



November 17, 1998 10:23 AM '98

Ms. Elizabeth Farr  
Addison County Northeast  
Supervisory Union  
Airport Drive  
Bristol, Vermont 05443

98-2471

RE: Monkton Central School, Monkton, Vermont - Subsurface Contaminant Investigation Report

Dear Ms. Farr:

Lincoln Applied Geology, Inc. (LAG) is pleased to present this Subsurface Contaminant Investigation (SCI) Report for the Monkton Central School (MCS) site, located on Monkton Road in Monkton, Vermont (Figure 1). This SCI Report was prepared in response to the discovery of petroleum contaminated soils during the removal of one underground storage tank (UST) system containing #2 fuel oil on July 6, 1998. As a result, the Vermont Department of Environmental Conservation (VDEC) Sites Management Section (SMS) requested that a SCI be performed to clearly define the magnitude and extent of the contamination. The Addison County Northeast Supervisory Union (ANESU) and MCS hired LAG to complete the SCI. The contaminant investigation was performed by LAG on August 24, and September 1 and 8, 1998 and resulted in the installation and sampling of 4 ground water monitor wells. The initial UST assessment and closure report dated July 9, 1998 was performed and previously submitted by Griffin International Inc. (GI) to the VDEC Underground Storage Tank Program (USTP).

NO  
Expressing  
site

In general, data collected during the SCI indicates that soil downgradient of the former UST and distribution piping has not been impacted by the petroleum contamination noted during the UST system removal. The sensitive receptor survey indicates that the MCS indoor air and its water supply have not been impacted. Review of the water quality data indicates that with the exception of very low concentrations [below VDEC ground water quality enforcement standards (GQES)] of benzene, toluene, xylenes, and total petroleum hydrocarbons (TPH) present in ground water monitor well MW-2, no other petroleum constituents were quantified above analytical detection limits in the 3 remaining monitor wells and the drilled bedrock well that supplies potable water to the MCS. Based on these data, we recommend that a second water quality sampling event be performed in March 1999 to confirm the low levels of petroleum contaminants and determine whether they are increasing or decreasing. If contaminant levels are decreasing then we will request that a Site Management Activity Completed (SMAC) designation be granted for the MCS site, resulting in the "closure" of contaminant-related activities.

Enclosed for your use in reviewing this SCI Report are the following tables, figures, and appendices.

Table 1	.....	Ground Water Elevation
Table 2	.....	Well Headspace PID Assays
Table 3	.....	Ground Water Quality Results
Figure 1	.....	General Location Map

Figure 2	Detailed Site Map
Figure 3	Ground Water Contour Map for September 1, 1998
Figure 4	Water Quality Summary Map for September 8, 1998
Appendix A	LAG Detailed Well Logs
Appendix B	Laboratory Reports for July 28 and September 8, 1998
Appendix C	Cost Estimate

### Site History

On July 6, 1998, the combined efforts of Kingsbury Construction Co. (KC), MacIntyre Fuels Inc. (MFI), and Griffin International (GI) completed the removal and closure of one 6,000 gallon #2 fuel oil UST at the MCS site in Monkton, Vermont. The UST was noted in fair condition with major pitting on its exterior. No holes or perforations were noted during the inspection of the UST. The distribution piping was also removed and inspected during the UST closure. The piping was noted in poor condition and a leak in the piping was discovered approximately 25 feet northeast of the former UST location (Figure 2). Soils beneath the UST and distribution piping were excavated to depths of 9 and 4 feet below grade, respectively. Photoionization detector (PID) readings in the UST excavation ranged between background (BG) levels and 118 parts per million (ppm) near the fill port location at 2.5 feet below grade. The three soil samples collected from along the UST distribution piping ranged between 40 ppm and 122 ppm (leak location) as assayed by PID. As mentioned in the GI UST closure report, no soils were removed from these excavations.

The MCS and ANeSU contacted LAG (after receiving the GI UST report) to collect a sample of water from the MCS drilled bedrock well and have it analyzed for VOCs. It was collected on July 28<sup>th</sup>, and the laboratory report is included in Appendix A. Review of Appendix A indicates that no VOCs were detected except 2.4 parts per billion (ppb) tetrahydrofuran, which is attributed to laboratory contamination.

Based on the results of the July 1998 UST removal and collected data, the VDEC SMS requested that additional work be performed to further define the degree and extent of the petroleum contamination. Lincoln Applied Geology, Inc. (LAG) was contracted by the ANeSU and MCS to perform the requested subsurface investigation. LAG installed four on-site ground water monitor wells (MW-1, 2, 3, and 4) on August 24, 1998. LAG also conducted a sensitive receptor survey and monitored the ambient air space of the MCS building.

On September 1<sup>st</sup> ground water levels and well headspace volatile organic compound (VOC) vapor levels were monitored. Once static ground water levels were recorded, the wells were appropriately developed and allowed one week to stabilize prior to the collection of ground water samples. On September 8<sup>th</sup> ground water samples were collected from all monitor wells (MW-1, 2, 3, and 4) and the MCS bedrock well. All water samples were analyzed for the presence of petroleum related compounds including: benzene, toluene, ethylbenzene, and xylenes (BTEX); methyl-tert-butyl-ether (MTBE); and TPH.



Review of the September 8<sup>th</sup> water quality data shows that very low concentrations of benzene, toluene, xylenes, and TPH were present in MW-2. However, these concentrations are all below the GQES. The data also shows BTEX, MTBE, and TPH were quantified above analytical method detection limits in the remaining wells sampled. Data collected during the sensitive receptor survey indicates that the indoor ambient air of the MCS building and the bedrock well water supply have not been impacted by petroleum contaminants.

### Site Geology

On August 24<sup>th</sup> monitor wells MW-1, 2, 3, and 4 were drilled and installed using hollow stem auger drilling techniques by T&K Drilling of Troy, New Hampshire. Two foot long soil samples were collected at five foot intervals, descriptively logged, and screened by PID (with a 10.0 eV lamp) for the presence of VOCs. A PVC monitor well was installed in each boring. Locations of the four monitor wells are shown on Figures 2, 3, and 4.

Unconsolidated soils encountered on-site included a thin layer of fill material over dense, low permeability fine sandy silt glacial till. Auger refusals at depths of 13.5', 11.0', 10.5', and 8.5' were noted in MW-1, 2, 3 and 4, respectively. The presence of about 80 feet of glacial till sediments in the MCS drilled well indicates that refusal was due to boulders or dense silts and not the bedrock surface. Review of the Centennial Geologic Map of Vermont (C.G. Doll, 1961) indicates that the underlying bedrock in this region is the Monkton Quartzite formation of the Lower Cambrian Period (570 to 540 million years ago) and consists of a distinctive red quartzite, interbedded with a white quartzite or a dolomite.

The LAG well logs including soil descriptions, PID levels, and well construction details are included as Appendix B. Review of Appendix B indicates that no PID readings were detected above background (BG) levels in any of the soil borings.

### Ground Water Level and Well Headspace PID Monitoring

On September 1<sup>st</sup> static ground water level measurements and well headspace vapor level data were collected from all monitor wells. LAG conducted a top of casing (TOC) stadia survey of all monitor wells and other on-site features pertinent to the SCI on September 16<sup>th</sup>. No free phase petroleum product has been detected by LAG in any wells on-site to date. A summary of ground water elevation data is presented in Table 1, and PID assay results are included in Table 2. Review of these data indicate that depth to ground water varied from 1.0 foot below TOC (MW-1) to 3.75 feet (MW-4). Review of Table 2 indicates that all PID readings in the monitor wells and the MCS building ambient airspace were at BG. These data indicate that there is no vapor phase contamination in soils downgradient of the former UST and piping and in the soils around the monitor wells.



### Site Hydrogeology

Ground water elevation data from September 1<sup>st</sup> was used to prepare a Ground Water Contour Map of the shallow ground water system presented as Figure 3. In general, ground water flows westerly across the site in the area of the wells. A low ground water gradient of 0.046 feet/foot was calculated using data from MW-1 and MW-3.

### Water Quality Sampling

On September 8<sup>th</sup> water quality samples were collected from monitor wells MW-1, 2, 3, 4 and the MCS drilled bedrock well. All samples were analyzed along with a trip blank for BTEX and MTBE via EPA Method 8020, and TPH via EPA Method 8100 at Green Mountain Laboratories, Inc. in Montpelier, Vermont.

The water quality results are summarized in Table 3 and are presented on the Water Quality Summary Map included as Figure 4. The laboratory reports are included as Appendix A. Review of Table 3, Figure 4, and Appendix A indicate that only very low concentrations of benzene (1.4 parts ppb), toluene (1.4 ppb), xylenes (3.7 ppb), and TPH (0.38 ppm) were present in MW-2. All concentrations are below the GQES. Petroleum constituents were not quantified above analytical detection limits in the remaining monitor wells sampled or the MCS drilled bedrock well. Based on these water quality data, ground water in the vicinity of MW-2 has only been slightly impacted by very low levels of dissolved phase petroleum contaminants.

### Potential Sensitive Receptors

On August 24<sup>th</sup> LAG conducted a sensitive receptor survey of the site and the MCS building. Potential sensitive receptors include indoor air from the MCS building and the drilled bedrock well (Figure 2) serving potable water to the school. As presented in Table 2, PID assays of the MCS building indoor air yielded only BG levels. Water quality samples collected from the drilled bedrock well (September 8, 1988) did not contain concentrations of petroleum constituents above analytical detection limits. Based on these data, LAG concludes that there are currently no health-related risks associated with the residual contamination remaining in soils in the vicinity of the former UST and distribution line, and in ground water in the vicinity of MW-2.

### Conclusions

Based on field observations and data collected during the SCI, the following conclusions are made:

1. One 6,000 gallon UST, used to store #2 fuel oil for heating purposes, was excavated and removed from the site on July 6, 1998.
2. The UST was noted in fair condition with no holes or perforations.

3. The UST distribution piping was noted in poor condition with a small leak approximately 25 feet northeast of the former UST location.
4. Soil PID levels ranged between BG and 122 ppm during the UST and distribution piping removal assessment. All soil was backfilled.
5. The depth to the shallow ground water system on-site (September 1, 1998) ranges from 1.0 foot (MW-1) to 3.75 feet (MW-4) below TOC.
6. The shallow ground water flow direction on-site is toward the west at a low gradient of 0.046 feet/foot.
7. With the exception of only very low concentrations of petroleum constituents present in MW-2 (below the GQES), no other constituents were quantified in ground water samples above analytical detection limits.
8. We believe that the limited amount of petroleum contamination identified during the July 6, 1998 UST removal will decrease over time due to the

natural attenuation processes, including dilution and biodegradation. Due to the very low permeability of the underlying glacial till soils, we do not believe that any significant migration of the limited dissolved phase petroleum contamination

Ms. Elizabeth Farr  
Page 6  
November 17, 1998

nts will  
occur.

9. Based on these data and the fact that the MCS well has 90 feet of steel casing, we believe that it is highly unlikely that the bedrock well serving the MCS will become impacted from the limited residual petroleum contamination present in soils in the vicinity of the former UST and distribution lines, and the very low concentrations present in ground water in the vicinity of MW-2.
10. Based on field observations made and data collected during the SCI, it is our professional opinion that the limited residual contamination detected during the UST removal and in ground water in the vicinity of MW-2 does not pose a health risk to students or faculty at the MCS.

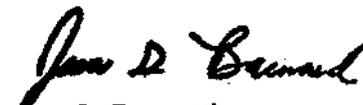
### Recommendations

Based on these conclusions, the following recommendations are made:

1. Conduct an additional complete site monitoring and ground water sampling event in March 1999 to confirm the low levels of ground water contaminants and determine whether they are increasing or decreasing.
2. After this data has been received and reviewed by LAG, a brief Summary Report will be submitted to the SMS along with an appropriate list of conclusions and recommendations for the site. If the results indicate that the contaminant levels have declined, then LAG will recommend that the site be granted a SMAC designation and no further contaminant-related activities will be performed.

A cost estimate to implement the recommended confirmatory sampling event is provided as Appendix C. If you have any questions with regards to this SCI Report, please call me or Stephen Revell, Senior Hydrogeologist, at 453-4384. We look forward to your reply and approval of the recommended work.

Sincerely,  
Lincoln Applied Geology Inc.,

  
Jason S. Bamard  
Geologist

cc: Chuck Schwer

F:\CLIENTS\WATERPRO\SCHOOLS\MONKTON\SUM1198.RPT

6

  
Lincoln Applied Geology, Inc  
Environmental Consultants

163 Revell Road • Lincoln, Vermont 05443 • (802) 453-4384 • FAX (802) 453-5399

Project: Monkton Central School  
Location: Monkton, Vermont

Table 1  
Sheet 1 of 1

**Ground Water Elevation/Product Level (feet)**

Data Point	TOC	09/01/98					
MW-1	100.00	99.00					
MW-2	100.73	97.93					
MW-3	99.99	96.04					
MW-4	100.21	96.46					

Notes:

- 1 - Elevation datum assumed
  - 2 - Reference elevation is elevation of top of PVC well casing
- Light Grey Cell = DRY  
Dark Grey Cell = Inaccessible

**Photoionization Results (PID - ppm)**

Data Point	08/24/98	09/01/98				
MW-1		BG				
MW-2		BG				
MW-3		BG				
MW-4		BG				
MCS Building	BG					

Notes:  
BG - Background  
SL - Saturated Lamp

Water Quality Results

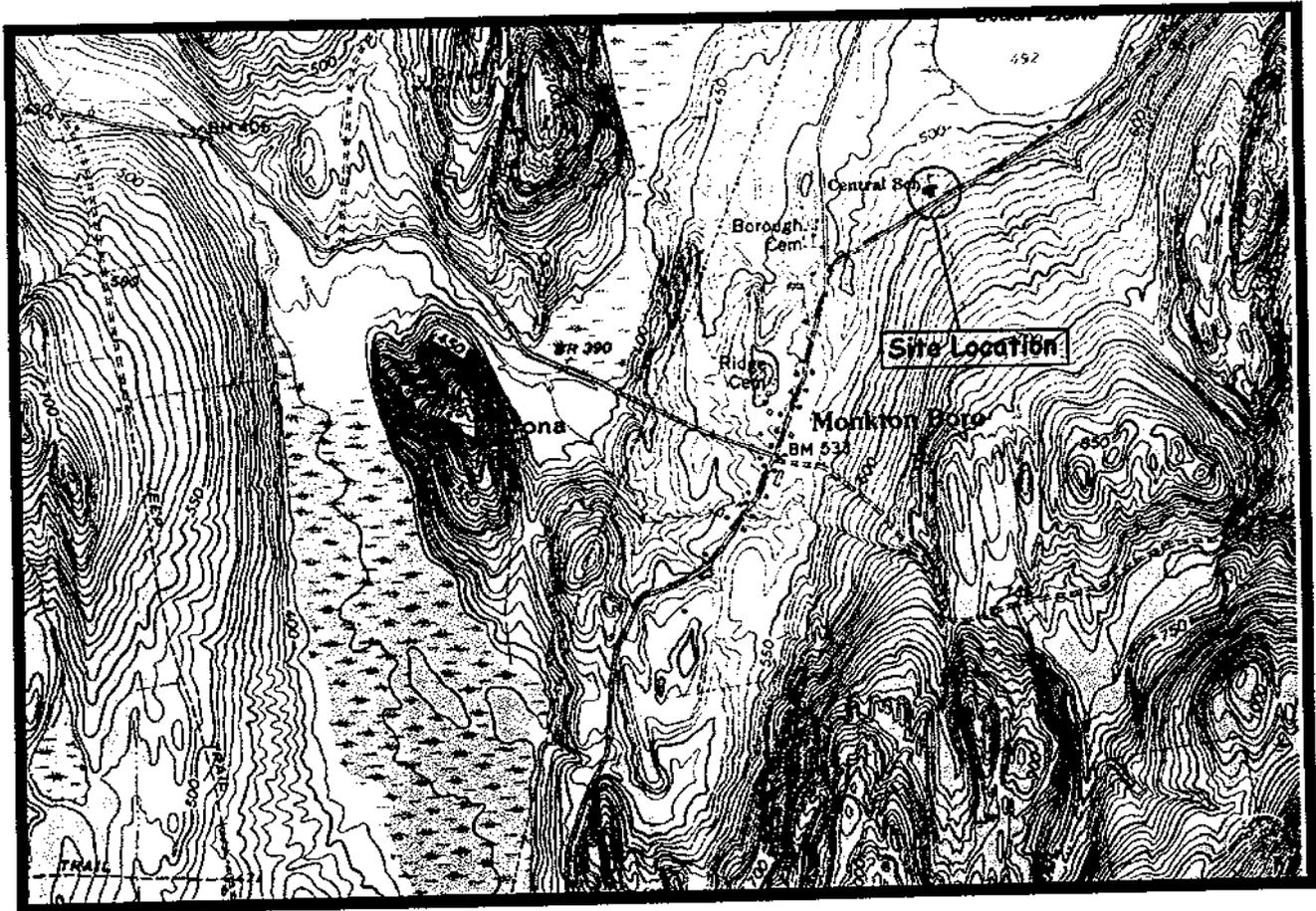
Data Point	Compound	09/08/98				
MW-1	Benzene		<1			
	Toluene		<1			
	Ethylbenzene		<1			
	Xylenes		<3			
	MTBE		<5			
	BTEX	<6				
	TPH (8100)		<0.1			
MW-2	Benzene		1.4			
	Toluene		1.4			
	Ethylbenzene		<1			
	Xylenes		3.7			
	MTBE		<5			
	BTEX	7.5				
	TPH (8100)		0.38			
MW-3	Benzene		<1			
	Toluene		<1			
	Ethylbenzene		<1			
	Xylenes		<3			
	MTBE		<5			
	BTEX	<6				
	TPH (8100)		<0.1			
MW-4	Benzene		<1			
	Toluene		<1			
	Ethylbenzene		<1			
	Xylenes		<3			
	MTBE		<5			
	BTEX	<6				
	TPH (8100)		<0.1			
SCHOOL DRILLED WELL	Benzene		<1			
	Toluene		<1			
	Ethylbenzene		<1			
	Xylenes		<3			
	MTBE		<5			
	BTEX	<6				
	TPH (8100)		<0.1			
TRIP BLANK	Benzene		<1			
	Toluene		<1			
	Ethylbenzene		<1			
	Xylenes		<3			
	MTBE		<5			
	BTEX	<6				

Note:  
 BTEX and MTBE concentrations quantified in parts per billion (ppb)  
 TPH concentrations quantified in parts per million (ppm)

Figure 1

**Monkton Central School  
Monkton, Vermont**

**GENERAL LOCATION MAP**



Scale 1" = 2,000'

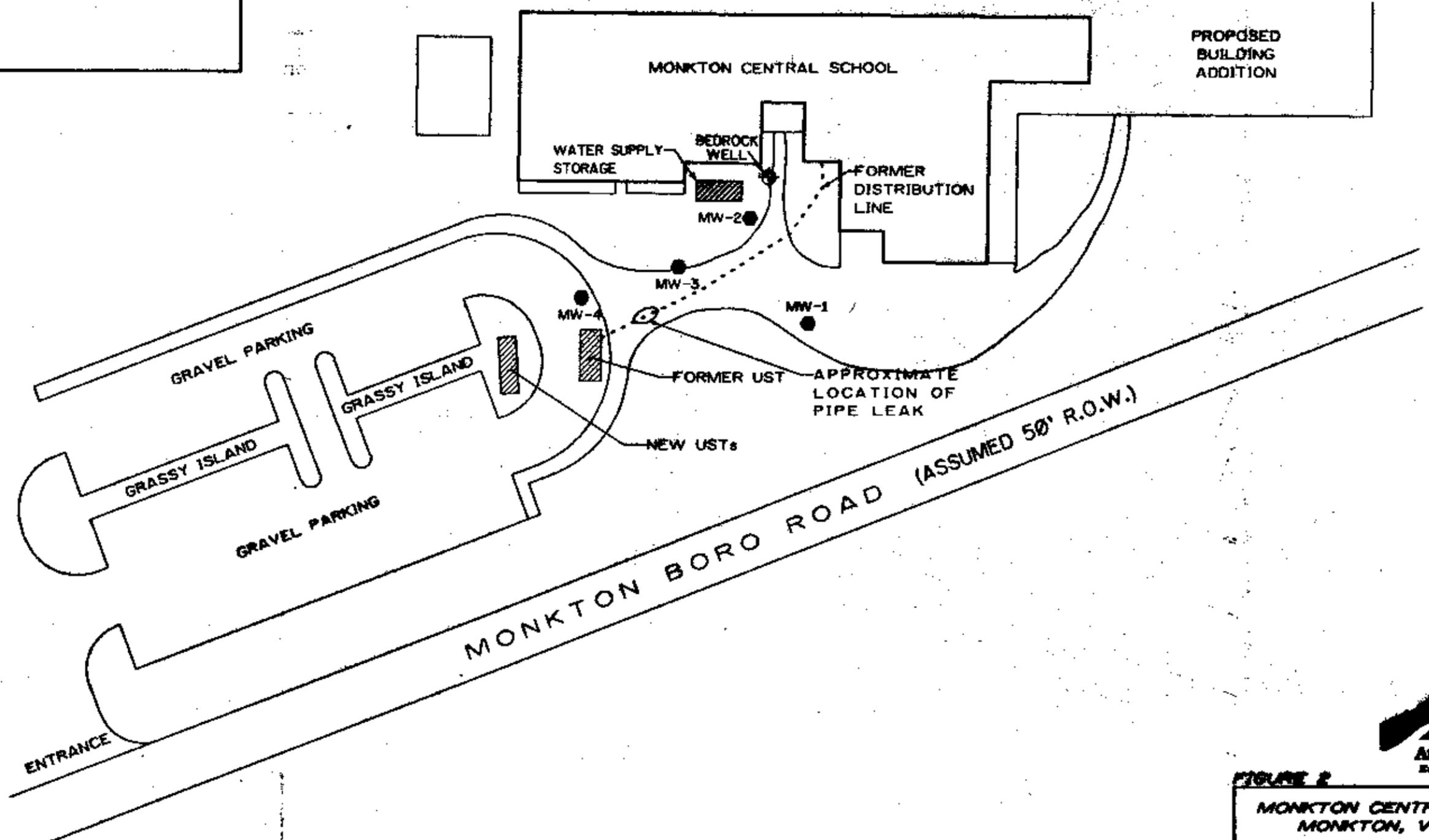
**MONKTON BORO, VT.**  
(FORMERLY MONKTON)  
NW/4 MIDDLEBURY 15' QUADRANGLE  
44073-B2-TF-024  
PHOTOINSPECTED 1983  
1963  
PHOTOREVISED 1972  
DMA 6372 II NW - SERIES V813



QUADRANGLE LOCATION

**LEGEND**

- ◆ BEDROCK WELL
- MONITORING WELL



**FIGURE 2**

**MONKTON CENTRAL SCHOOL  
MONKTON, VERMONT**

**DETAILED SITE MAP**

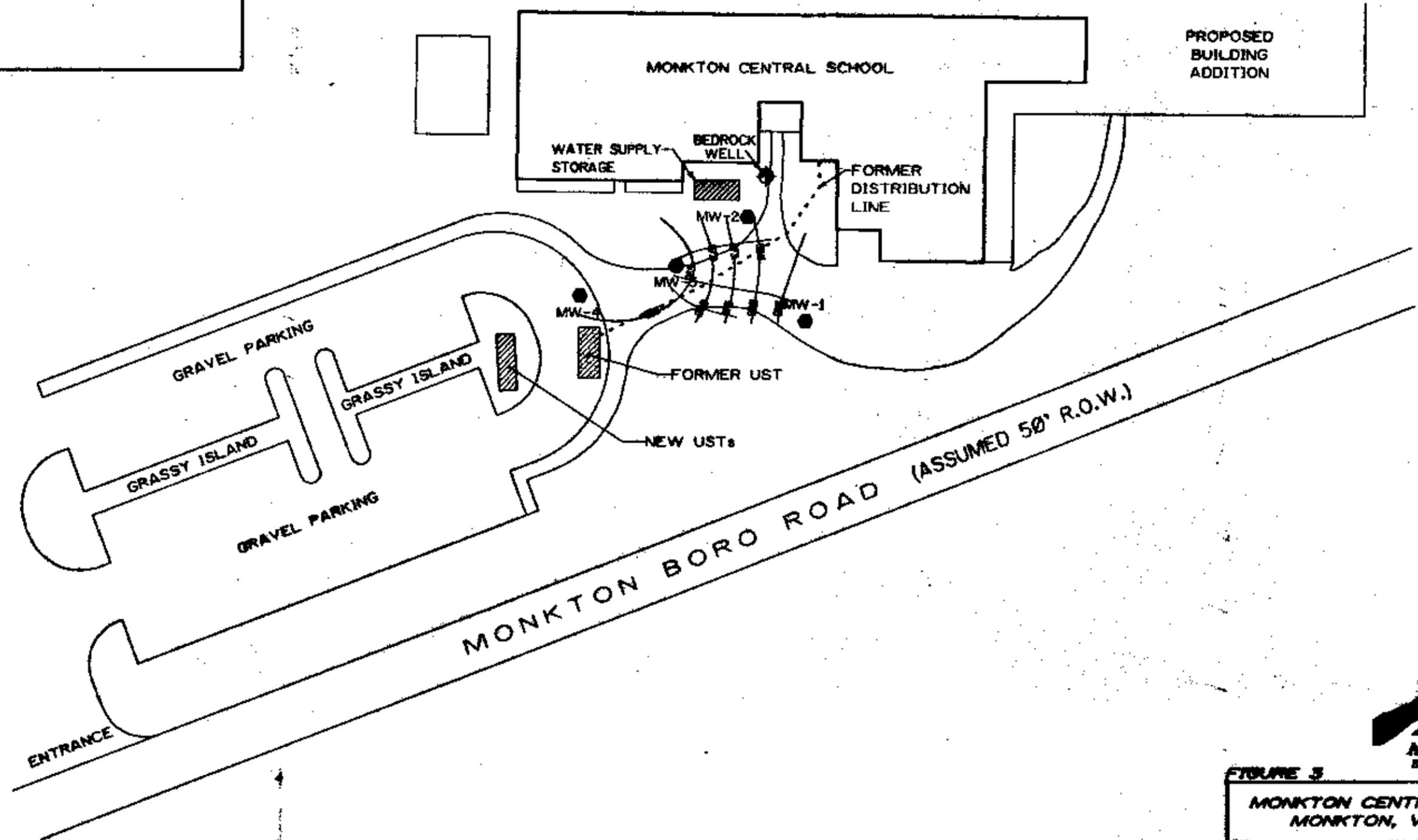
Date SEPT 98	Job Name SITE INVESTIGATION	Scale 1" = 50'
-----------------	--------------------------------	-------------------

NOTE: PORTIONS OF THIS MAP WERE TAKEN FROM MAP TITLED "MONKTON CENTRAL SCHOOL ADDITION AND RENOVATIONS" GENERATED BY PINKHAM ENGINEERING ASSOCIATES, INC.



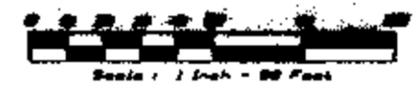
**LEGEND**

- ◆ BEDROCK WELL
- MONITORING WELL
- 90° GROUND WATER ELEVATION CONTOUR LINE
- GROUND WATER FLOW DIRECTION



**FIGURE 3**  
**MONKTON CENTRAL SCHOOL**  
**MONKTON, VERMONT**  
**GROUND WATER ELEVATION**  
**CONTOUR MAP**  
**FOR**  
**SEPTEMBER 1, 1998**

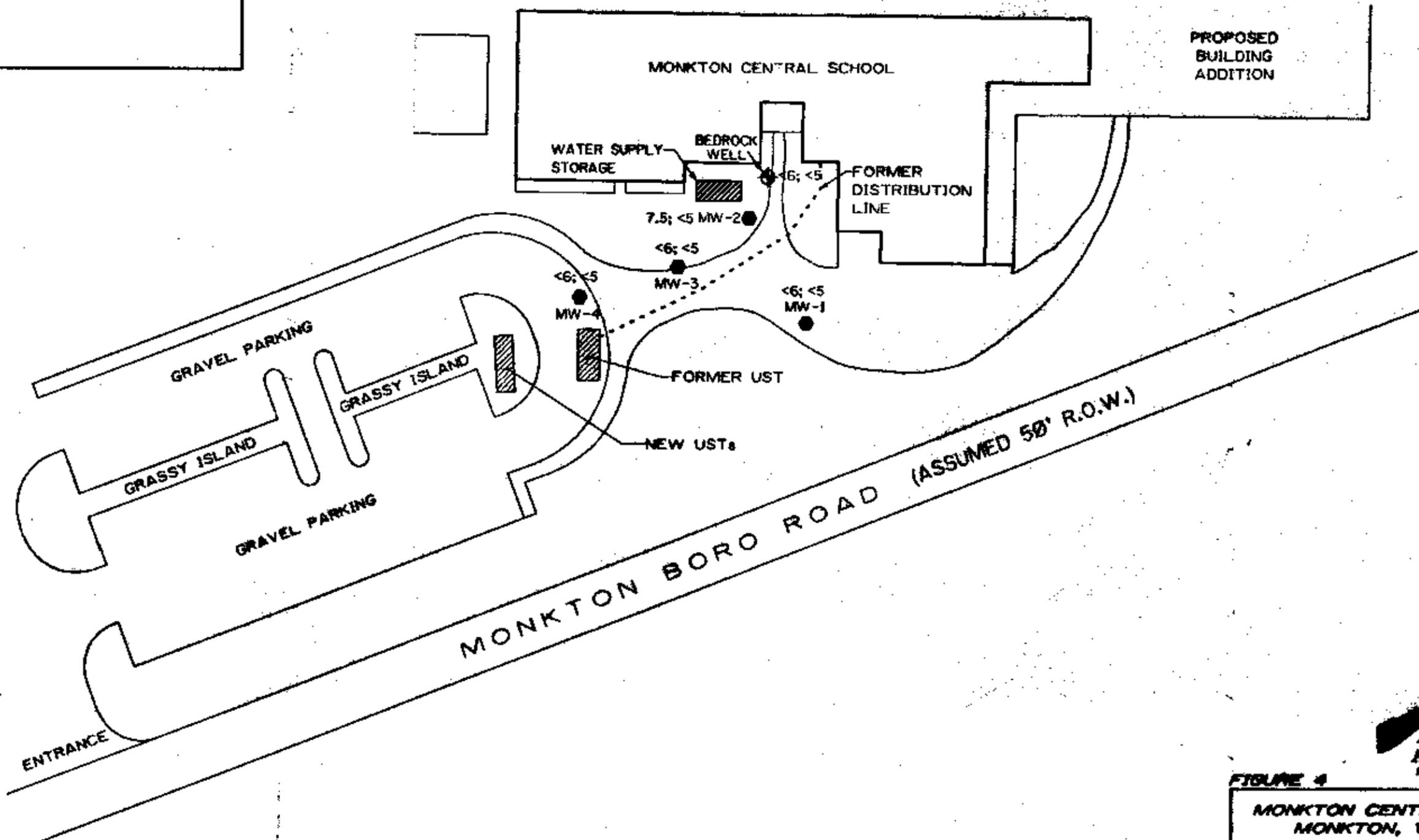
NOTE: PORTIONS OF THIS MAP WERE TAKEN FROM MAP TITLED, "MONKTON CENTRAL SCHOOL ADDITION AND RENOVATIONS" GENERATED BY PINKHAM ENGINEERING ASSOCIATES, INC.



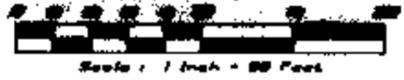
Date	Job Name	Scale
SEPT 98	SITE INVESTIGATION	1" = 50'

**LEGEND**

- ◆ BEDROCK WELL
- MONITORING WELL
- <6; <5 BTEX; MTBE CONTAMINANT CONCENTRATION (PPB)



NOTE: PORTIONS OF THIS MAP WERE TAKEN FROM MAP TITLED "MONKTON CENTRAL SCHOOL ADDITION AND RENOVATIONS" GENERATED BY PINKHAM ENGINEERING ASSOCIATES, INC.



**FIGURE 4**

**MONKTON CENTRAL SCHOOL  
MONKTON, VERMONT**

**WATER QUALITY  
SUMMARY MAP  
FOR  
SEPTEMBER 8, 1998**

Date: SEPT 88	Job Type: SITE INVESTIGATION	Scale: 1" = 50'
------------------	---------------------------------	--------------------

Appendix A

Laboratory Reports  
for  
July 28 and September 8, 1998



# Intertek Testing Services Environmental Laboratories

The following Qualifiers may be used when reporting any Organic Parameters analyzed by Gas Chromatography/Mass Spectrometry (GCMS). Any additional qualifiers used in the reports will be described in the case narrative. These flags are based on the EPA Contract Laboratory Program statement of work.

## GC/MS Qualifiers

A = The reported Tentatively Identified Compound (TIC) is a suspected aldol-condensation product.

B = The reported analyte was detected in the associated method blank as well as the sample.

D = Compound is identified in an analysis which occurred at a dilution.

E = Compound quantitation is above the instrument's calibration range for this analysis.

J = Indicates an estimated quantitation value below reporting limit.

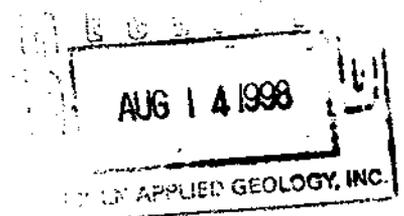
NJ = The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

U = Compound was analyzed for but not detected.

X = The reported compound is a suspected laboratory contaminant.

Y = An additional qualifier which will be defined at the time of use by the data reviewer.

Z = The reported result is based on the combined responses from coeluting compounds.



FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

BEDROCK WELL

Lab Name: ITS ENVIRONMENTAL Contract: 98000  
 Lab Code: INCHVT Case No.: 98000 SAS No.: SDG No.: 70050  
 Matrix: (soil/water) WATER Lab Sample ID: 361814  
 Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L361814V  
 Level: (low/med) LOW Date Received: 08/03/98  
 % Moisture: not dec. \_\_\_\_\_ Date Analyzed: 08/04/98  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0  
 Soil Extract Volume: \_\_\_\_\_ (uL) Soil Aliquot Volume: \_\_\_\_\_ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl Chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
60-29-7	Diethyl Ether	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
67-64-1	Acetone	5.0	U
74-88-4	Methyl Iodide	0.50	U
75-15-0	Carbon Disulfide	0.50	U
107-05-1	Allyl Chloride	0.50	U
75-09-2	Methylene Chloride	0.50	U
107-13-1	Acrylonitrile	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl-t-Butyl Ether	0.50	U
75-34-3	1,1-Dichloroethane	0.50	U
590-20-7	2,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	5.0	U
107-12-0	Propionitrile	25	U
96-33-3	Methyl Acrylate	0.50	U
74-97-5	Bromochloromethane	0.50	U
126-98-7	Methacrylonitrile	0.50	U
109-99-9	Tetrahydrofuran	2.4	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
109-69-3	1-Chlorobutane	0.50	U
56-23-5	Carbon Tetrachloride	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

FORM I VOA

AUG 14 1998  
 LINCOLN APPLIED GEOLOGY, INC

FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

BEDROCK WELL

Lab Name: ITS ENVIRONMENTAL

Contract: 98000

Lab Code: INCHVT

Case No.: 98000

SAS No.:

SDG No.: 70050

Matrix: (soil/water) WATER

Lab Sample ID: 361814

Sample wt/vol: 5.000 (g/mL) ML

Lab File ID: L361814V

Level: (low/med) LOW

Date Received: 08/03/98

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 08/04/98

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

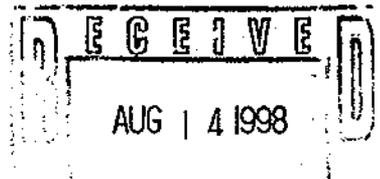
Soil Extract Volume: \_\_\_\_\_ (uL)

Soil Aliquot Volume: \_\_\_\_\_ (uL)

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) UG/L Q

79-01-6-----	Trichloroethene	0.50	U
78-87-5-----	1,2-Dichloropropane	0.50	U
74-95-3-----	Dibromomethane	0.50	U
80-62-6-----	Methyl Methacrylate	0.50	U
75-27-4-----	Bromodichloromethane	0.50	U
107-14-2-----	Chloroacetonitrile	25	U
10061-01-5-----	cis-1,3-Dichloropropene	0.50	U
513-88-2-----	1,1-Dichloropropanone	25	U
108-10-1-----	4-Methyl-2-Pentanone	2.5	U
79-46-9-----	2-Nitropropane	25	U
108-88-3-----	Toluene	0.50	U
10061-02-6-----	trans-1,3-Dichloropropene	0.50	U
97-63-2-----	Ethyl Methacrylate	0.50	U
79-00-5-----	1,1,2-Trichloroethane	0.50	U
127-18-4-----	Tetrachloroethene	0.50	U
142-28-9-----	1,3-Dichloropropane	0.50	U
591-78-6-----	2-Hexanone	2.5	U
124-48-1-----	Dibromochloromethane	0.50	U
106-93-4-----	1,2-Dibromoethane	0.50	U
108-90-7-----	Chlorobenzene	0.50	U
630-20-6-----	1,1,1,2-Tetrachloroethane	0.50	U
100-41-4-----	Ethylbenzene	0.50	U
1330-20-7-----	m- & p-Xylene	0.50	U
95-47-6-----	o-Xylene	0.50	U
100-42-5-----	Styrene	0.50	U
75-25-2-----	Bromoform	0.50	U
1330-20-7-----	Xylene (total)	0.50	U
98-82-8-----	Isopropylbenzene	0.50	U
108-86-1-----	Bromobenzene	0.50	U
79-34-5-----	1,1,2,2-Tetrachloroethane	0.50	U
96-18-4-----	1,2,3-Trichloropropane	0.50	U
110-57-6-----	trans-1,4-Dichloro-2-butene	0.50	U
95-49-8-----	2-Chlorotoluene	0.50	U

FORM I VOA



FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

BEDROCK WELL

Lab Name: ITS ENVIRONMENTAL

Contract: 98000

Lab Code: INCHVT

Case No.: 98000

SAS No.:

SDG No.: 70050

Matrix: (soil/water) WATER

Lab Sample ID: 361814

Sample wt/vol: 5.000 (g/mL) ML

Lab File ID: L361814V

Level: (low/med) LOW

Date Received: 08/03/98

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 08/04/98

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: \_\_\_\_\_ (uL)

Soil Aliquot Volume: \_\_\_\_\_ (uL)

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

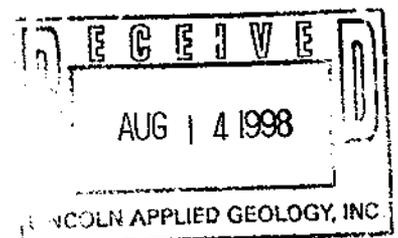
CAS NO.

COMPOUND

Q

106-43-4-----	4-Chlorotoluene	0.50	U
103-65-1-----	n-Propylbenzene	0.50	U
108-67-8-----	1,3,5-Trimethylbenzene	0.50	U
76-01-7-----	Pentachloroethane	0.50	U
98-06-6-----	tert-Butylbenzene	0.50	U
95-63-6-----	1,2,4-Trimethylbenzene	0.50	U
135-98-8-----	sec-Butylbenzene	0.50	U
541-73-1-----	1,3-Dichlorobenzene	0.50	U
99-87-6-----	p-Isopropyltoluene	0.50	U
106-46-7-----	1,4-Dichlorobenzene	0.50	U
95-50-1-----	1,2-Dichlorobenzene	0.50	U
104-51-8-----	n-Butylbenzene	0.50	U
67-72-1-----	Hexachloroethane	0.50	U
96-12-8-----	1,2-Dibromo-3-Chloropropane	0.50	U
98-95-3-----	Nitrobenzene	0.50	U
120-82-1-----	1,2,4-Trichlorobenzene	0.50	U
87-68-3-----	Hexachlorobutadiene	0.50	U
91-20-3-----	Naphthalene	0.50	U
87-61-6-----	1,2,3-Trichlorobenzene	0.50	U

FORM I VOA



FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

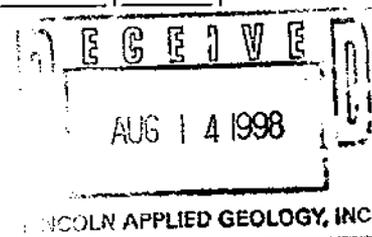
TRIP BLANK

Lab Name: ITS ENVIRONMENTAL Contract: 98000  
 Lab Code: INCHVT Case No.: 98000 SAS No.: SDG No.: 70050  
 Matrix: (soil/water) WATER Lab Sample ID: 361813  
 Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L361813V  
 Level: (low/med) LOW Date Received: 08/03/98  
 % Moisture: not dec. \_\_\_\_\_ Date Analyzed: 08/04/98  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0  
 Soil Extract Volume: \_\_\_\_\_ (uL) Soil Aliquot Volume: \_\_\_\_\_ (uL)

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
75-71-8	Dichlorodifluoromethane	0.50	U
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl Chloride	0.50	U
74-83-9	Bromomethane	0.50	U
75-00-3	Chloroethane	0.50	U
75-69-4	Trichlorofluoromethane	0.50	U
60-29-7	Diethyl Ether	0.50	U
75-35-4	1,1-Dichloroethene	0.50	U
67-64-1	Acetone	200	E
74-88-4	Methyl Iodide	0.50	U
75-15-0	Carbon Disulfide	0.50	U
107-05-1	Allyl Chloride	0.50	U
75-09-2	Methylene Chloride	0.50	U
107-13-1	Acrylonitrile	0.50	U
156-60-5	trans-1,2-Dichloroethene	0.50	U
1634-04-4	Methyl-t-Butyl Ether	0.42	J
75-34-3	1,1-Dichloroethane	0.50	U
590-20-7	2,2-Dichloropropane	0.50	U
156-59-2	cis-1,2-Dichloroethene	0.50	U
78-93-3	2-Butanone	340	E
107-12-0	Propionitrile	25	U
96-33-3	Methyl Acrylate	0.50	U
74-97-5	Bromochloromethane	0.50	U
126-98-7	Methacrylonitrile	0.50	U
109-99-9	Tetrahydrofuran	2.5	U
67-66-3	Chloroform	0.50	U
71-55-6	1,1,1-Trichloroethane	0.50	U
109-69-3	1-Chlorobutane	0.50	U
56-23-5	Carbon Tetrachloride	0.50	U
563-58-6	1,1-Dichloropropene	0.50	U
71-43-2	Benzene	0.50	U
107-06-2	1,2-Dichloroethane	0.50	U

FORM I VOA



FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

TRIP BLANK

Lab Name: ITS ENVIRONMENTAL Contract: 98000  
 Lab Code: INCHVT Case No.: 98000 SAS No.: SDG No.: 70050  
 Matrix: (soil/water) WATER Lab Sample ID: 361813  
 Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L361813V  
 Level: (low/med) LOW Date Received: 08/03/98  
 % Moisture: not dec. \_\_\_\_\_ Date Analyzed: 08/04/98  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0  
 Soil Extract Volume: \_\_\_\_\_ (uL) Soil Aliquot Volume: \_\_\_\_\_ (uL)

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	0.50	U
78-87-5	1,2-Dichloropropane	0.50	U
74-95-3	Dibromomethane	0.50	U
80-62-6	Methyl Methacrylate	0.50	U
75-27-4	Bromodichloromethane	0.50	U
107-14-2	Chloroacetonitrile	25	U
10061-01-5	cis-1,3-Dichloropropene	0.50	U
513-88-2	1,1-Dichloropropanone	25	U
108-10-1	4-Methyl-2-Pentanone	2.5	U
79-46-9	2-Nitropropane	25	U
108-88-3	Toluene	0.48	J
10061-02-6	trans-1,3-Dichloropropene	0.50	U
97-63-2	Ethyl Methacrylate	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.50	U
142-28-9	1,3-Dichloropropane	0.50	U
591-78-6	2-Hexanone	88	
124-48-1	Dibromochloromethane	0.50	U
106-93-4	1,2-Dibromoethane	0.50	U
108-90-7	Chlorobenzene	0.50	U
630-20-6	1,1,1,2-Tetrachloroethane	0.50	U
100-41-4	Ethylbenzene	0.50	U
1330-20-7	m- & p-Xylene	0.25	J
95-47-6	o-Xylene	0.50	U
100-42-5	Styrene	0.50	U
75-25-2	Bromoform	0.50	U
1330-20-7	Xylene (total)	0.26	J
98-82-8	Isopropylbenzene	0.50	U
108-86-1	Bromobenzene	0.50	U
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	0.50	U
95-49-8	2-Chlorotoluene	0.50	U

FORM I VOA

AUG 14 1998

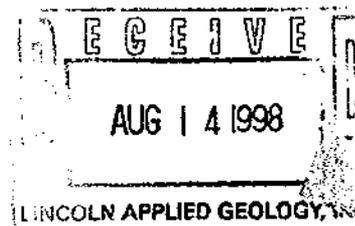
FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

TRIP BLANK

Lab Name: ITS ENVIRONMENTAL Contract: 98000  
 Lab Code: INCHVT Case No.: 98000 SAS No.: SDG No.: 70050  
 Matrix: (soil/water) WATER Lab Sample ID: 361813  
 Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L361813V  
 Level: (low/med) LOW Date Received: 08/03/98  
 % Moisture: not dec. \_\_\_\_\_ Date Analyzed: 08/04/98  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0  
 Soil Extract Volume: \_\_\_\_\_ (uL) Soil Aliquot Volume: \_\_\_\_\_ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
106-43-4	4-Chlorotoluene	0.50	U
103-65-1	n-Propylbenzene	0.50	U
108-67-8	1,3,5-Trimethylbenzene	0.50	U
76-01-7	Pentachloroethane	0.50	U
98-06-6	tert-Butylbenzene	0.50	U
95-63-6	1,2,4-Trimethylbenzene	0.50	U
135-98-8	sec-Butylbenzene	0.50	U
541-73-1	1,3-Dichlorobenzene	0.50	U
99-87-6	p-Isopropyltoluene	0.50	U
106-46-7	1,4-Dichlorobenzene	0.50	U
95-50-1	1,2-Dichlorobenzene	0.50	U
104-51-8	n-Butylbenzene	0.50	U
67-72-1	Hexachloroethane	0.50	U
96-12-8	1,2-Dibromo-3-Chloropropane	0.50	U
98-95-3	Nitrobenzene	0.50	U
120-82-1	1,2,4-Trichlorobenzene	0.50	U
87-68-3	Hexachlorobutadiene	0.50	U
91-20-3	Naphthalene	0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	U



FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

TRIP BLANKDL

Lab Name: ITS ENVIRONMENTAL

Contract: 98000

Lab Code: INCHVT

Case No.: 98000

SAS No.:

SDG No.: 70050

Matrix: (soil/water) WATER

Lab Sample ID: 361813D1

Sample wt/vol: 5.000 (g/mL) ML

Lab File ID: L361813DV

Level: (low/med) LOW

Date Received: 08/03/98

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 08/04/98

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 3.1

Soil Extract Volume: \_\_\_\_\_ (uL)

Soil Aliquot Volume: \_\_\_\_\_ (uL)

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

CAS NO. COMPOUND Q

75-71-8	Dichlorodifluoromethane	1.6	U
74-87-3	Chloromethane	1.6	U
75-01-4	Vinyl Chloride	1.6	U
74-83-9	Bromomethane	1.6	U
75-00-3	Chloroethane	1.6	U
75-69-4	Trichlorofluoromethane	1.6	U
60-29-7	Diethyl Ether	1.6	U
75-35-4	1,1-Dichloroethene	1.6	U
67-64-1	Acetone	190	D
74-88-4	Methyl Iodide	1.6	U
75-15-0	Carbon Disulfide	1.6	U
107-05-1	Allyl Chloride	1.6	U
75-09-2	Methylene Chloride	1.6	U
107-13-1	Acrylonitrile	1.6	U
156-60-5	trans-1,2-Dichloroethene	1.6	U
1634-04-4	Methyl-t-Butyl Ether	1.6	U
75-34-3	1,1-Dichloroethane	1.6	U
590-20-7	2,2-Dichloropropane	1.6	U
156-59-2	cis-1,2-Dichloroethene	1.6	U
78-93-3	2-Butanone	320	D
107-12-0	Propionitrile	78	U
96-33-3	Methyl Acrylate	1.6	U
74-97-5	Bromochloromethane	1.6	U
126-98-7	Methacrylonitrile	1.6	U
109-99-9	Tetrahydrofuran	7.8	U
67-66-3	Chloroform	1.6	U
71-55-6	1,1,1-Trichloroethane	1.6	U
109-69-3	1-Chlorobutane	1.6	U
56-23-5	Carbon Tetrachloride	1.6	U
563-58-6	1,1-Dichloropropene	1.6	U
71-43-2	Benzene	1.6	U
107-06-2	1,2-Dichloroethane	1.6	U

FORM I VOA

AUG 14 1998

COLN APPLIED GEOLOGY, INC.

FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

TRIP BLANKDL

Lab Name: ITS ENVIRONMENTAL Contract: 98000  
 Lab Code: INCHVT Case No.: 98000 SAS No.: SDG No.: 70050  
 Matrix: (soil/water) WATER Lab Sample ID: 361813D1  
 Sample wt/vol: 5.000 (g/mL) ML Lab File ID: L361813DV  
 Level: (low/med) LOW Date Received: 08/03/98  
 % Moisture: not dec. \_\_\_\_\_ Date Analyzed: 08/04/98  
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 3.1  
 Soil Extract Volume: \_\_\_\_\_ (uL) Soil Aliquot Volume: \_\_\_\_\_ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	1.6	U
78-87-5	1,2-Dichloropropane	1.6	U
74-95-3	Dibromomethane	1.6	U
80-62-6	Methyl Methacrylate	1.6	U
75-27-4	Bromodichloromethane	1.6	U
107-14-2	Chloroacetonitrile	78	U
10061-01-5	cis-1,3-Dichloropropene	1.6	U
513-88-2	1,1-Dichloropropanone	78	U
108-10-1	4-Methyl-2-Pentanone	7.8	U
79-46-9	2-Nitropropane	78	U
108-88-3	Toluene	1.6	U
10061-02-6	trans-1,3-Dichloropropene	1.6	U
97-63-2	Ethyl Methacrylate	1.6	U
79-00-5	1,1,2-Trichloroethane	1.6	U
127-18-4	Tetrachloroethene	1.6	U
142-28-9	1,3-Dichloropropane	1.6	U
591-78-6	2-Hexanone	75	D
124-48-1	Dibromochloromethane	1.6	U
106-93-4	1,2-Dibromoethane	1.6	U
108-90-7	Chlorobenzene	1.6	U
630-20-6	1,1,1,2-Tetrachloroethane	1.6	U
100-41-4	Ethylbenzene	1.6	U
1330-20-7	m- & p-Xylene	1.6	U
95-47-6	o-Xylene	1.6	U
100-42-5	Styrene	1.6	U
75-25-2	Bromoform	1.6	U
1330-20-7	Xylene (total)	1.6	U
98-82-8	Isopropylbenzene	1.6	U
108-86-1	Bromobenzene	1.6	U
79-34-5	1,1,2,2-Tetrachloroethane	1.6	U
96-18-4	1,2,3-Trichloropropane	1.6	U
110-57-6	trans-1,4-Dichloro-2-butene	1.6	U
95-49-8	2-Chlorotoluene	1.6	U

FORM I VOA

RECEIVED  
AUG 14 1998  
COLN APPLIED GEOLOGY, INC

FORM 1  
VOLATILE ORGANICS ANALYSIS DATA SHEET

GREMLA SAMPLE NO.

TRIP BLANKDL

Lab Name: ITS ENVIRONMENTAL

Contract: 98000

Lab Code: INCHVT

Case No.: 98000

SAS No.:

SDG No.: 70050

Matrix: (soil/water) WATER

Lab Sample ID: 361813D1

Sample wt/vol: 5.000 (g/mL) ML

Lab File ID: L361813DV

Level: (low/med) LOW

Date Received: 08/03/98

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 08/04/98

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 3.1

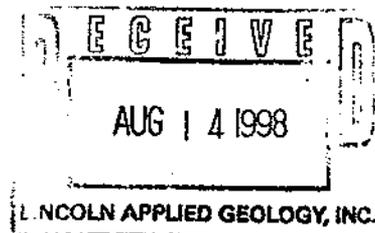
Soil Extract Volume: \_\_\_\_\_ (uL)

Soil Aliquot Volume: \_\_\_\_\_ (uL)

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
106-43-4	4-Chlorotoluene	1.6	U
103-65-1	n-Propylbenzene	1.6	U
108-67-8	1,3,5-Trimethylbenzene	1.6	U
76-01-7	Pentachloroethane	1.6	U
98-06-6	tert-Butylbenzene	1.6	U
95-63-6	1,2,4-Trimethylbenzene	1.6	U
135-98-8	sec-Butylbenzene	1.6	U
541-73-1	1,3-Dichlorobenzene	1.6	U
99-87-6	p-Isopropyltoluene	1.6	U
106-46-7	1,4-Dichlorobenzene	1.6	U
95-50-1	1,2-Dichlorobenzene	1.6	U
104-51-8	n-Butylbenzene	1.6	U
67-72-1	Hexachloroethane	1.6	U
96-12-8	1,2-Dibromo-3-Chloropropane	1.6	U
98-95-3	Nitrobenzene	1.6	U
120-82-1	1,2,4-Trichlorobenzene	1.6	U
87-68-3	Hexachlorobutadiene	1.6	U
91-20-3	Naphthalene	1.6	U
87-61-6	1,2,3-Trichlorobenzene	1.6	U

FORM I VOA



G M L  S A M P L E  #	<b>Green Mountain Laboratories, Inc.</b>						Analysis Requested										Page
	RR #3, Box 5210																of
	Montpelier, VT 05602																r
	Phone (802) 223-1468 Fax (802) 223-8688																GML #
	E-mail : GML@together.net																RECEIVED
	Client Name <i>Green Mt. Labs</i>						<div style="border: 1px solid black; padding: 5px; display: inline-block;">             AUG 14 1998              COLBY APPLIED GEOLOGY, INC.           </div>										REMARKS
	Address																
	Phone / Fax																
	Project Name																
	Project Number																
Project Manager <i>Sarah Hallock</i>																	
Sampler						<i>EPA 524.2</i> <i>Time Blank</i>										REMARKS	
Sample Location		Date	Time	# of Cont.	Pres.											Sample Type	REMARKS
1) <i>Tap Blank</i>		<i>7/28/98</i>	<i>0940</i>	<i>2</i>	<i>HCl</i>											<i>H<sub>2</sub>O</i>	X
2) <i>Time Blank</i>			<i>0940</i>	<i>1</i>	<i>HCl</i>											<i>H<sub>2</sub>O</i>	X
3) <i>Bedrock Well at Pressure Tanks</i>		<i>1305</i>		<i>4</i>	<i>HCl</i>	<i>H<sub>2</sub>O</i>	X										

### Chain of Custody

Relinquished By:	Date / Time: <i>8/2/98 5:07</i>	Received By:	Date / Time:
Relinquished By:	Date / Time:	Received By:	Date / Time:
Relinquished By:	Date / Time:	Received By:	Date / Time:
Lot Temperature: <i>6°C</i>	Vial Lot ID #:	Accepted By: <i>W. B. B. 8-3-98</i>	<i>0800</i>

G M L  S A M P L E  #	<b>Green Mountain Laboratories, Inc.</b>						Analysis Requested										Page										
	RR #3, Box 5210						<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">EPA 524.2 (VOCs)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Temperature</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">RECEIVE</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">AUG 4 1998</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">LINCOLN APPLIED GEOLOGY, INC.</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">GML #</div> </div>										1										
	Montpelier, VT 05602																										of 1
	Phone (802) 223-1468 Fax (802) 223-8688																										3989
	E-mail : GML@together.net																										GML #
	Client Name <i>Lincoln Applied Geology, Inc.</i>																										3989
	Address <i>163 Revell Drive, Lincoln, VT 05443</i>																										Remarks
	Phone / Fax <i>(802) 453-4384 / 5399</i>																										<i>Rush</i>
	Project Name <i>Monkton Central School</i>																										<i>Rush</i>
	Project Number																										<i>@ Spigot Rush</i>
Project Manager																											
Sampler <i>Bill Noiland</i>																											
Sample Location		Date	Time	# of Cont.	Pres.	Sample Type																					
1	<i>Trip Blank</i>	<i>7/28/98</i>	<i>0940</i>	<i>2</i>	<i>HCl</i>	<i>Water</i>	✓																				
2	<i>Temperature Blank</i>	<i>7/28/98</i>	<i>0940</i>	<i>1</i>	<i>None</i>	<i>Water</i>	✓																				
3	<i>Bedrock Well @ Pressure Tank</i>	<i>7/28/98</i>	<i>1305</i>	<i>4</i>	<i>HCl</i>	<i>Water</i>	✓																				
RUSH																											

### Chain of Custody

Relinquished By: <i>Bill Noiland</i>	Date / Time:	Received By: <i>Joy Boyd</i>	Date / Time:
Relinquished By: <i>Joy Boyd</i>	Date / Time: <i>7-29-98</i>	Received By: <i>David Dalton</i>	Date / Time: <i>1/29/98 10:23</i>
Relinquished By:	Date / Time:	Received By:	Date / Time:
Lot Temperature:	Vial Lot ID #:	Accepted By:	

# GREEN MOUNTAIN LABORATORIES, INC.

27 Cross Road  
Middlesex, Vermont 05602

Phone (802) 223 - 1468

Fax (802) 223 - 8688

## LABORATORY RESULTS

SEP 21 1998

CLIENT NAME:	Lincoln Applied Geology	REFERENCE NO:	4146
ADDRESS:	RD #1, Box 710 Bristol, VT 05443	PROJECT NO:	NA
SAMPLE LOCATION:	Monkton Central School	DATE OF SAMPLE:	09/08/98
SAMPLER:	Jason Barnard	DATE OF RECEIPT:	09/10/98
ATTENTION:	Bill Norland	DATE OF ANALYSIS:	09/11/98-09/15/98
		DATE OF REPORT:	09/15/98

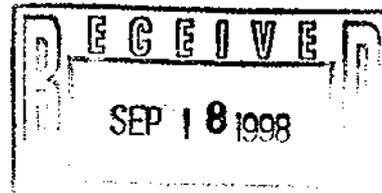
Pertaining to the analyses of specimens submitted under the accompanying chain of custody form, please note the following:

- 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 analyte to all samples, standards, and blanks. Surrogate recoveries were found to be within laboratory QA/QC acceptance limits, unless noted otherwise.

Reviewed by:



Sarah Hallock  
Director of Chemical Services



# GREEN MOUNTAIN LABORATORIES, INC.

27 Cross Road  
Middlesex, Vermont 05602

Phone (802) 223 - 1468

Fax (802) 223 - 8688

## LABORATORY RESULTS

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

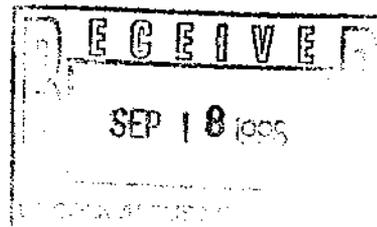
GML REF. # : 4146  
STATION: TRIP BLANK  
ANALYSIS DATE: 09/15/98  
DATE SAMPLED: 09/08/98  
SAMPLE TYPE: WATER

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  
BPQL = Below Practical Quantitation Limits

SEP 21 1998



# GREEN MOUNTAIN LABORATORIES, INC.

27 Cross Road  
Middlesex, Vermont 05602

Phone (802) 223 - 1468

Fax (802) 223 - 8688

## LABORATORY RESULTS

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

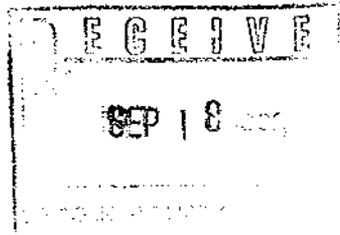
GML REF. #: 4146  
STATION: MW-1  
ANALYSIS DATE: 09/11/98  
DATE SAMPLED: 09/08/98  
SAMPLE TYPE: WATER

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

Surrogate % Recovery: 96.0 %

ND = Not Detected  
BPQL = Below Practical Quantitation Limits

SEP 21 1998



# GREEN MOUNTAIN LABORATORIES, INC.

27 Cross Road  
Middlesex, Vermont 05602

Phone (802) 223 - 1468

Fax (802) 223 - 8688

## LABORATORY RESULTS

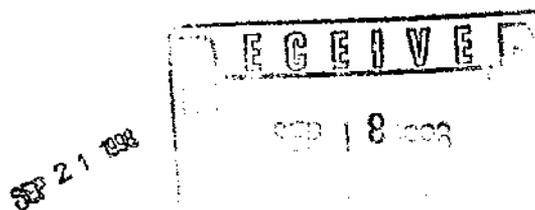
GC/MS METHOD - BTEX (BENZENE, TOLUENE, ETHYLBENZENE, XYLENES) + MTBE

GML REF. # : 4146  
STATION: MW-2  
ANALYSIS DATE: 09/11/98  
DATE SAMPLED: 09/08/98  
SAMPLE TYPE: WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	1.4
Toluene	1	1.4
Ethylbenzene	1	ND
Xylenes	3	3.7
MTBE	5	ND

Surrogate % Recovery: 97.4 %

ND = Not Detected  
BPQL = Below Practical Quantitation Limits



# GREEN MOUNTAIN LABORATORIES, INC.

27 Cross Road  
Middlesex, Vermont 05602

Phone (802) 223 - 1468

Fax (802) 223 - 8688

## LABORATORY RESULTS

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

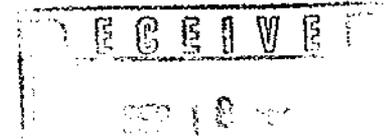
GML REF. #: 4146  
STATION: MW-3  
ANALYSIS DATE: 09/11/98  
DATE SAMPLED: 09/08/98  
SAMPLE TYPE: WATER

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

Surrogate % Recovery: 95.6 %

ND = Not Detected  
BPQL = Below Practical Quantitation Limits

SEP 21 1998



# GREEN MOUNTAIN LABORATORIES, INC.

27 Cross Road  
Middlesex, Vermont 05602

Phone (802) 223 - 1468

Fax (802) 223 - 8688

## LABORATORY RESULTS

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

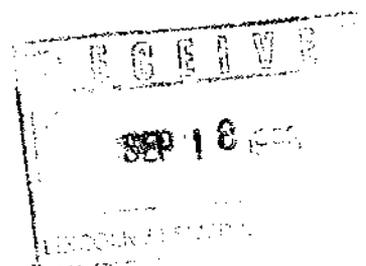
GML REF. #: 4146  
STATION: MW-4  
ANALYSIS DATE: 09/11/98  
DATE SAMPLED: 09/08/98  
SAMPLE TYPE: WATER

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

Surrogate % Recovery: 97.8 %

ND = Not Detected  
BPQL = Below Practical Quantitation Limits

SEP 21 1998



# GREEN MOUNTAIN LABORATORIES, INC.

27 Cross Road  
Middlesex, Vermont 05602

Phone (802) 223 - 1468

Fax (802) 223 - 8688

## LABORATORY RESULTS

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

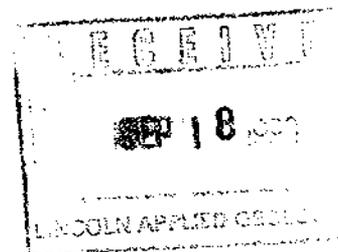
GML REF. #: 4146  
STATION: SCHOOL DRILLED WELL  
ANALYSIS DATE: 09/11/98  
DATE SAMPLED: 09/08/98  
SAMPLE TYPE: WATER

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

Surrogate % Recovery: 97.0 %

ND = Not Detected  
BPQL = Below Practical Quantitation Limits

SEP 21 1998



# Green Mountain Laboratories, Inc.

27 Cross Road  
Middlesex, Vermont 05602

Phone (802) 223-1468

Fax (802) 223-8688

## LABORATORY RESULTS

CLIENT NAME:	Lincoln Applied Geology	REF #:	4146
CLIENT ADDRESS:	163 Revell Drive Lincoln, Vermont 05443	PROJECT NO.:	NA
PROJECT NAME:	Monkton Central School	DATE OF SAMPLE:	09/08/98
SAMPLER:	Jason Barnard	DATE OF RECEIPT:	09/10/98
ATTENTION:	Bill Norland	DATE OF ANALYSIS:	09/18/98-09/19/98
		DATE OF REPORT:	10/22/98

### Total Petroleum Hydrocarbons (TPH) by EPA Method 8100M (mg/L - ppm)

Sample	PQL	TPH Results
MW-1	0.10	<0.10
MW-2	0.10	0.38
MW-3	0.10	<0.10
MW-4	0.10	<0.10
School Drilled Well	0.10	<0.10

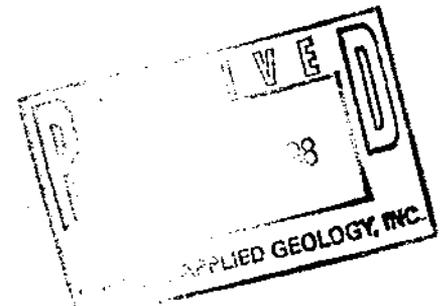
PQL= Practical Quantitation Limit

Reviewed by:



Sarah Hallock  
Director of Chemical Services

OCT 27 1998



G M L  S A M P L E  #	<b>Green Mountain Laboratories, Inc.</b>						Analysis Requested						Page 1 of 1
	RR #3, Box 5210 Montpelier, VT 05602 Phone (802) 223-1468 Fax (802) 223-8688 E-mail : GML@together.net												
	Client Name <i>Lincoln Applied Geology</i>						EPA 8020 + MTISE EPA 8100 (TPH)						GML #
	Address <i>163 Bennett Drive Lincoln, VT 05443</i>												4146
	Phone / Fax <i>(802) 453-4384</i>												
	Project Name <i>Newston Central School</i>												
	Project Number												
	Project Manager <i>Bill Norland</i>												
	Sampler <i>Jason Barreard</i>												
	Sample Location	Date	Time	# of Cont.	Pres.	Sample Type						Remarks	
1	<i>Trip Blanks</i>	<i>9/8/98</i>	<i>9:30</i>	<i>2</i>	<i>HCl</i>	<i>H<sub>2</sub>O</i>	X						
2	<i>MW-1</i>		<i>11:00</i>	<i>2</i>	<i>HCl</i>	<i>H<sub>2</sub>O</i>	X						
3	<i>MW-2</i>		<i>11:05</i>	<i>1</i>	<i>None</i>	<i>H<sub>2</sub>O</i>		X					
4	<i>MW-3</i>		<i>11:15</i>	<i>2</i>	<i>HCl</i>	<i>H<sub>2</sub>O</i>	X						
5	<i>MW-4</i>		<i>11:15</i>	<i>1</i>	<i>None</i>	<i>H<sub>2</sub>O</i>		X					
6	<i>MW-5</i>		<i>11:30</i>	<i>2</i>	<i>HCl</i>	<i>H<sub>2</sub>O</i>	X						
7	<i>MW-3</i>		<i>11:30</i>	<i>1</i>	<i>None</i>	<i>H<sub>2</sub>O</i>	X	X					
8	<i>MW-4</i>		<i>11:40</i>	<i>2</i>	<i>HCl</i>	<i>H<sub>2</sub>O</i>	X						
9	<i>MW-4</i>		<i>11:40</i>	<i>1</i>	<i>None</i>	<i>H<sub>2</sub>O</i>		X					
10	<i>School Drilled Well</i>		<i>11:50</i>	<i>2</i>	<i>HCl</i>	<i>H<sub>2</sub>O</i>	X						
11	<i>School Drilled Well</i>		<i>11:50</i>	<i>1</i>	<i>None</i>	<i>H<sub>2</sub>O</i>		X				<i>led From Pressure Springs</i>	

RECEIVED  
 OCT 24 1998  
 LINCOLN APPLIED GEOLOGY

**Chain of Custody**

Relinquished By: <i>Jan Barreard</i>	Date / Time: <i>9/8/98 1300</i>	Received By: <i>Jan Barreard</i>	Date / Time: <i>9/28/98 1300</i>
Relinquished By: <i>Jan Barreard</i>	Date / Time: <i>9/10/98</i>	Received By: <i>Jan Z. Kimball</i>	Date / Time: <i>9/10/98 14:58</i>
Relinquished By: <i>Jan Barreard</i>	Date / Time:	Received By:	Date / Time:
Lot Temperature:	Vial Lot ID #:	Accepted By:	

# Appendix B

## Detailed Well Logs

## WELL LOG

---

WELL: MW-1  
LOCATION: Monkton Central School, Monkton, Vermont - Upgradient of UST distribution piping, south of the asphalt walkway.  
DRILLER: T & K Drilling and Boring, Troy, New Hampshire.  
HYDROGEOLOGIST: Jason S. Barnard, Lincoln Applied Geology, Inc.  
DATE: August 24, 1998

**Soils Description:** (BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
0.0 - 0.3'	Dark brown, <u>very fine sandy silt loam</u> , some medium gravel, moist.	BG
0.3 - 2.0'	Light grey, <u>very fine sandy silt</u> , dense blocky structure, some medium to large gravel, damp. Glacial till.	BG
5.0 - 7.0'	Light grey, <u>very fine sandy silt</u> , dense blocky structure, some medium gravel, damp. Glacial till.	BG
10.0 - 11.0'	Grey to light brown, <u>very fine sandy silt</u> , trace small gravel, dense blocky structure, damp. Glacial till.	BG
	Auger Refusal at 13.5'	

### Well Construction:

Bottom of Boring: 13.5'  
Bottom of Well: 13.5'  
Well Screen: 10.0' (3.5 - 13.5') of 2.0" sch 40 PVC, 0.020" slot  
Solid Riser: 2.5' (0.5 - 3.0') of 2.0" sch. 40 PVC  
Sand Pack: 10.5' (3.0 - 13.5') of No. 2 sand  
Bentonite Seal: 1.0' (2.0 - 3.0') of chips  
Backfill: 1.0' (1.0 - 2.0') of drill cuttings  
Well Box: Cemented flush with grade.

## WELL LOG

---

WELL: MW-2  
LOCATION: Monkton Central School, Monkton, Vermont - Near the front entrance of the school building.  
DRILLER: T & K Drilling and Boring, Troy, New Hampshire.  
HYDROGEOLOGIST: Jason S. Barnard, Lincoln Applied Geology, Inc.  
DATE: August 24, 1998

**Soils Description:** (BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
2.0 - 4.0'	Grey, <u>very fine sandy silt</u> , some small to medium gravel, dense blocky structure, dry. Glacial till.	BG
4.0 - 6.0'	Grey, <u>very fine sandy silt</u> , trace small gravel, dense blocky structure, saturated. Glacial till.	BG
10.0 - 11.0'	Grey, <u>very fine sandy silt</u> , some small gravel, dense blocky structure, damp. Glacial till.	BG
	Auger refusal at 11.0'	

### Well Construction:

Bottom of Boring: 11.0'  
Bottom of Well: 10.5'  
Well Screen: 7.0' (3.5 - 10.5') of 2.0" sch. 40 PVC, 0.020" slot  
Solid Riser: 3.0' (0.5 - 3.5') of sch. 40 PVC  
Sand Pack: 7.5' (3.0 - 10.5') of No. 2 sand  
Bentonite Seal: 1.5' (2.0 - 3.5') of chips  
Backfill: 1.0' (1.0 - 2.0') of drill cuttings  
Well Box: Cemented flush with grade.

## WELL LOG

WELL: MW-3  
LOCATION: Monkton Central School, Monkton, Vermont - Between the school entrance and the parking area, downgradient of former UST distribution piping.  
DRILLER: T & K Drilling and Boring, Troy, New Hampshire.  
HYDROGEOLOGIST: Jason S. Barnard, Lincoln Applied Geology, Inc.  
DATE: August 24, 1998

**Soils Description:** (BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
2.0 - 3.5'	Grey, <u>very fine sandy silt</u> , dense blocky structure, moist. Glacial till.	BG
4.0 - 5.3'	Grey, <u>very fine sandy silt</u> , trace small gravel, dry. Glacial till.	BG
10.0 - 10.5'	Grey, <u>very fine sandy silt</u> , some small to medium gravel, dense blocky structure, moist. Glacial till.	BG
	Auger refusal at 10.5'	

### Well Construction:

Bottom of Boring: 10.5'  
Bottom of Well: 10.0'  
Well Screen: 6.0' (4.0 - 10.0') of sch. 40 PVC, 0.020" slot  
Solid Riser: 3.5' (0.5 - 4.0') of sch. 40 PVC  
Sand Pack: 6.5' (3.5 - 10.0') of No. 2 sand  
Bentonite Seal: 2.0' (1.5 - 3.5') of chips  
Backfill: None  
Well Box: Cemented flush with grade.

## WELL LOG

---

WELL: MW-4  
LOCATION: Monkton Central School, Monkton, Vermont - Eastern edge of the parking area, downgradient of the former UST's.  
DRILLER: T & K Drilling and Boring, Troy, New Hampshire.  
HYDROGEOLOGIST: Jason S. Barnard, Lincoln Applied Geology, Inc.  
DATE: August 24, 1998

**Soils Description:** (BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
2.0 - 4.0'	Brown, <u>very fine sandy silt</u> , pliable structure, moist. Glacial till.	BG
4.0 - 6.0'	Light brown, <u>very fine sandy silt</u> , trace small gravel, pliable structure, moist. Glacial till.	BG
	Auger refusal at 8.5	

**Well Construction:**

Bottom of Boring: 8.5'  
Bottom of Well: 8.0'  
Well Screen: 5.0' (3.0 - 8.0') of sch 40 PVC, 0.020" slot  
Solid Riser: 2.5' (0.5 - 3.0') of sch. 40 PVC  
Sand Pack: 5.5' (2.5 - 8.0') of No. 2 sand  
Bentonite Seal: 1.0' (1.5 - 2.5') of chips  
Backfill: None  
Well Box: Cemented flush with grade.

# Appendix C

## Cost Estimate

**Monkton Central School  
Monkton, Vermont  
Cost Estimate for  
Additional Sampling and Reporting  
16-Nov-98**

**1.) Additional Site Monitoring and Water Quality Sampling**

Hydrogeologist/Site Manager -	1	hr(s) @	\$50.00	per hour	\$	50.00	
Field Technician -	6	hr(s) @	\$35.00	per hour	\$	210.00	
Mileage -	100	mile(s) @	\$0.30	per mile	\$	30.00	
Disposable Bailer (1.5) -	4	bailer(s) @	\$8.89	each	\$	35.56	
Samples, EPA Method 8020 -	6	sample(s) @	\$60.00	per sample	\$	360.00	
TPH by EPA Method 8100 -	6	sample(s) @	\$100.00	per sample	\$	600.00	
(Samples include: 4-monitor wells, 1-water supply well, and 1-trip blank)							
<b>Subtotal</b>						<b>\$</b>	<b>1,285.56</b>

**2.) Summary Report**

Principal/Senior Hydrogeologist -	0.5	hr(s) @	\$85.00	per hour	\$	42.50	
Hydrogeologist/Site Manager -	1	hr(s) @	\$60.00	per hour	\$	60.00	
Geologist -	4	hr(s) @	\$50.00	per hour	\$	200.00	
Computer/CAD Technician -	1	hr(s) @	\$40.00	per hour	\$	40.00	
Administrative Assistant -	1	hr(s) @	\$35.00	per hour	\$	35.00	
<b>Subtotal</b>						<b>\$</b>	<b>377.50</b>
<b>Grand Total&gt;&gt;&gt;</b>						<b>\$</b>	<b>1,663.06</b>