein	ND	ug/l	100	8260A	sh	07/29/97
Acrylonitrile	ND	ug/l	100	8260A	sh	07/29/97
Benzene	ND	ug/l	1	8260A	sh	07/29/97
Bromobenzene	ND	ug/l	5	8260A	sh	07/29/97
Bromochloromethane	ND	ug/l	5	8260A	sh	07/29/97
Bromodichloromethane	ND	ug/l	5	8260A	sh	07/29/97
Bromoform	ND	ug/l	5	8260A	sh	07/29/97
Bromomethane	ND	ug/l	5	8260A	sh	07/29/97
2-Butanone	ND	ug/l	100	8260A	sh	07/29/97
n-Butylbenzene	ND	ug/l	5	8260A	sh	07/29/97
sec-Butylbenzene	ND	ug/l	5	8260A	sh	07/29/97
tert-Butylbenzene	ND	ug/l	5	8260A	sh	07/29/97
Carbon Disulfide	ND	ug/l	5	8260A	sh	07/29/97
Carbon Tetrachloride	ND	ug/l	5	8260A	sh	07/29/97
Chlorobenzene	ND	ug/l	5	8260A	sh	07/29/97
Chloroethane	ND	ug/l	5	8260A	sh	07/29/97
2-Chloroethylvinyl Ether	ND	ug/l	5	8260A	sh	07/29/97
Chloroform	ND	ug/l	5	8260A	sh	07/29/97
Chloromethane	ND	ug/l	5	8260A	sh	07/29/97
2-Chlorotoluene	ND	ug/l	5	8260A	sh	07/29/97
4-Chlorotoluene	ND	ug/l	5	8260A	sh	07/29/97
1,2-Dibromo-3-Chloropropane	ND	ug/l	5	8260A	sh	07/29/97
Dibromochloromethane	ND	ug/l	5	8260A	sh	07/29/97
1,2-Dibromoethane	ND	ug/l	5	8260A	sh	07/29/97



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VOLATILE ORGANICS

Dibromomethane	ND	ug/l	5	8260A	sh	07/29/97
1,2-Dichlorobenzene	ND	ug/l	5	8260A	sh	07/29/97
1,3-Dichlorobenzene	ND	ug/l	5	8260A	sh	07/29/97
1,4-Dichlorobenzene	ND	ug/l	5	8260A	sh	07/29/97
Dichlorodifluoromethane	ND	ug/l	5	8260A	sh	07/29/97
1,1-Dichloroethane	ND	ug/l	5	8260A	sh	07/29/97
1,2-Dichloroethane	ND	ug/l	5	8260A	sh	07/29/97
1,1-Dichloroethene	ND	ug/l	1	8260A	sh	07/29/97
cis-1,2-Dichloroethene	ND	ug/l	5	8260A	sh	07/29/97
trans-1,2-Dichloroethene	ND	ug/l	5	8260A	sh	07/29/97
1,2-Dichloropropane	ND	ug/l	5	8260A	sh	07/29/97
1,3-Dichloropropane	ND	ug/l	5	8260A	sh	07/29/97
2,2-Dichloropropane	ND	ug/l	5	8260A	sh	07/29/97
1,1-Dichloropropene	ND	ug/l	5	8260A	sh	07/29/97
cis-1,3-Dichloropropene	ND	ug/l	5	8260A	sh	07/29/97
trans-1,3-Dichloropropene	ND	ug/l	5	8260A	sh	07/29/97
Ethylbenzene	ND	ug/l	5	8260A	sh	07/29/97
Hexachlorobutadiene	ND	ug/l	5	8260A	sh	07/29/97
2-Hexanone	ND	ug/l	5	8260A	sh	07/29/97
Iodomethane	ND	ug/l	5	8260A	sh	07/29/97
Isopropylbenzene	ND	ug/l	5	8260A	sh	07/29/97
p-Isopropyltoluene	ND	ug/l	5	8260A	sh	07/29/97
Methylene Chloride	ND	ug/l	5	8260A	sh	07/29/97
4-Methyl-2-Pentanone	ND	ug/l	5	8260A	sh	07/29/97
MTBE	ND	ug/l	50	8260A	sh	07/29/97
		ug/l	5	8260A	sh	07/29/97



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 Project Manager: Nancy Reid
 Sampler Name: Jeff Duigou

Sample Information

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 Client ID: GP-1
 Matrix: Water

Date Sampled: 07/24/97 10:15
 Date Received: 07/25/97 : 0
 Date Reported: 07/30/97

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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VOLATILE ORGANICS

Naphthalene	ND	ug/l	5	8260A	sh	07/29/97
n-Propylbenzene	ND	ug/l	5	8260A	sh	07/29/97
Styrene	ND	ug/l	5	8260A	sh	07/29/97
1,1,1,2-Tetrachloroethane	ND	ug/l	5	8260A	sh	07/29/97
1,1,2,2-Tetrachloroethane	ND	ug/l	5	8260A	sh	07/29/97
Tetrachloroethene	ND	ug/l	5	8260A	sh	07/29/97
Toluene	ND	ug/l	5	8260A	sh	07/29/97
1,2,3-Trichloropropane	ND	ug/l	5	8260A	sh	07/29/97
1,2,3-Trichlorobenzene	ND	ug/l	5	8260A	sh	07/29/97
1,2,4-Trichlorobenzene	ND	ug/l	5	8260A	sh	07/29/97
1,1,1-Trichloroethane	ND	ug/l	5	8260A	sh	07/29/97
1,1,2-Trichloroethane	ND	ug/l	5	8260A	sh	07/29/97
Trichloroethene	ND	ug/l	5	8260A	sh	07/29/97
Trichlorofluoromethane	ND	ug/l	5	8260A	sh	07/29/97
1,2,4-Trimethylbenzene	ND	ug/l	5	8260A	sh	07/29/97
1,3,5-Trimethylbenzene	ND	ug/l	5	8260A	sh	07/29/97
Vinyl Acetate	ND	ug/l	5	8260A	sh	07/29/97
Vinyl Chloride	ND	ug/l	2	8260A	sh	07/29/97
o-Xylene	ND	ug/l	5	8260A	sh	07/29/97
p-m-Xylene	ND	ug/l	5	8260A	sh	07/29/97

SURROGATE STUDIES - VOLATILES

Bromofluorobenzene	101	Percent			sh	07/29/97
Dibromofluoromethane	108	Percent			sh	07/29/97
Toluene-D8	102	Percent			sh	07/29/97



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F I N A L R E P O R T

Client Information

Account:	Haley & Aldrich, Inc.	Project Name:	Groundwater Monitoring (7-25-97)
Address:	110 National Drive	Project Number:	91017-402
	Glastonbury, CT 06033	Project Manager:	Nancy Reid
		Sampler Name:	

Sample Information

Lab ID:	72063256-002	Date Sampled:	// :
Client ID:	QC Report-Water	Date Received:	07/25/97 : 0
Matrix:	Water	Date Reported:	07/30/97

Analytical Parameter	Result	Unit	Detection Limit	Method No.	Analyst	Date Analyzed
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METHOD BLANKS

Method Blank - Volatile	ND	ug/l	8260
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MATRIX SPIKE STUDIES - VOLATILES

Sample ID:	3268-002
Benzene	100 Percent
Chlorobenzene	102 Percent
1,1-Dichloroethene	101 Percent
Toluene	101 Percent
Trichloroethene	95 Percent

METHOD SUMMARIES

Volatile organic analysis is performed using H/P 5995 or 5970 GC/MS, Tekmar purge and trap, and ALS autosampler. Chromatography incorporates packed and megabore columns. Data reduction is performed on RTE 1000 and ChemStation systems. Tuning is based on BFB standards. Procedural guidelines follow EPA or SW846 for all analyses.

METHOD REFERENCES

1. Test Methods For Evaluating Solid Waste: Physical Chemical Methods. EPA SW 846. November 1986.
2. Methods For Chemical Analysis of Water and Wastes. EPA 600/4-79-200. Revised March 1983.
3. Standard Methods For Examination of Water and Wastewater. APHA-AWWA-WACF., 18th Edition. 1992.
4. EPA Methods For The Determination of Organic Compounds in Drinking Water.

