

1067



October 11, 1995

Oct 12 11 03 AM '95
Vermont Department of Environmental Conservation

Mr. Richard Spiese
Acting Supervisor
Sites Management Section
Vermont Department of
Environmental Conservation
103 South Main Street
Waterbury, Vermont 05676

RE: Pattee's "108" Market, W. Enosburg, VT - Quarterly Status Report (June - August 1995) (VDEC Site #94-1564)

Dear Mr. Spiese:

On behalf of Charles Pattee and Pattee's "108" Market, Lincoln Applied Geology, Inc. (LAG) has continued with the Vapor Extraction System (VES) operation, site monitoring, and the quarterly monitoring well and bedrock water supply well sampling. The VES has remained operational since the February 21, 1995 startup and continues to operate with consistent success. This letter report is provided to detail the results of our August 14, 1995 quarterly sampling round of the monitor wells and surrounding bedrock supplies, and the biweekly VES operation and ground water monitoring.

Prior site activities were described in our June 13, 1995 status report (and earlier reports). Water quality monitoring has continued at the site and no water supplies, other than the Pattee supply, have been adversely impacted. The point of entry treatment (POET) system that was installed on the Pattee well remains effective. POET influent concentrations currently show benzene, toluene, ethylbenzene, xylene, and methyl-tert-butyl ether (MTBE) below drinking water guidelines and method detection limits for BTEX. We do continue to recommend the POET's use because of the possibility that concentrations of these constituents may increase again in the near future.

As you are aware, some limited free floating product has been occasionally measured on-site and Soak Ease adsorbent bailers have been maintained in RW-1/VES-1, MW-4, and MW-5. Since the end of September 1994, we estimate that nearly 6.0 gallons of free phase product has been recovered by the passive Soak Ease system. We also estimate that an equivalent of over 94 gallons of product has been recovered by the VES through August 1995.

Enclosed for your information and use in reviewing this status report are the

following:

Table 1,	Ground Water Elevation and Product Thickness;
Table 2,	Headspace Photoionization Results;
Table 3,	Ground Water Quality Summary;
Table 4,	Vapor Extraction System Vacuums;
Table 5,	FALCO Oxidizer Data;
Figure 1,	Ground Water Contour Map for August 14, 1995;
Figure 2,	Ground Water Quality Map for August 14, 1995;
Chart 1,	Liquid Level Trends;
Chart 2,	Ground Water Level Trends;
Chart 3,	Vapor Recovery Trends; and
Appendix A,	August 1995 Analytical Results.

A summary of ground water level elevations is included as **Table 1** and depicted in **Charts 1** and **2**. Overall ground water levels continue to fluctuate moderately in RW-1, MW-5, and MW-4, and little in MW-2 and MW-3. These fluctuations appear to be in response to seasonal rainfall events and indicate that an unconfined surficial aquifer exists under the site. As seen in **Table 1**, downgradient monitor wells 10 and 11 were still dry suggesting that the water table surface drops into the bedrock to the south of the site. The ground water contour map for August 14, 1995 (shown as **Figure 1**) continues to show the southerly ground water flow component.

Headspace photoionization detector (PID) assays of the monitoring well array have continued in order to track potential vapor impacts. A summary of headspace PID levels during the quarter has been prepared as **Table 2**. In general, vapor impacts for the monitor wells and VES points have not changed significantly since the last quarter indicating that contaminant vapors are being contained by the VES based remediation system.

A quarterly round of ground water quality sampling was performed on August 14, 1995. Copies of the formal analytical results are included in **Appendix A** and summarized in **Table 3**. The aerial distribution of the BTEX and MTBE constituents is depicted on **Figure 2**. The bulk of the contamination remains in the primary source area encompassing RW-1, MW-4, and MW-5. There has been no significant increase in concentrations in MW-6 and MW-7. We do, however, continue to see soluble phase impacts in the old Pattee well. Although the ground water concentrations have been decreasing, we are somewhat concerned that there may also be capillary fringe soils that, due to their higher moisture content, have and will not be remediated to the degree that will prevent migration of low level effects which may continue to impact the



Mr. Richard Spiese
Page 3
October 11, 1995

bedrock aquifer.

Water quality sampling of the nearby private water supplies was also performed on August 14 and letter reports have regularly been prepared for well owners. Copies of these letter reports have been sent to you. These results are also summarized in **Table 3** and indicate that the only bedrock water supplies that have consistently shown impacts are the current Pattee's supply well and the unused old Pattee well.

Since being brought on-line in February 1995 the VES has operated continuously and successfully. Influent VES PID assays and hydrocarbon concentration estimates from the FALCO temperature sensor have continued to decline since system startup. A trend graph of product recovery and influent concentrations has been prepared as **Chart 3**.

Induced vacuums measured in the vapor extraction wells and other associated monitoring points around the site continue to show significant soil/vadose zone related induced vacuum effects throughout the site (**Table 4**). A summary of the FALCO oxidation system monitoring data are included as **Table 5**. Based on these cumulative results, we are pleased with the remedial success of the VES that has been achieved to date. We do however, continue to recommend that the VES remain operational until the goals delineated in the CAP have been obtained (≤ 5 ppm by PID on the VES influent).

While the steady decrease in soil gas VOC concentrations clearly indicates significant reduction in vadose zone VOC concentrations, the presence of heterogeneous soils could mean that there are less permeable soil layers that have not yet been significantly remediated by the VES system. To obtain an indication of this possibility, the VES blower will be shutdown for a few days to achieve equilibrium soil gas conditions, and then restarted one VES point at a time to measure the equilibrium soil gas concentrations in each area. Significantly higher concentrations will indicate that overall the soils have not been remediated as fully as first believed.

Depending on the results of the VES shutdown/restart test and the next 1 or 2 sets of quarterly ground water results, conclusions will be made on the progress and operation of the VES remedial system. Modifications, such as operating the VES periodically instead of continuously, apportioning air flow rates differently to the VES points to avoid dead zones, and lowering the ground water table using RW-1 (to expose more capillary soils to the VES process) may be considered. In the meantime, the biweekly site and VES monitoring, passive floating product recovery (if necessary) and quarterly sampling will continue.



Lincoln Applied Geology, Inc.
Environmental Consultants

RD # 1 Box 710 • Bristol, Vermont 05443 • (802) 453-4384 • FAX (802) 453-5399

Mr. Richard Spiese
Page 4
October 11, 1995

Please feel free to contact me or Alan Moore, P.E., Project Manager with any questions or comments you may have. In the interim we will continue with our biweekly site visits, as well as, the quarterly sampling and reporting schedule.

Sincerely,

Richard S. Vandenberg
Richard S. Vandenberg
Hydrogeologist

RSV/smk
enclosure
cc: Charlie Pattee



Lincoln Applied Geology, Inc.
Environmental Consultants

RD # 1 Box 710 • Bristol, Vermont 05443 • (802) 453-4384 • FAX (802) 453-5399

Ground Water Elevation/Product Level (feet)

Data Point	TOC	6-16-95	6-21-95	6-29-95	7-7-95	7-13-95	7-20-95	7-28-95	8-9-95	8-14-95	8-22-95
RW-1	94.62 ^{***}	84.81	85.02	85.20	85.02	83.37		85.50	86.62	85.42	85.47
MW-1	99.73	87.83							87.93	<88.01	
MW-2	97.03	85.66				85.16		85.13	85.54	85.41	85.26
MW-3	96.44	85.61				84.89		85.90	85.48	85.44	85.29
MW-4	94.59	85.59	85.67	85.27	84.93	82.94	84.76	84.87	85.77	85.19	84.44
MW-5	92.58	81.87	81.79	81.85	81.70	81.13	81.83	82.08	82.96	82.23	81.91
MW-6	90.19	79.34				78.89		79.14	79.42	79.48	79.35
MW-7	89.76	80.03				78.56		79.16	80.41	79.84	79.51
MW-8	93.11	80.40				<80.26		<80.36	80.56	<80.51	
MW-9	55.14	48.24				<46.49			46.92	47.87	46.78
MW-10	80.13	<70.51							<70.56		
MW-11	78.31	<64.58							<64.61		
VES-1	94.62	84.81				83.37		85.50	86.62	85.42	85.47
VES-2	96.82	85.38				86.55		86.22	87.27	86.67	85.52
VES-3	93.20	83.74				81.20		81.60	83.71	82.85	82.15
VES-4	91.83	81.98				80.63			82.63	82.81	81.91

Notes:

- 1 - Elevation datum assumed
- 2 - Reference elevation is elevation of top of PVC well casing
- Light Grey Cell = DRY
- Dark Grey Cell = Inaccessible
- *** RW-1 cut down fitted as VES-1 during 1/95

Photoionization Results (PID - ppm)

Data Point	6-16-95	6-21-95	6-29-95	7-7-95	7-13-95	7-20-95	7-28-95	8-9-95	8-14-95	8-22-95
RW-1***	42	2.6	4.8	34	20.0		0.4	20.0	36	20.0
MW-1	BG							BG	BG	BG
MW-2	7.8				BG		BG	1.4	1.0	BG
MW-3	4.0				2.0		BG	2.0	1.0	1.0
MW-4	134	2.6	2.4	1.2	50	3.2	2	5.0	26	20.0
MW-5	40	2.0	4.2	1.8	2.0	0.4	BG	3.6	1.0	1.0
MW-6	BG				BG		1	BG	BG	BG
MW-7	BG				BG		BG	BG	BG	BG
MW-8	BG				BG		BG	0.6	0.4	0.4
MW-9	BG				BG			0.2	BG	0.4
MW-10	BG				BG			BG	BG	BG
MW-11	BG				BG			BG	0.2	BG
Pattee's Basement	BG			BG			BG	BG	BG	
Apartment Basement	BG			BG			BG	BG	BG	
VES-1	42				20.0		0.4	20.0	36	20.0
VES-2	3.2				1.4		1	3.6	31	6.4
VES-3	1.0				BG		0.4	BG	20.0	10.6
VES-4	4.0				BG			BG	1.0	9.0
Pattee's Old Well	BG							BG	BG	0.2

Notes:
 BG - Background
 SL - Saturated Lamp
 Dark Grey Cell = Inaccessible
 * - Photovac TIP utilized (10.6 eV)
 *** RW-1 cut down fitted as VES-1 during 1/95

Ground Water Quality Results (ppb)

Data Point	2-27-95	3-24-95	3-28-95	4-18-95	5-15-95	5-24-95	8-14-95
MW-1							
MW-2	12	24			<6	2000	<60
MW-3	59	12			6.3	<5	15
MW-4	12700				2700		<1,200
MW-5	52870	1980			18615		4640
MW-6	46590	<5			<2,500		86
MW-7	<6	<5			10100		690
MW-8	<6	<5			12		14
MW-9	<6	<5			<6		<6
MW-10					<6		<6
MW-11					17		9.8
RW-1	5680				<6		<6
Pattee's Supply Well	53820	<10	<5	8.9	<1,250		<1,200
Fluery Supply Well	<4	<10	<6	<5	22900		12170
Leahy Supply Well	<4	<10	<6	<5	17	<6	<5
West Supply Well	<4	<10		<6	<5	<6	<6
Pattee Old Well			21	16	60	11	30
Atamian Well		<6	<5	122.4		<6	<5
Hawksworth Well		<6	<5			<6	<5
Howard Spring		<6	<5			<6	<5
Salminen		<6	<5			<6	<5
Stebbin's Well		<6	<5			<6	<5
Stream Point A						<6	<5
Trip Blank	<4	<10	<6	<5	<6	<5	<5
P.O.E.T. Influent							10
P.O.E.T. Mid							11
P.O.E.T. Effluent	<4	<10	<6	13	<4	<5	<6

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

Project: Pattee's "108" Market
 Location: West Enosburg, Vermont

Table 4
 VDEC Site # 94-1564
 Sheet 1 of 1

Vapor Extraction System(VES) Vacuum (in/H 2 0)

Data Point	2-24-95	3-2-95	3-10-95	3-13-95	4-4-95	6-16-95	7-13-95	
RW-1								
MW-1	1.25					0.07		
MW-2	0.34					7.5		
MW-3	3.8					3.20	5.5	
MW-4	0.52					11.00	11	
MW-5	0.04					2.3	1.7	
MW-6	0.02					1.2	0.38	
MW-7	0.74					0.51	0.34	
MW-8						2.9	1.54	
MW-9								
MW-10								
MW-11								
VES-1	2.70	4	10.5	12.00	14.00	>30	25	
VES-2	2.7	4	10	11.5	13.5	>30	24	
VES-3	2.65	4.5	11.0	12.5	14.5	15	11	
VES-4	2.7	4	11.5	12	14	15	11	

NOTES:

Falco Oxidizer Data

Upon Arrival												
Oxidizer Vacuum Data	06/09/95	06/16/95	06/21/95	06/29/95	07/07/95	07/13/95	07/20/95	07/28/95	08/04/95	08/09/95	08/14/95	08/22/95
Total Vacuum	32	35	36	34	33	32	28	26	28	30	30	30
VES-1	27	>30	29	26	25	25	19	18	19	23	21	20
VES-2	27	>30	29	26	25	24	18	17	19	23	21	19
VES-3	30	15	11	12	11	11	20	18	19	25	23	20
VES-4	27	15	11	11.5	11.5	11	16	15	16	21	18	17
Oxidizer Flow Data	06/09/95	06/16/95	06/21/95	06/29/95	07/07/95	07/13/95	07/20/95	07/28/95	08/04/95	08/09/95	08/14/95	08/22/95
Dilution Air	0.0	0.0	12.46	0.0	0.0	0.0	0.0	0.0	39.40	12.46	0.0	0.0
VES-1	49.84	30.52	39.40	36.32	24.92	41.32	39.40	43.2	30.52	32.96	32.96	39.40
VES-2	32.96	27.86	32.96	36.32	24.92	41.32	37.38	37.4	30.52	32.96	32.96	39.40
VES-3	24.92	27.86	26.43	21.58	23.31	78.80	35.24	44.9	27.86	35.24	35.24	38.40
VES-4	35.24	24.92	27.86	21.58	23.31	78.80	35.24	41.3	78.80	24.92	27.86	37.38
Total Flow (CFM)	142.95	111.15	139.11	115.80	96.45	240.23	147.25	166.78	207.09	138.54	129.02	154.57
PID	06/09/95	06/16/95	06/21/95	06/29/95	07/07/95	07/13/95	07/20/95	07/28/95	08/04/95	08/09/95	08/14/95	08/22/95
Oxidizer Influent	82	70	64	94	58	86	56	42	36	26	34	32
Oxidizer Effluent	2.0	0.2	0.2	1.4	0.8	0.2	0.8	BG	BG	BG	0.2	0.2
Temperature	06/09/95	06/16/95	06/21/95	06/29/95	07/07/95	07/13/95	07/20/95	07/28/95	08/04/95	08/09/95	08/14/95	08/22/95
T-1	329	328	329	331	329	331	331	331	329	330	332	332
T-2	357	353	359	358	366	365	350	342	342	338	338	336
T-3	354	351	355	359	361	360	348	343	340	338	340	336

Pattee's "108" Market
Liquid Level Trends

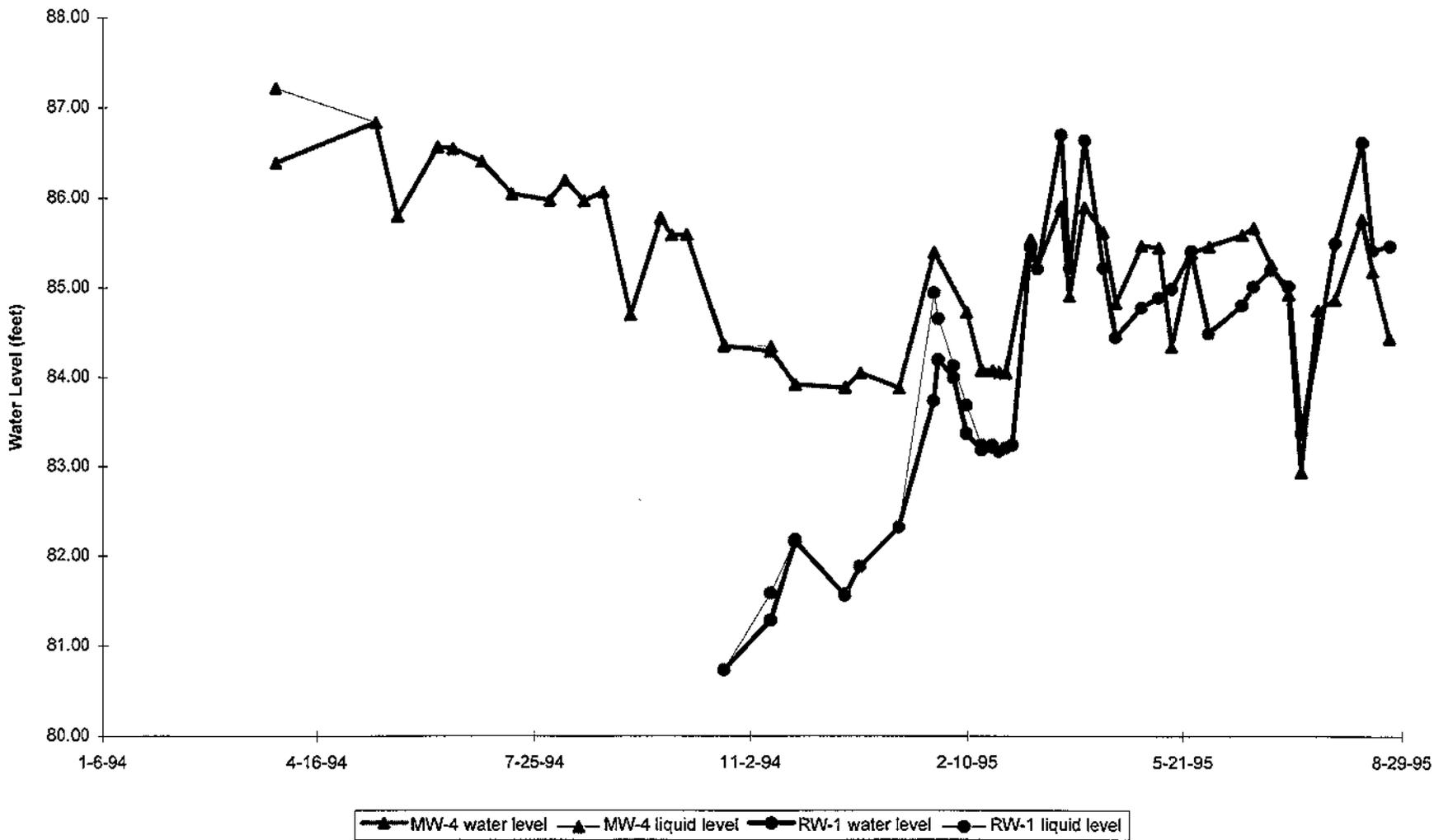
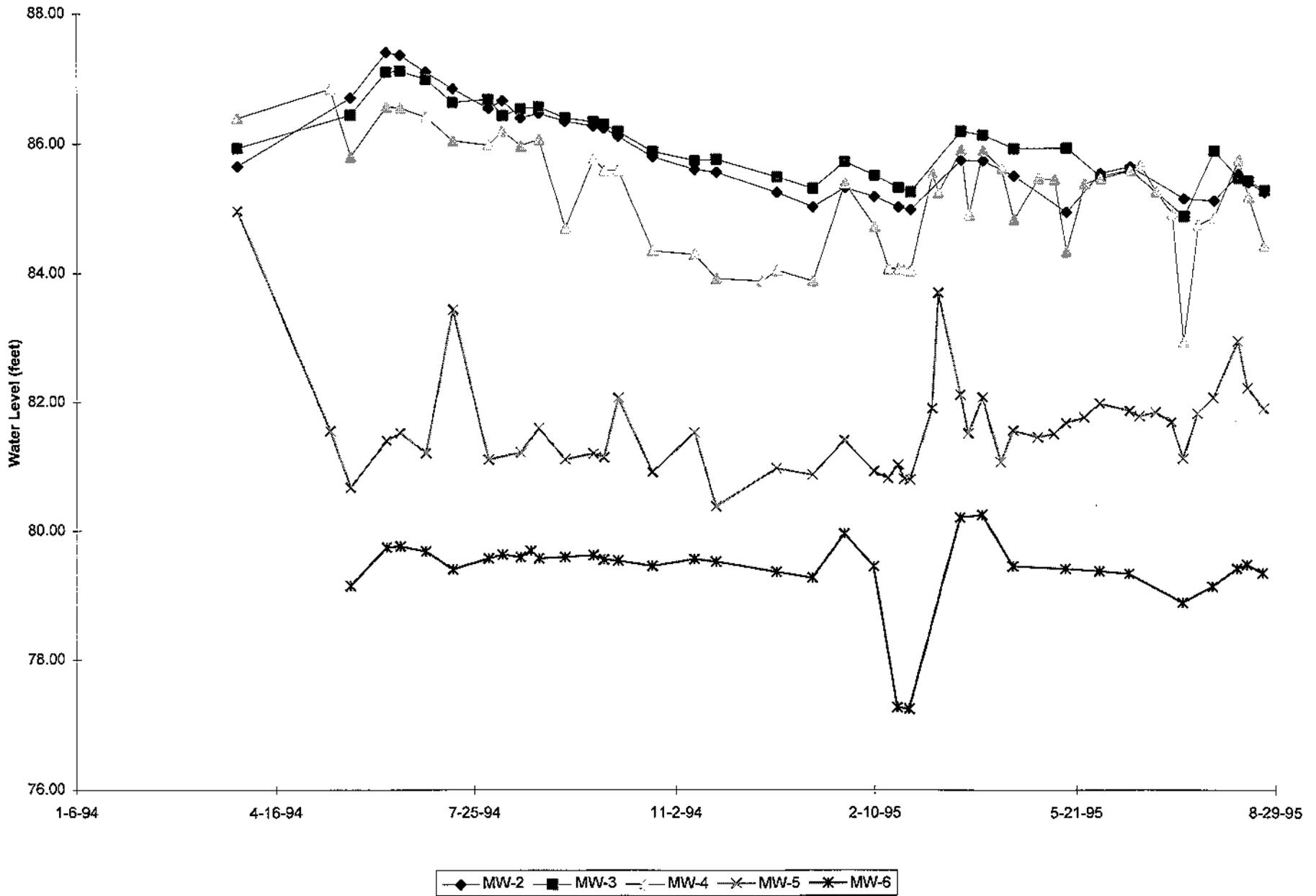


Chart 1

Pattee's "108" Market Ground Water Level Trends



Pattee's "108" Market
Vapor Recovery Trends

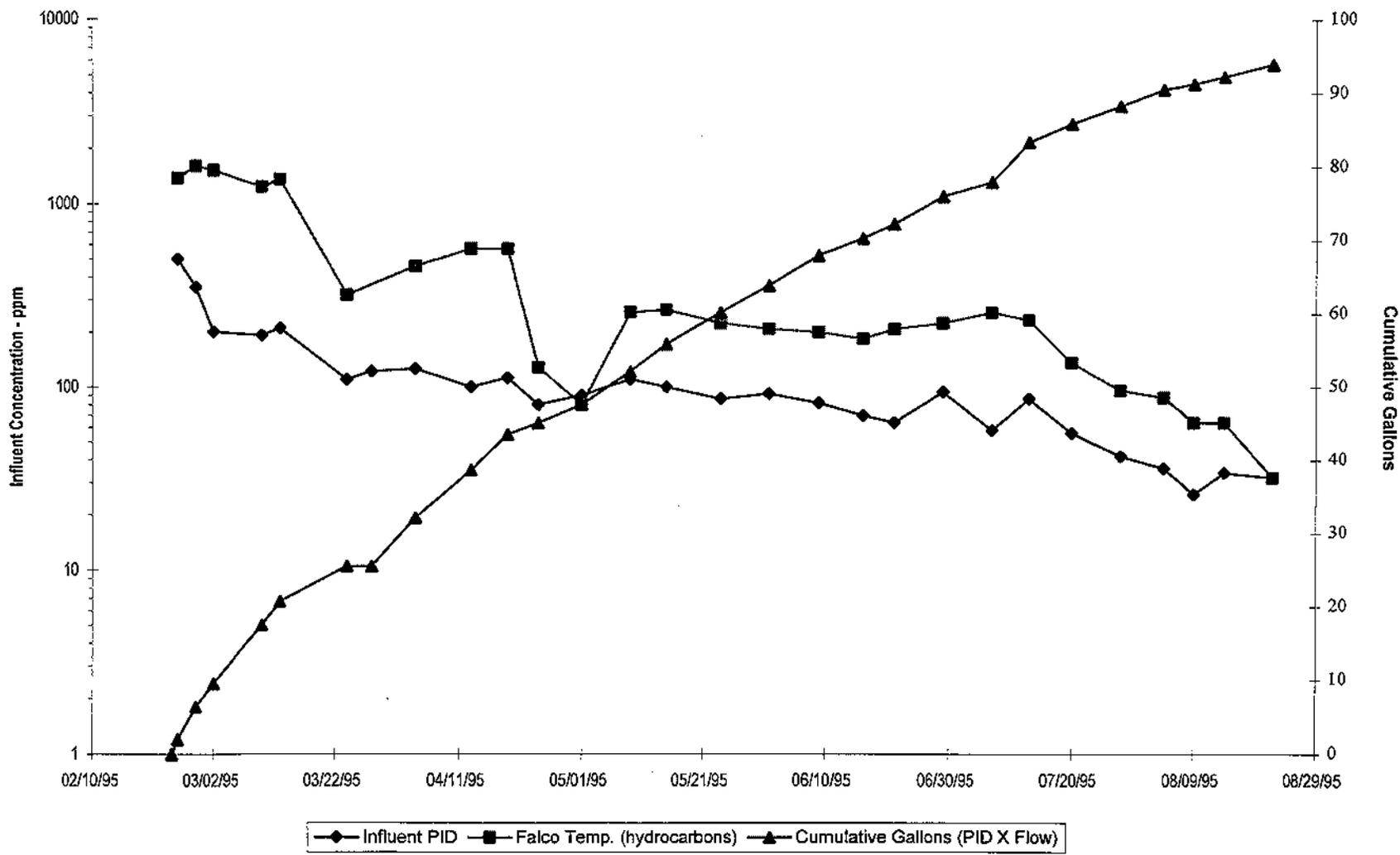
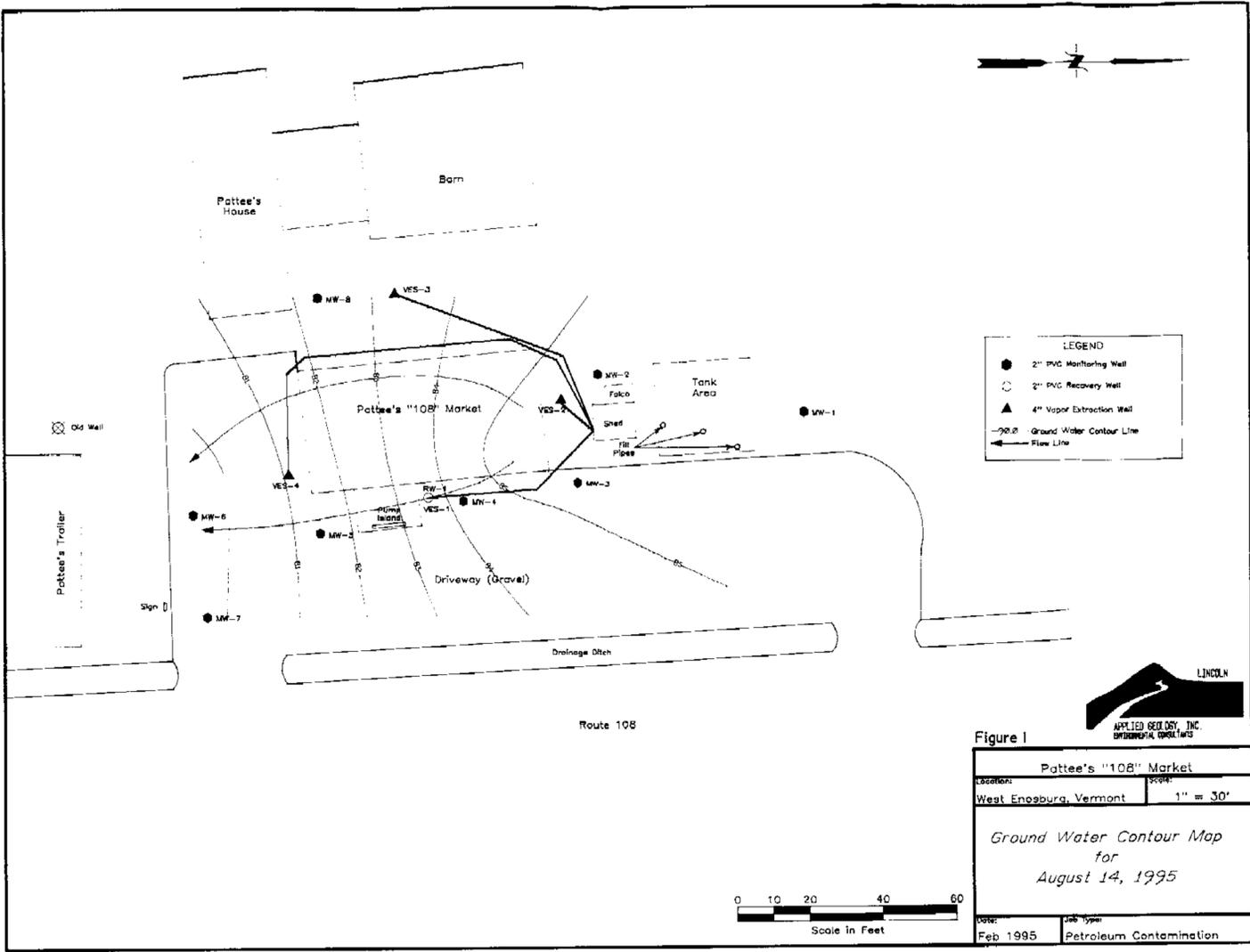
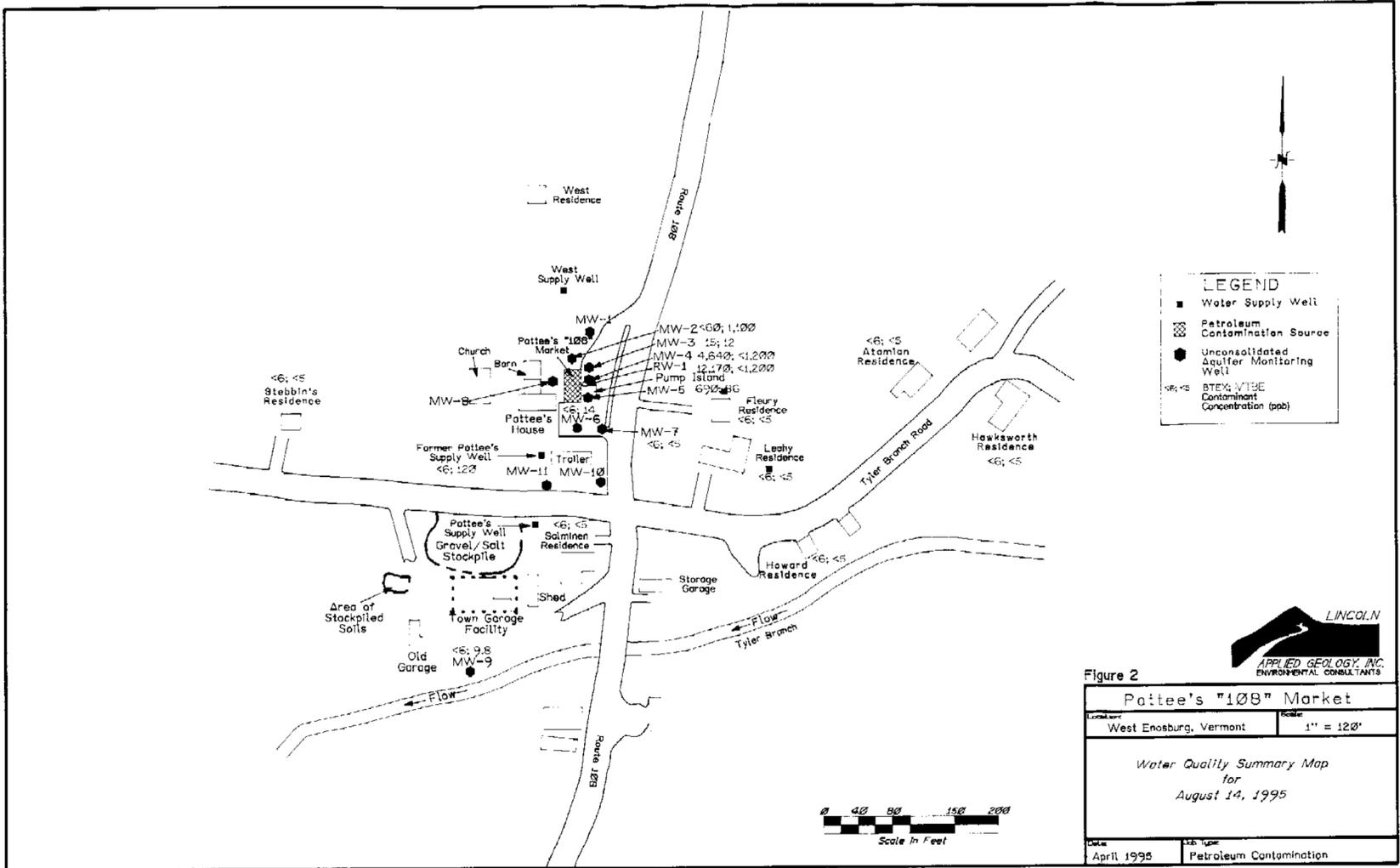


Chart 3





Appendix A

August 1995 Analytical Results

SP 1 & 2

Green Mountain Laboratories, Inc.

RR#3 Box 5210
Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

CLIENT NAME:	Lincoln Applied Geology	REF #:	0130
ADDRESS:	RD1 Box 710 Bristol, Vermont 05443	PROJECT NO.:	not given
SAMPLE LOCATION:	Pattee's	DATE OF SAMPLE:	8/14/95
SAMPLER:	James Robideau	DATE OF RECEIPT:	8/14/95
		DATE OF ANALYSIS:	8/15-17/95
ATTENTION:	Rick Vandenburg	DATE OF REPORT:	8/17/95 - 8/20/95

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. The trip blank was prepared by the client from reagent water supplied by the laboratory.
- 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 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:



Director, Chemical Services

21 35

100%

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Howard
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	12:15
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 15, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 103 %

ND = Not Detected

Green Mountain Laboratories, Inc.

RR#3, Box 5210
Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Fleury
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	12:05
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 15, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 99.9 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Leahy
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	12:00
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 15, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 103 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Stabbin's
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	11:40
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 15, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL ($\mu\text{g/L}$)	Conc. ($\mu\text{g/L}$)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 101 %

ND = Not Detected.

21-95

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Atamian
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	11:25
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 15, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 101 %

ND = Not Detected.

21-00

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Salminen
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	11:00
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 15, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 102 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Hawksworth
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	11:20
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL ($\mu\text{g/L}$)	Conc. ($\mu\text{g/L}$)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 98.5 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210
Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Trip
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	8:00
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 15, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL ($\mu\text{g/L}$)	Conc. ($\mu\text{g/L}$)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 102 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Mid
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	10:45
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	11

Surrogate % Recovery: 95.4 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210
Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 17, 1995	STATION:	Effluent
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	10:45
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 96.7 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210
Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	Influent
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	10:45
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	10

Surrogate % Recovery: 98.4 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210
Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	Pattee's Old Well
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	12:20
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	120

Surrogate % Recovery: 99.5 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	MW-9
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	12:40
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	1.4
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	9.8

Surrogate % Recovery: 98.4 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	MW-7
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	12:30
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL ($\mu\text{g/L}$)	Conc. ($\mu\text{g/L}$)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	ND

Surrogate % Recovery: 97.6 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	MW-6
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	13:05
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
Xylenes	3	ND
MTBE	5	14

Surrogate % Recovery: 97.9 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	MW-3
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	12:50
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	2.8
Toluene	1	5.9
Ethylbenzene	1	ND
Xylenes	3	5.3
MTBE	5	12

Surrogate % Recovery: 98.6 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	MW-2
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	13:15
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	10	ND
Toluene	10	ND
Ethylbenzene	10	ND
Xylenes	30	ND
MTBE	50	1100

Surrogate % Recovery: 98.6 %

ND = Not Detected.

Green Mountain Laboratories, Inc.

RR#3, Box 5210
Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	MW-5
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	13:25
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 17, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	5	10
Toluene	5	130
Ethylbenzene	5	20
Xylenes	15	530
MTBE	25	86

Surrogate % Recovery: 92.5 %

27

Green Mountain Laboratories, Inc.

RD#1, Box 5210
Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Patee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	MW-4
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	13:40
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 16, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	250	ND
Toluene	250	550
Ethylbenzene	250	440
Xylenes	750	3400
MTBE	1,200	ND

Surrogate % Recovery: 96.7%

ND = Not Detected.

2

Green Mountain Laboratories, Inc.

RR#3, Box 5210

Montpelier, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

LABORATORY RESULTS

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

CLIENT NAME:	Lincoln Applied Geology	PROJECT CODE:	not given
PROJECT NAME:	Pattee's	GML REF.#:	0130
REPORT DATE:	August 20, 1995	STATION:	RW-1
DATE SAMPLED:	August 14, 1995	TIME SAMPLED:	13:50
DATE RECEIVED:	August 14, 1995	SAMPLER:	James Robideau
ANALYSIS DATE:	August 17, 1995	SAMPLE TYPE:	Water

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	250	890
Toluene	250	4900
Ethylbenzene	250	380
Xylenes	750	6000
MTBE	1200	ND

Surrogate % Recovery: 97.9 %

ND = Not Detected

10/10

G. M. L

CHAIN OF CUSTODY RECORD



DEPARTMENT OF VERMONT

RR#3 Box 5210 P.O. Box 189

Montpelier, VT 05602

Ph. (802)223-1468 Fax (802)223-8688

ANALYSIS REQUESTED

Page 2 of 2
MAV # 0130

CLIENT NAME: LINCOLN APPLIED GEOLOGY
ADDRESS: R01 BOX 710 BRISTOL, VT 05442
PROJECT NAME: PATTEC'S
PROJECT NUMBER:
PROJECT MANAGER: Rich V
AMPLER: James R

BTEX - MPAE

Sample Location	Date	Time	# of cont.	pres ervd	Sample Type														REMARKS:
MW-6	8-14-95	1:05	2	HCL	HOMILI	✓													1x
MW-2	8-14-95	1:15	2	HCL	HOMILI	✓													10x
MW-5	8-14-95	1:25	2	HCL	HOMILI	✓													250x
MW-4	8-14-95	1:40	2	HCL	HOMILI	✓													250x
RW-1	8-14-95	1:50	2	HCL	HOMILI	✓													250x
MW-1	8-14-95	NO SAMPLE	2	HCL	HOMILI	✓													
MW-3	8-14-95	NO SAMPLE	2	HCL	HOMILI	✓													

Relinquished by:	Received by:	Date/Time	Relinquished by:	Received by:	Date/Time
James R					

CHAIN OF CUSTODY RECORD



MicroAssays of Vermont

RR#3 Box 5210 P.O. Box 189
Montpelier, VT 05602
Ph (802)223-1468 Fax (802)223-8688

ANALYSIS REQUESTED

Page
1 of 2
MAV #
0130

CLIENT NAME LINCOLN APPLIED GEOLOGY
ADDRESS R01 BOX 710 BRISTOL, VT 05445
PROJECT NAME PATTEE'S
PROJECT NUMBER
PROJECT MANAGER RICH V
SAMPLER JAMES R

Sample Location	Date	Time	# of cont.	pres ervd	Sample Type	B Test - MTBC	REMARKS:
TRIP	8-14-95	8:00	2	HCL	40mils	✓	1x
EFFLUENT	8-14-95	10:45	2	HCL	40mils	✓	1x
MID	8-14-95	10:45	2	HCL	40mils	✓	1x
EFFLUENT	8-14-95	10:45	2	HCL	40mils	✓	1x
SALPINX	8-14-95	11:00	2	HCL	40mils	✓	1x
HAWTHORNE	8-14-95	11:20	2	HCL	40mils	✓	1x
ATOMIAN	8-14-95	11:25	2	HCL	40mils	✓	1x
STABBIN'S	8-14-95	11:40	2	HCL	40mils	✓	1x
LEAHY	8-14-95	12:00	2	HCL	40mils	✓	1x
FLEURY	8-14-95	12:05	2	HCL	40mils	✓	1x
HOWARD	8-14-95	12:15	2	HCL	40mils	✓	1x
PATTEE'S OLDWELL	8-14-95	12:20	2	HCL	40mils	✓	1x
MW-7	8-14-95	12:30	2	HCL	40mils	✓	1x
MW-9	8-14-95	12:40	2	HCL	40mils	✓	1x
MW-3	8-14-95	12:50	2	HCL	40mils	✓	1x

Relinquished by:	Received by:	Date/Time	Relinquished by:	Received by:	Date/Time
<u>James R. Robt</u>	<u>Rich Walker</u>	<u>8/14/95 3:55pm</u>			