LINCOLN
APPLIED GEOLOGY, INC.
ENVIRONMENTAL CONSULTANTS

May 16, 1994

Ms. Linda Elliott
Vermont Department of
Environmental Conservation
103 South Main Street
Waterbury, Vermont 05676

RE: Pratt Residence, Montpelier, Vermont - Summary Report (VDEC Site #93-1504)

Dear Ms. Elliott:

Based on your March 2, 1994 letter request, Lincoln Applied Geology, Inc. (LAG) continued with operations and monitoring of the vapor extraction system (VES) that we installed at the Pratt residence. We also completed the installation of the two additional ground water monitoring wells to further define the degree and extent of contamination. The scope of this work was detailed in our January 21, 1994 summary report and work plan.

We continue to operate and maintain the VES and believe that it is effective in minimizing/eliminating the fuel oil vapors within the residence. Recovery rates based on both our monitoring data estimates and carbon canister replacement are relatively low. We estimate that an equivalent of only 6.5 gallons has been recovered in vapor form since the VES came on-line in late September. While it appears that significant amounts of adsorbed phase contaminants remain in the vadose zone soils, ground water quality impacts appear to be minimal.

Enclosed for your information and use in reviewing this summary report and recommendations are the following:

Table 1,	Ground Water Elevations and Product Thickness;
Table 2,	PID Assays;
Table 3,	Ground Water Quality Summary
Figure 1,	General Location Map
Figure 2,	Ground Water Contour Map for April 18, 1994
Figure 3,	A - A Cross Section
Figure 4,	Water Quality Summary Map for March 22, 1994
Charts 1&2,	Ground Water Level Trends
Charts 3&4,	PID Trends
Chart 5,	Vapor Recovery Trends
Appendix A,	Boring Logs for MW-1 and MW-2

Appendix B, March 1994 Water Quality Results

The general location of the Pratt Residence on Upper Terrace Street in Montpelier, Vermont is depicted on **Figure 1**. The overall topography slopes to the south. Municipal water and sewer services are available along Terrace Street. Other than the vapors in the Pratt basement, the only significant receptors of the fuel oil contamination are the underlying soils and ground water.

The locations of the hand installed AH series soil borings and VES are depicted on the **Figure 2** Ground Water Contour Map for April 18, 1994. As described in our previous reports these hand borings did encounter refusal that may or may not be part of the shallow bedrock system that outcrops on the east and west portions of the Pratt property. The soil borings in the southernmost portion of the basement demonstrated the greatest fuel oil impacts and were plumbed to the exterior VES blower.

The VES system was plumbed so that each AH series well could be monitored for liquid level measurements and PID assays. As seen in **Table 1**, the relatively shallow hand borings are often times dry and some have demonstrated measurable thicknesses of free phase product. The seasonal fluctuations in ground water levels are depicted in **Charts 1 and 2**. While measurable product has dissipated somewhat with time and the use of Soak Ease adsorbent bailers, we believe that continued operation of the VES remains warranted. Currently a Soak Ease is maintained only in AH-4 although cumulatively less than two gallons of product has been recovered by Soak Ease use.

With the successful installation of MW's 1 and 2 this past March, more accurate ground water contour maps were prepared. **Figure 2**, the contour map for April 18, 1994, confirms that ground water flow is in a southwesterly direction which mimics the topography.

As seen in **Table 2**, Headspace PID Assays, no measurable vapor impacts to the residence have been recorded since the VES was started in late September. With continued operation of the VES, static headspace PID assays of the various monitoring points have generally shown overall decreasing concentration trends (**Charts 3 & 4**). We estimate that an equivalent of 6.5 gallons of product has been recovered in vapor form through April 1994. The rate of product recovery remains relatively constant and provides justification for continued VES operations (**Chart 5**).

To further define the degree and extent of contamination we completed the installation of 2 more monitoring wells as proposed in our January 1994 report. The locations of these wells are depicted on **Figure 2** as MW-1 and MW-2. We utilized Green Mountain Boring, Inc.'s (GAB) bombardier rig for both access and potential bedrock boring capabilities. Saturated soil conditions were encountered so that the proposed 5 foot core into bedrock was not necessary. Copies of the boring logs and monitoring well construction details are included in **Appendix A**. The site cross section included in our January 1994 report has been updated as **Figure 3** to include the MW-2 boring. Bedrock was not encountered in MW-2, adjacent to the house. This indicates that the hand boring refusals within the basement were not due to bedrock. They appear to reduce to a dense, dry basal till overlying the bedrock which serves to impede downward vertical migration of contaminants.

Following appropriate monitoring well development, all available monitoring points having sufficient volumes of ground water were sampled on March 22, 1994 and assayed by purge and trap gas chromatography procedures akin to EPA Method 8260 with quantification for the MTBE and BTEX constituents. Copies of the formal analytical results are included in **Appendix B** and summarized in **Table 3**. The March sampling round represents the first analytical water quality survey performed on the site. A distribution of the BTEX/MTBE contaminants is depicted on **Figure 4**. As anticipated the greatest concentrations were found below the southwest corner of the basement, indicating that minimal downgradient migration has occurred within the unconfined surficial aquifer.

It is important to note that the only quantified presence of benzene was 22 parts per billion (ppb) in AH-4. Ground water enforcement standards were not exceeded in any other well for benzene or other regulated constituents of fuel oil. It is also interesting to note that MTBE, not normally associated with residential fuel oil, was detected and quantified in AH-4 and AH-5 at 11 and 10 ppb respectively.

Based on these cumulative results to date we believe that we have adequately defined the degree and extent of fuel oil contamination. We believe that significant adsorbed phase contaminant remains in the soils below the southwest corner of the basement. It does not appear that a significant impact to the surficial aquifer has occurred nor do we expect a significant impact to either the surficial unconfined aquifer or to the bedrock aquifer. We further believe that the VES (which has remained operational) continues to be effective in minimizing/eliminating vapor impacts to the Pratt residence. As a result we

recommend continued VES operation and biweekly site monitoring. We further recommend quarterly ground water quality sampling be performed for a minimum of one year.

Please feel free to contact me or Steve LaRosa, LAG Site Manager, with any questions or comments you may have. In the interim, we will implement our recommendations for biweekly monitoring and quarterly sampling with the next round tentatively set for June.

Sincerely,

John F. Amadon, CPSS

JFA/smd
enclosure
cc: Eleanor Pratt
Christine Marsh

Lincoln Applied Geology, Inc.
Environmental Consultants
RD # 1 Box 710 • Bristol, Vermont 05443 • (802) 453-4384 • FAX (802) 453-5399

Project: Pratt Residence
Location: Montpelier, Vermont

Table 1
VDEC Site# 93-1504

Ground Water Elevation/Product Level (feet)

Data Point	TOC	11-19-93	11-23-93	12-17-93	12-30-93	1-14-94	1-27-94	2-4-94
AH-1	96.98	93.58	93.60	94.26	93.60	93.23		
AH-2	95.14	92.94	92.72	92.99	92.77	92.09		
AH-3	95.58	93.88	93.63	94.28	93.83			
AH-4	96.12		0.02 92.70	93.46	93.27			
AH-5	101.72	94.67	94.68	94.62	94.71	94.67		94.64
AH-6	100.86							
AH-7	93.31	90.81	90.47	91.16	90.49			
AH-8	96.96			94.11				
MW-1	94.92							
MW-2	101.42							

NOTES:
1 - Elevation datum assumed
2 - Reference elevation is elevation of top of PVC well casing
* - Water entering at top of casing
Gray Cell = Well Dry
Dark Gray Cell = Inaccessible

Project: Pratt Residence
Location: Montpelier, Vermont

Table 1
VDEC Site# 93-1504

Ground Water Elevation/Product Level (feet)

Data Point	TOC	2-8-94	2-11-94	2-21-94	3-22-94	4-6-94	4-18-94	4-26-94
AH-1	96.98				94.13	94.96	94.95	
AH-2	95.14				91.69	93.24	93.21	
AH-3	95.58				93.88	94.49	94.48	
AH-4	96.12				93.01	93.70	93.67	
AH-5	101.72	94.59	94.60	94.67	94.77	94.62	94.66	93.63
AH-6	100.86							93.44
AH-7	93.31				91.71	91.76	91.54	93.14
AH-8	96.96				94.91	94.16	94.31	
MW-1	94.92				89.94	90.32	90.12	89.25
MW-2	101.42				92.02	92.42	92.31	91.19

NOTES:
1 - Elevation datum assumed
2 - Reference elevation is elevation of top of PVC well casing
* - Water entering at top of casing
Gray Cell = Well Dry
Dark Gray Cell = Inaccessible

Project: Pratt Residence
Location: Montpelier, Vermont

Table 2
VDEC Site# 93-1504

Photoionization Results (PID - ppm)

Data Point	11-23-93	12-17-93	12-30-93	1-14-94	1-27-94	2-4-94	2-8-94
AH-1	0.6	1.8	0.8	1.6		1.8	3.2
AH-2	0.6	BG	0.6	BG		BG	BG
AH-3	BG	BG	BG	BG		BG	BG
AH-4	20.0	4.8	17.0	4.6		4.4	5.0
AH-5	BG	BG	BG	BG	0.4	BG	1.0
AH-6	BG	BG	BG	BG	BG	BG	BG
AH-7	BG	BG	BG				
AH-8	3.6	3.8	3.0	3.6		3.6	2.6
MW-1							
MW-2							
1st Floor	BG	BG	BG	BG		BG	BG
Basement	BG	BG	BG	BG		BG	BG
Roton Effluent	6.2	5.0	6.0	6.0	3.4	BG	3.2
Can 1	BG	BG	BG	BG	0.6	0.6	BG
Can 2	BG	BG	BG	BG	BG	BG	BG

NOTES:
BG - Background
SL - Saturated Lamp
Gray Cell = Dry
Dark Gray Cell = Inaccessible

Project: Pratt Residence
Location: Montpelier, Vermont

Table 2
VDEC Site# 93-1504

Photoionization Results (PID - ppm)

Data Point	2-11-94	2-21-94	3-22-94	4-6-94	4-18-94	4-26-94	5-11-94
AH-1		1.8	3.0	3.6	2.6		1.4
AH-2		BG	0.4	BG	BG		0.2
AH-3		BG	BG	BG	BG		BG
AH-4		4.4	5.0	1.8	1.0		2.0
AH-5	BG	BG	BG	BG	BG	1.4	BG
AH-6	BG	BG	BG	BG	BG	BG	BG
AH-7	BG			BG	BG	BG	BG
AH-8		3.6	BG	2.0	0.6		1.0
MW-1			BG	BG	BG	BG	BG
MW-2			9.0	BG	4.0	0.6	BG
1st Floor		BG	BG	BG	BG		BG
Basement		BG	BG	BG	BG		BG
Roton Effluent		BG	2.0	4.8	3.8	1.4	4.2
Can 1	0.6	0.6	0.2	1.0	0.2	0.2	0.4
Can 2	BG	BG	BG	BG	BG	BG	BG

NOTES:
BG - Background
SL - Saturated Lamp
Gray Cell = Dry
Dark Gray Cell = Inaccessible

Project: Pratt Residence
Location:Montpelier, Vermont

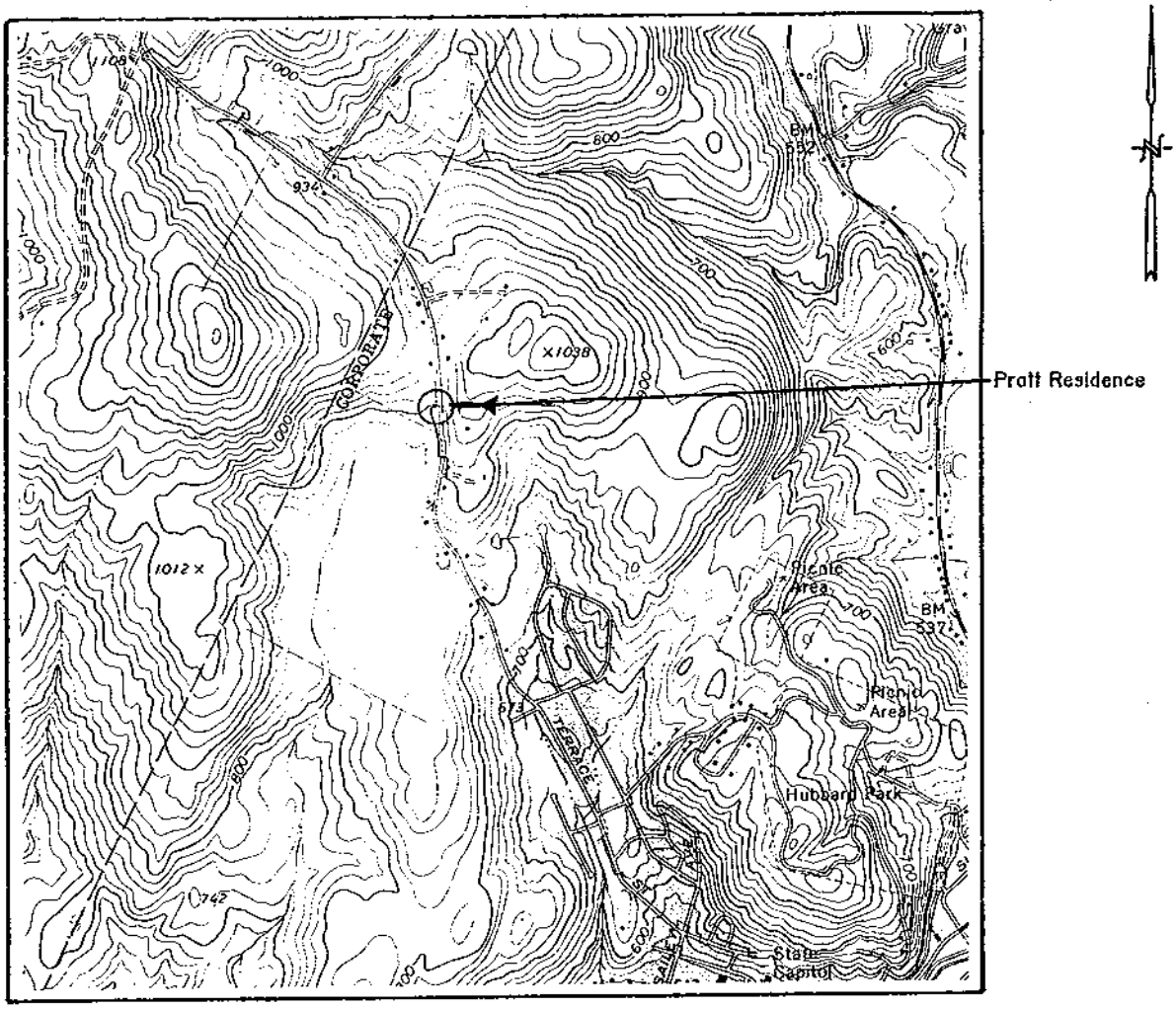
Table 3
VDEC Site # 93-1504
Sheet 1 of 1

Ground Water Quality Results (ppb)

Data Point	3-22-94						
AH-1	<1 62						
AH-2	<1 14						
AH-3	<1 11						
AH-4	11 590						
AH-5	10 94						
AH-6							
AH-7	<1 <6						
AH-8	<1 11						
MW-1	<1 12						
MW-2	<1 121						

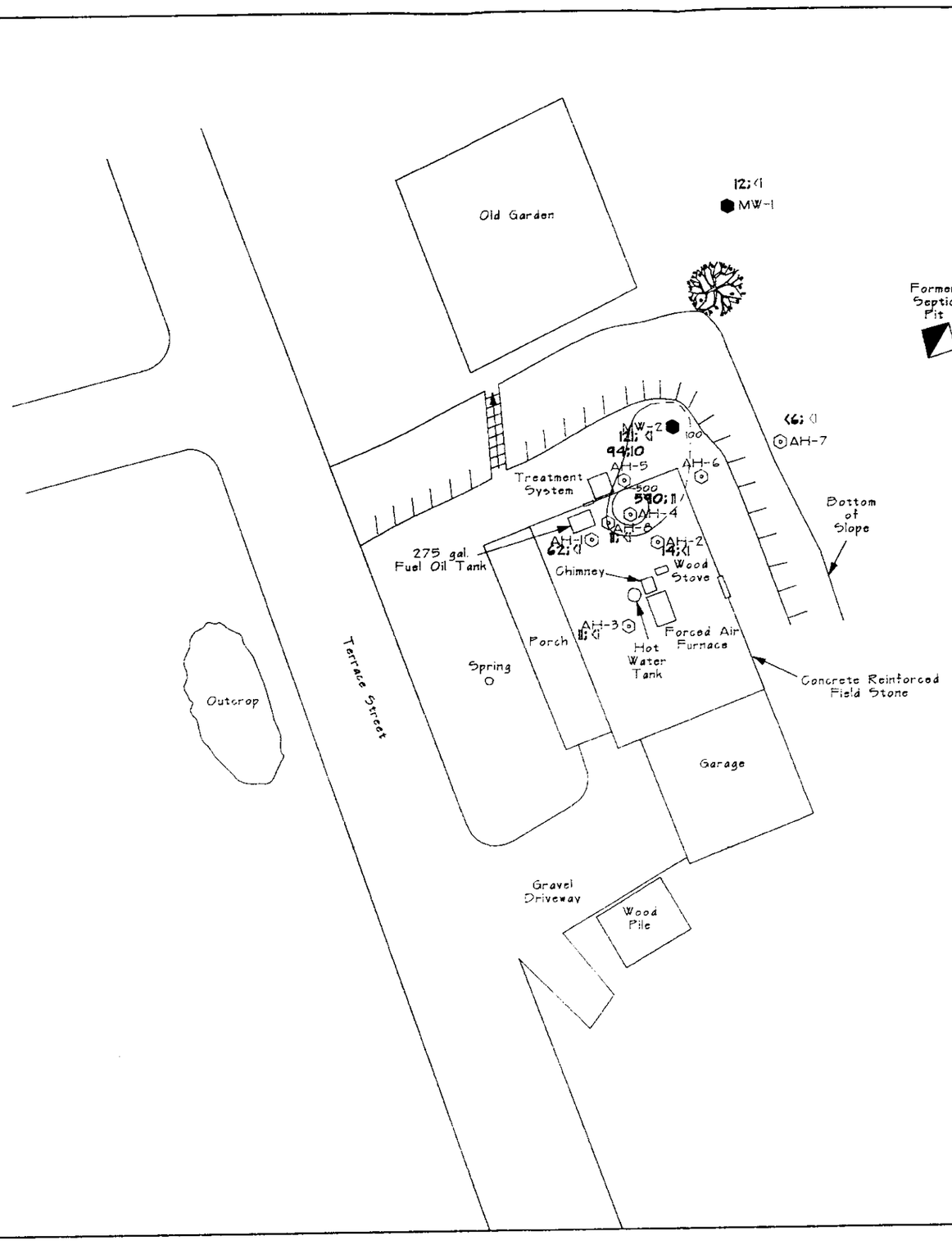
NOTES:
MTBE in upper right corner of cell
BTEX in lower left corner of cell
< - Contaminant not detected at specified detection limit

Pratt Residence
GENERAL LOCATION MAP



Source: U.S.G.S. 7.5 min. Topo Series
Montpelier, VT Quad.

Scale: 1" = 2000'



LEGEND

- 2" PVC Monitoring Well
- Auger Hole Well
- 590; 11 BTEX/MTBE Contamination Concentrations (ppb)
- 100 Contaminant Contour (ppb)

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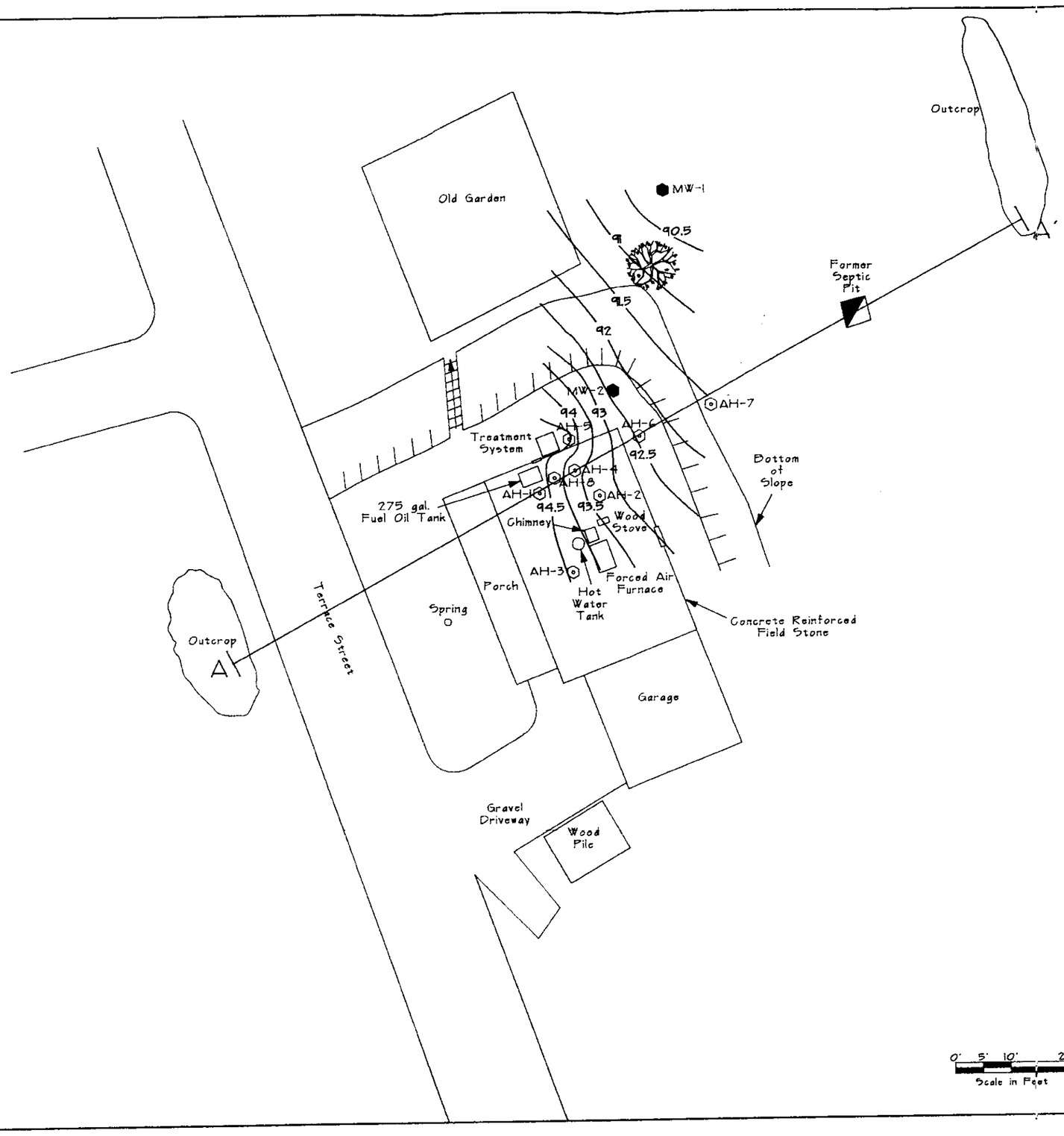
Figure 4

Pratt Residence

Location:	Scale:
Montpelier, Vermont	1" = 20'

Water Quality Summary Map for March 22, 1994

Date:	Job Type:
Mar 1994	Petroleum Contamination



LEGEND

- 2" PVC Monitoring Well
- Auger Hole Well
- Contour Line

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Figure 2

Pratt Residence

Location:	Scale:
Montpelier, Vermont	1" = 20'

Ground Water Contour Map
for
April 18, 1994

Date:	Job Type:
Mar 1994	Petroleum Contamination

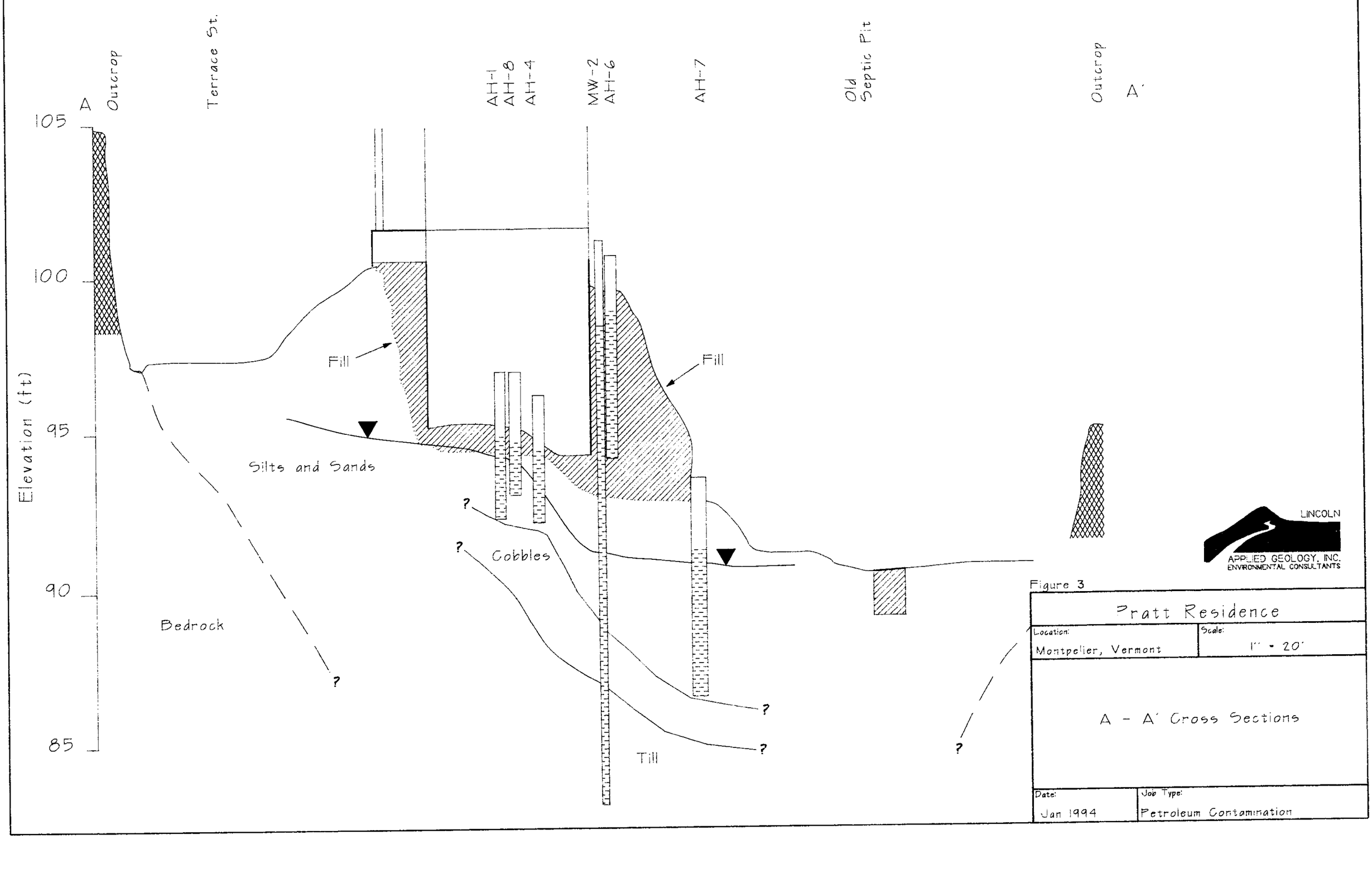

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Figure 3

Pratt Residence

Location:	Scale:
Montpelier, Vermont	1" = 20'

A - A' Cross Sections

Date:	Job Type:
Jan 1994	Petroleum Contamination

Pratt Residence
AH-1,2,3,4 and 8 Ground Water Level Trends

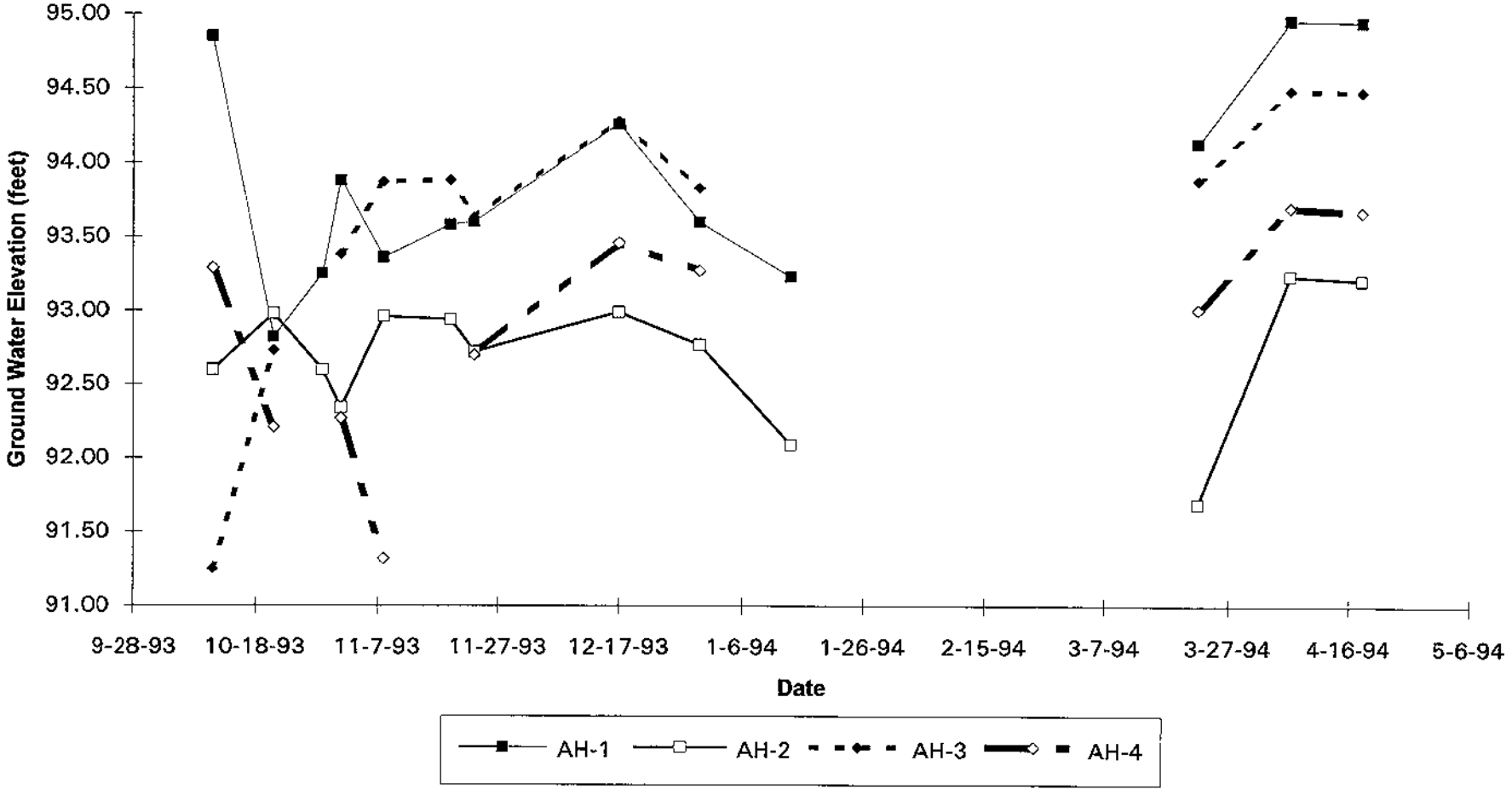

Chart 1

Pratt Residence
AH-5,6 and 7 Ground Water Level Trends

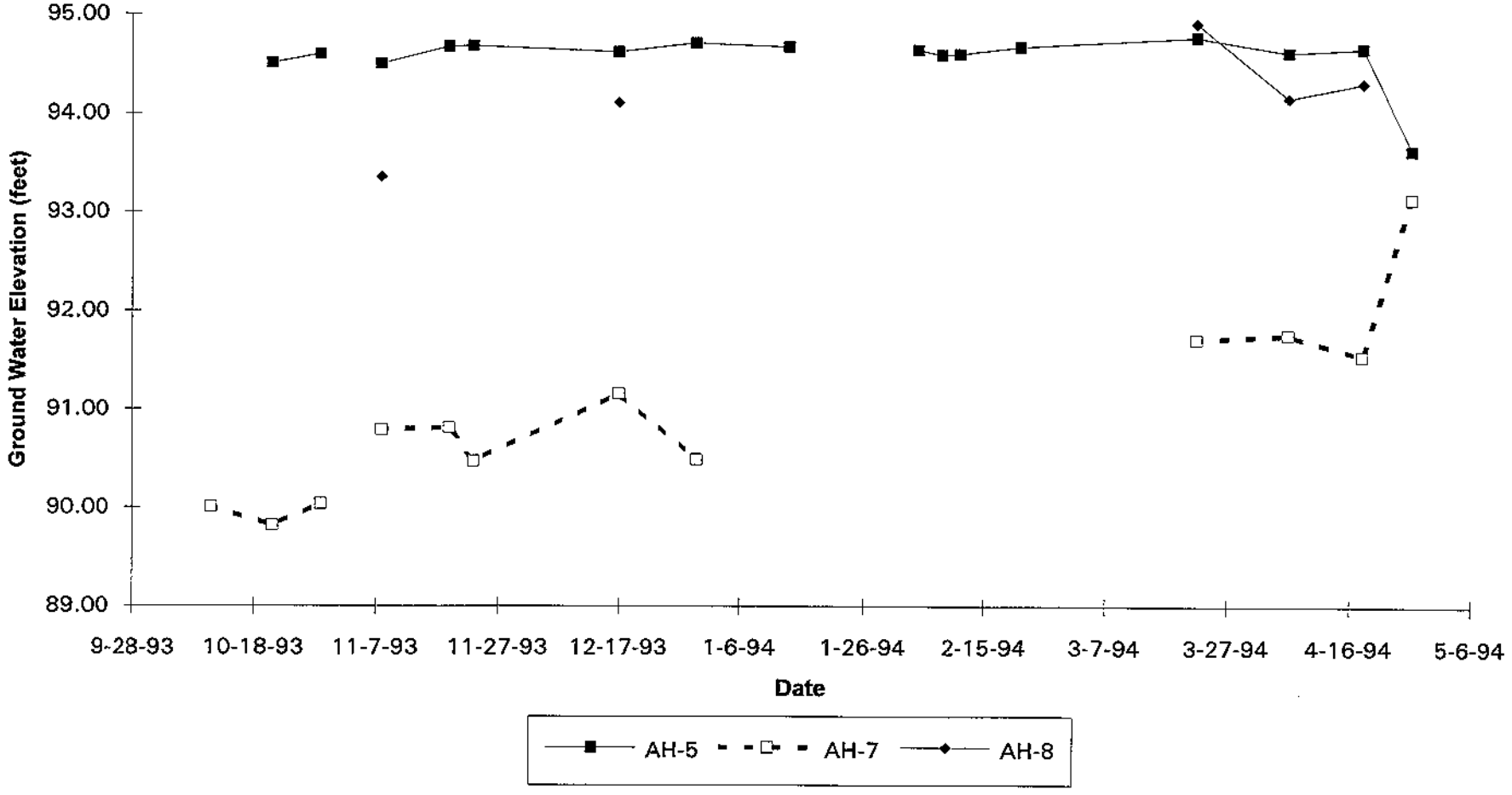

Chart 2

Pratt Residence
AH-1,2,3,4 and 8 PID Trends

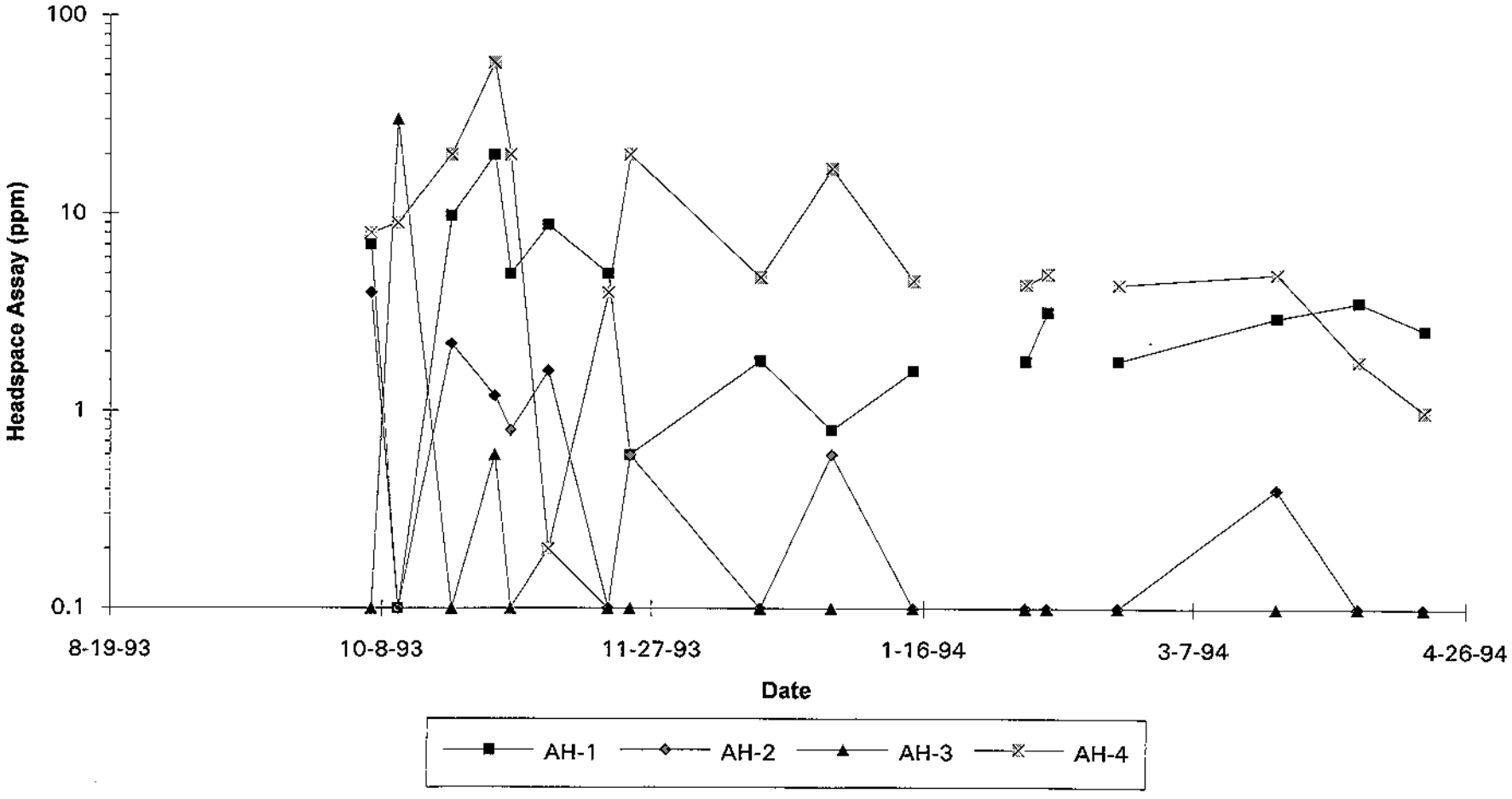

Chart 3

Pratt Residence
AH-5, 6 and 7 PID Trends

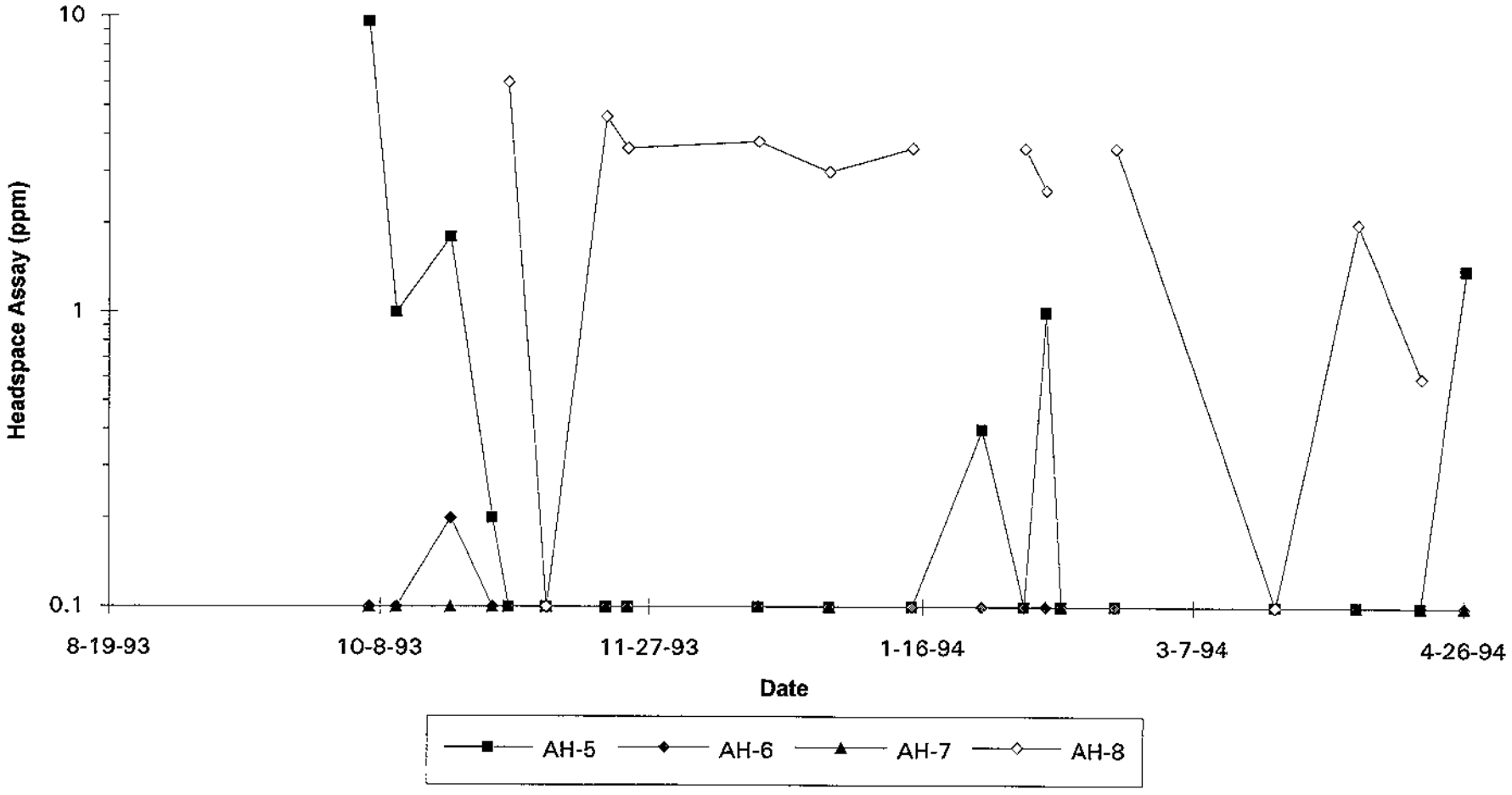

Chart 4

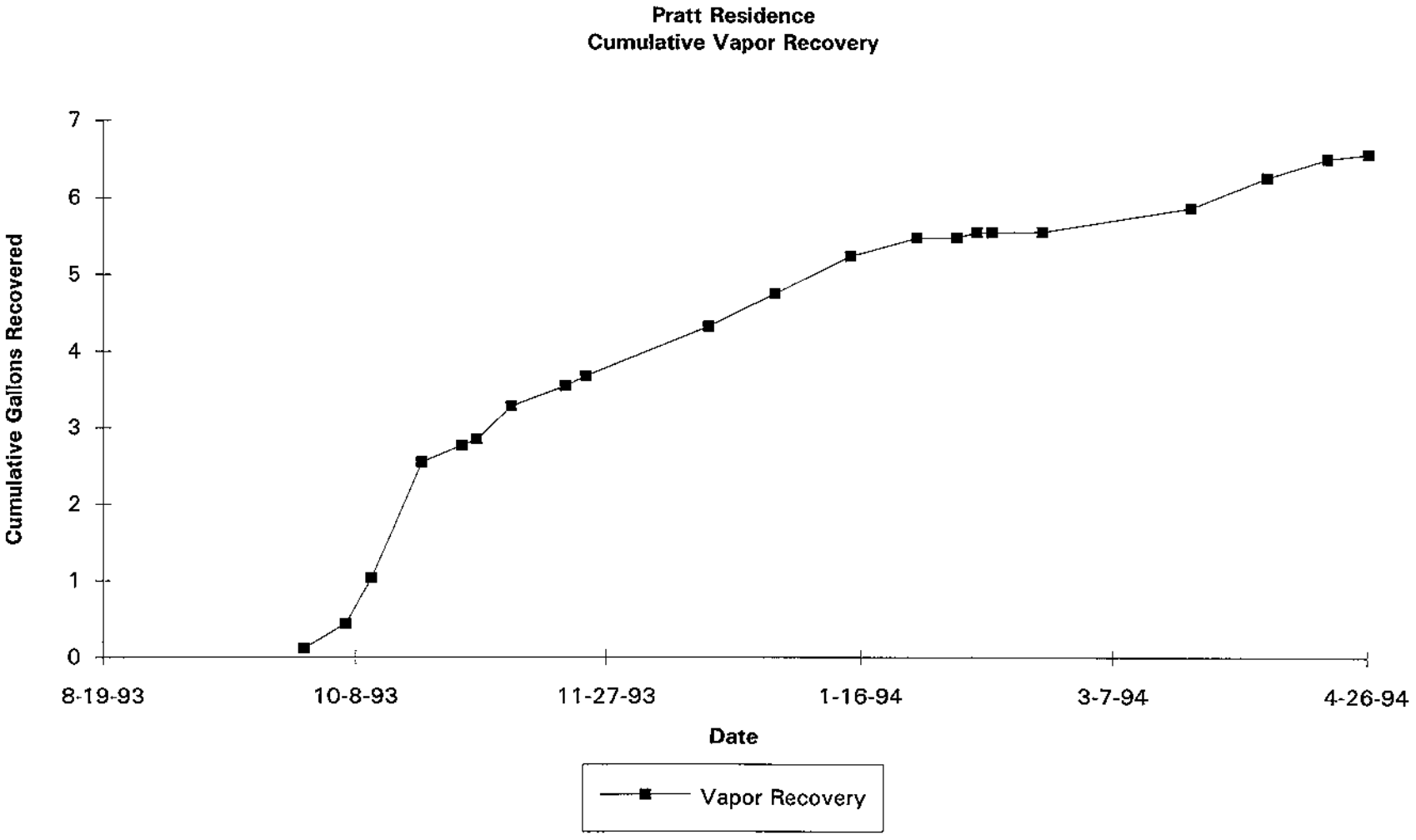
Pratt Residence
Cumulative Vapor Recovery
Cumulative Gallons Recovered
0
1
2
3
4
5
6
7
8-19-93
10-8-93
11-27-93
1-16-94
3-7-94
4-26-94
Date
Vapor Recovery

Chart 5

Appendix A

Boring Logs

for MW-1 and MW-2

WELL LOG

WELL:	MW-1
LOCATION:	Pratt Residence, Northwest corner of garden
DRILLER:	Green Mountain Boring
HYDROGEOLOGIST:	Steven LaRosa, Lincoln Applied Geology, Inc.
DATE:	03/11/94

Soils Description: BG = Background

Depth	Description	PID (ppm)
0 - 2'	Loamy Topsoil	
2' - 10.5'	Moist, brown, till derived, silty fine to very fine sands with some pebbles and little gravel. Saturated at approximately 4'.	BG
10.5' - 11.5'	Saturated, sandy, medium gravel	BG
11.5'	Auger Refusal. Chips of green phyllite/schist in cuttings. Typical of local outcrops.	

Well Construction:

Bottom of Boring:	12.5'
Bottom of Well:	11.0'
Well Screen:	10' of 2" Sch 40 0.02" slot well screen PVC
Solid Riser:	5' of 2" Sch 40 PVC
Sand Pack:	11' - 0.5'
Bentonite Seal:	0.5' - 0'
Backfill:	None
Well Box:	4.00' Stick-Up

WELL LOG

WELL:	MW-2
LOCATION:	Pratt Residence, Southwest corner of house
DRILLER:	Green Mountain Boring
HYDROGEOLOGIST:	Steven LaRosa, Lincoln Applied Geology, Inc.
DATE:	03/11/94

Soils Description: BG = Background

Depth	Description	PID (ppm)
0 - 6'	Dry stony, sandy fill. Silt, fine sand and debris evident also.	BG
6' - 10'	Moist loamy silty, very fine sand. Roots and other organic matter.	BG
10' - 12'	Moist cobbley medium gravel	BG
12' - 20'	Moist to saturated, till derived, brown silty, very fine sand with pebbles. Wet outside sample tube but sample only moist. Became drier and much denser with depth.	BG

Well Construction:

Bottom of Boring:	18'
Bottom of Well:	18'
Well Screen:	15' of 2" Sch 40, 0.02" slot well screen PVC
Solid Riser:	6' of 2" Sch 40 PVC
Sand Pack:	18' - 2'
Bentonite Seal:	2' - 0'
Backfill:	None
Well Box:	2.90' Stick-Up

Green Mountain Boring Co., Inc.

R. D. 2 — BARRE, VERMONT 05641

SHEET 1 OF

TO Lincoln Applied Geology ADDRESS RD #1, Box 710, Bristol DATE 3/11/94

PROJECT NAME Pratt's LOCATION Montpelier, VT HOLE NO. MW-1

REPORT SENT TO Lincoln Applied Geo. PROJ. NO. LINE & STA.

SAMPLES SENT TO Lincoln Applied Geo. OUR JOB NO. 94-27 OFFSET None

GROUND WATER OBSERVATIONS		CASING	SAMPLER	CORE BAR.	
At 5' at 0 Hours	Type	AUGERS 4.25"	SPLIT SPOON		SURFACE ELEV.
	Size I. D.		1 3/8"		DATE STARTED 3/11/94
At at Hours	Hammer Wt.		140#		DATE COMPL. 3/11/94
	Hammer Fall		30"		BORING FOREMAN Lawrence
					INSPECTOR
					SOILS ENGR. LaRosa

LOCATION OF BORING: NW corner of garden

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	To 6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
		5'-7'	Dry	7 20	12	14	Damp		Silty sand with stones	1	24"	20"
		8.5' 10.5'	Dry	28 10	11	15	Damp		Silty sand with stones	2	24"	15"
									Refusal with augers at 12.5'			
									Installed well at			
									Materials Used:			
									10' X 2" X .020 screen			
									5' X 2" riser			
									1 bottom cone cap			
									1 top locking wing cap			
									3 bags sand			
									1/2 bag bentonite			
									1 dolphin lock			

GEOLOGY, INC.

GROUND SURFACE TO 12.5' USED 4.25" AUGERS: THEN Installed well

Sample Type
D = Dry C = Cored W = Washed

Proportions Used
trace 0 to 10%
little 10 to 20%

140 lb. Wt. x 30" fall on 2" O. D. Sampler
Cohesionless Density
0-10 Loose
10-30 Med. Dense

Cohesive Consistency
0-4 Soft
4-8 M/Stiff
30 + Hard

SUMMARY:
Earth Boring
Rock Coring 12.5'
Samples

Green Mountain Boring Co., Inc.

R. D. 2 — BARRE, VERMONT 05641

SHEET 2 OF

TO Lincoln Applied Geology ADDRESS RD #1, Box 710, Bristol

PROJECT NAME Pratt's LOCATION Montpelier, VT

REPORT SENT TO Lincoln Applied Geo. PROJ. NO.

SAMPLES SENT TO Lincoln Applied Geo. OUR JOB NO. 94-27

DATE 3/11/94

HOLE NO. MW-2

LINE & STA.

OFFSET None

GROUND WATER OBSERVATIONS	CASING	SAMPLER	CORE BAR.
At None at O. Hours	Type	AUGERS 4.25" SPLIT SPOON	
At ... at ... Hours	Size I. D.		1 3/8"
	Hammer Wt.		140#
	Hammer Fall		30"

SURFACE ELEV.

DATE STARTED 3/11/94

DATE COMPL. 3/11/94

BORING FOREMAN Lawrence

INSPECTOR

SOILS ENGR. LaRosa

LOCATION OF BORING: NW corner of house

DEPTH	Casing Blows per foot	Sample Depths From — To	Type of Sample	Blows per 6" on Sampler From 0-6	6-12	To 12-18	Moisture Density or Consist.	Strata Change Elev.	SOIL IDENTIFICATION Remarks include color, gradation, Type of soil etc. Rock-color, type, condition, hardness, Drilling time, seams and etc.	SAMPLE No.	Pen	Rec.
		5'-7'	Dry	24 4	10	4	Dry		Fine silty sand with stones	1	24"	15"
		10'-12'	Dry	16 17	16	16	Damp		Silty sand with stones	2	24"	17"
		15'-17'	Dry	20	28	42	Damp		Silty sand with stones	3	18"	18"
		18'-20'	Dry	61	55	56/4	Dry		Brown to grey silt with stones, trace of sand	4	16"	16"
									Set well at 18'			
									Materials Used: 15' X 2" X .020 screen 5' X 2" riser 4 bags sand 1/2 bag bentonite 1 bottom cone cap			
									1 top locking wing cap 1 dolphin lock			

PANEL GEOL...

GROUND SURFACE TO ... USED ... AUGERS: THEN ...

Sample Type

D = Dry C = Cored W = Washed

UP = Undisturbed Piston

TP = Test Pit A = Auger V = Vane Test

UT = Undisturbed Thinwall

Proportions Used	
trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

140 lb. Wt. x 30" fall an 2" O. D. Sampler

Cohesionless Density		Cohesive Consistency		
0-10	Loose	0-4	Soft	30 + Hard
10-30	Med. Dense	4-8	M/Stiff	
30-50	Dense	8-15	Stiff	
50 +	Very Dense	15-30	V-Stiff	

SUMMARY:

Earth Boring

Rock Coring

Samples

HOLE NO.

Appendix B

March 1994

Water Quality Results

LABORATORY ANALYSIS

CLIENT NAME:	Lincoln Applied Geology	REF #:	8500
ADDRESS:	RD#1 Box 710 Bristol, VT 05443	PROJECT NO.:	not given
SAMPLE LOCATION:	Pratt Residence	DATE OF SAMPLE:	3/22/94
SAMPLER:	James Robideau	DATE OF RECEIPT:	3/22/94
		DATE OF ANALYSIS:	3/28,3/29, 3/30,3/31/94
ATTENTION:	John Amadon	DATE OF REPORT:	4/1/94

Pertaining to the analyses of specimens submitted under the accompanying chain of custody form, please note the following:

- Water samples submitted for VOC analysis were preserved with HCL.
- Specimens were processed and examined according to the procedures outlined in the specified method.
- Holding times were honored.
- Instruments were appropriately tuned and calibrations were checked with the frequencies required in the specified method.
- Blank contamination was not observed at levels interfering with the analytical results.
- Continuing calibration standards were monitored at intervals indicated in the specified method. The resulting analytical precision and accuracy were determined to be within method QA/QC acceptance limits.
- The inferred efficiency of analyte recovery for individual samples was monitored by the addition of surrogate analytes to all samples, standards, and blanks. Surrogate recoveries were found to be within laboratory QA/QC acceptance limits, unless noted otherwise.

Reviewed by:

Brendan McMahon, Ph.D.
Director, Chemical Services

MicroAssays of Vermont, Inc. P.O. Box 189 Middlesex, Vermont 05602 (802) 223-1468 FAX 223-8688

LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt Residence	REF.#:	8,500
REPORT DATE:	April 1, 1994	STATION:	AH-1
DATE SAMPLED:	March 22, 1994	TIME SAMPLED:	14:09
DATE RECEIVED:	March 22, 1994	SAMPLER:	James Robideau
ANALYSIS DATE:	March 31, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	1	BPQL
Toluene	1	6
Ethylbenzene	1	5
Xylenes	3	50
MTBE	1	BPQL

Surrogate % Recovery: 100%

BPQL = Below Practical Quantitation Limit (PQL).

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LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt Residence	REF.#:	8,500
REPORT DATE:	April 1, 1994	STATION:	AH-2
DATE SAMPLED:	March 22, 1994	TIME SAMPLED:	14:12
DATE RECEIVED:	March 22, 1994	SAMPLER:	James Robideau
ANALYSIS DATE:	March 31, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	1	BPQL
Toluene	1	BPQL
Ethylbenzene	1	1
Xylenes	3	11
MTBE	1	BPQL

Surrogate % Recovery: 100%

BPQL = Below Practical Quantitation Limit (PQL).

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LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt Residence	REF.#:	8,500
REPORT DATE:	April 1, 1994	STATION:	AH-3
DATE SAMPLED:	March 22, 1994	TIME SAMPLED:	14:05
DATE RECEIVED:	March 22, 1994	SAMPLER:	James Robideau
ANALYSIS DATE:	March 30, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	1	BPQL
Toluene	1	BPQL
Ethylbenzene	1	BPQL
Xylenes	3	8
MTBE	1	BPQL

Surrogate % Recovery: 100%

BPQL = Below Practical Quantitation Limit (PQL).

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LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt Residence	REF.#:	8,500
REPORT DATE:	April 1, 1994	STATION:	AH-4
DATE SAMPLED:	March 22, 1994	TIME SAMPLED:	14:15
DATE RECEIVED:	March 22, 1994	SAMPLER:	James Robideau
ANALYSIS DATE:	March 31, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	5	22
Toluene	5	106
Ethylbenzene	5	63
Xylenes	15	399
MTBE	5	11

Surrogate % Recovery: 100%

BPQL = Below Practical Quantitation Limit (PQL).

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LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt Residence	REF.#:	8,500
REPORT DATE:	April 1, 1994	STATION:	AH-5
DATE SAMPLED:	March 22, 1994	TIME SAMPLED:	14:03
DATE RECEIVED:	March 22, 1994	SAMPLER:	James Robideau
ANALYSIS DATE:	March 29, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	1	BPQL
Toluene	1	2
Ethylbenzene	1	9
Xylenes	3	82
MTBE	1	10

Surrogate % Recovery: 98%

BPQL = Below Practical Quantitation Limit (PQL).

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LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt Residence	REF.#:	8,500
REPORT DATE:	April 1, 1994	STATION:	AH-8
DATE SAMPLED:	March 22, 1994	TIME SAMPLED:	14:07
DATE RECEIVED:	March 22, 1994	SAMPLER:	James Robideau
ANALYSIS DATE:	March 29, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	1	BPQL
Toluene	1	BPQL
Ethylbenzene	1	BPQL
Xylenes	3	8
MTBE	1	BPQL

Surrogate % Recovery: 98%

BPQL = Below Practical Quantitation Limit (PQL).

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LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt Residence	REF.#:	8,500
REPORT DATE:	April 1, 1994	STATION:	MW-1
DATE SAMPLED:	March 22, 1994	TIME SAMPLED:	13:55
DATE RECEIVED:	March 22, 1994	SAMPLER:	James Robideau
ANALYSIS DATE:	March 28, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	1	BPQL
Toluene	1	BPQL
Ethylbenzene	1	1
Xylenes	3	9
MTBE	1	BPQL

Surrogate % Recovery: 98%

BPQL = Below Practical Quantitation Limit (PQL).

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LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt Residence	REF.#:	8,500
REPORT DATE:	April 1, 1994	STATION:	MW-2
DATE SAMPLED:	March 22, 1994	TIME SAMPLED:	14:00
DATE RECEIVED:	March 22, 1994	SAMPLER:	James Robideau
ANALYSIS DATE:	March 28, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	1	BPQL
Toluene	1	4
Ethylbenzene	1	12
Xylenes	3	104
MTBE	1	BPQL

Surrogate % Recovery: 98%

BPQL = Below Practical Quantitation Limit (PQL).

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CHAIN OF CUSTODY RECORD

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Montpelier, VT 05602
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Page 1 of 1

MAV # 8500

CLIENT NAME: Lincoln Applied Geology
ADDRESS: RD1 Box 710 Bristol, VT 05443
PROJECT NAME: PRATT Residence
PROJECT NUMBER:
PROJECT MANAGER:
SAMPLER:

ANALYSIS REQUESTED: BTEX - MTBE

Sample Location	Date	Time	# of cont.	pres ervd	Sample Type		REMARKS:
MW-1	3-22-94	1:55	2	HCl	Y.Mill	✓	✓
MW-2	3-22-94	2.00	2	HCl	Y.Mill	✓	✓
AH-5	3-22-94	2.03	2	HCl	Y.Mill	✓	✓
AH-3	3-22-94	2.05	2	HCl	Y.Mill	✓	✓
AH-8	3-22-94	2.07	2	HCl	Y.Mill	✓	✓
AH-1	3-22-94	2.09	2	HCl	Y.Mill	✓	✓
AH-2	3-22-94	2.12	2	HCl	Y.Mill	✓	✓
AH-4	3-22-94	2.15	2	HCl	Y.Mill	✓	✓

Relinquished by:	Received by:	Date/Time	Relinquished by:	Received by:	Date/Time
[signature]	Denise E. Bouchard	3-22-94 2:41P			

MICROASSAYS OF VERMONT INCORPORATED

...GEOLOGY, INC.

LABORATORY ANALYSIS

CLIENT NAME:	Lincoln Applied Geology	REF #:	8524
ADDRESS:	RD#1 Box 710	PROJECT NO.:	not given
	Bristol, VT 05443		
SAMPLE LOCATION:	Pratt's	DATE OF SAMPLE:	3/24/94
SAMPLER:	Steve Larosa	DATE OF RECEIPT:	3/24/94
		DATE OF ANALYSIS:	4/2/94
ATTENTION:	John Amadon/Steve Larosa	DATE OF REPORT:	4/5/94

Pertaining to the analyses of specimens submitted under the accompanying chain of custody form, please note the following:

- Water samples submitted for VOC analysis were preserved with HCL.
- Specimens were processed and examined according to the procedures outlined in the specified method.
- Holding times were honored.
- Instruments were appropriately tuned and calibrations were checked with the frequencies required in the specified method.
- Blank contamination was not observed at levels interfering with the analytical results.
- Continuing calibration standards were monitored at intervals indicated in the specified method. The resulting analytical precision and accuracy were determined to be within method QA/QC acceptance limits.
- The inferred efficiency of analyte recovery for individual samples was monitored by the addition of surrogate analytes to all samples, standards, and blanks. Surrogate recoveries were found to be within laboratory QA/QC acceptance limits, unless noted otherwise.

Reviewed by:

Brendan McMahon, Ph.D.
Director, Chemical Services

LABORATORY REPORT

GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pratt's	REF.#:	8,524
REPORT DATE:	April 5, 1994	STATION:	AH-7
DATE SAMPLED:	March 24, 1994	TIME SAMPLED:	17:35
DATE RECEIVED:	March 24, 1994	SAMPLER:	Steve Larosa
ANALYSIS DATE:	April 2, 1994	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Concentration (µg/L)
Benzene	1	BPQL
Toluene	1	BPQL
Ethylbenzene	1	BPQL
Xylenes	3	BPQL
MTBE	1	BPQL

Surrogate % Recovery: 99%

BPQL = Below Practical Quantitation Limit (PQL).

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CHAIN OF CUSTODY RECORD

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ANALYSIS REQUESTED

Page 1 of 1

MAV # 952

CLIENT NAME LAG

ADDRESS

PROJECT NAME Pratt S

PROJECT NUMBER

PROJECT MANAGER

SAMPLER S. LaRosa

Sample Location	Date	Time	# of cont.	pres ervd	Sample Type	BTEX + MTBE											REMARKS
AH-7	3/24/94	5:35	2	✓	H_2O		-2106 (ow.										

Relinquished by:	Received by:	Date/Time	Relinquished by:	Received by:	Date/Time
		17:47 3/24/94 (17:47)			