LINCOLN
APPLIED GEOLOGY, INC.
Environmental Consultants

July 15, 1999

Mr. Ronald Williamson
692 Church Hill Road
Charlotte, VT 05445

RE: Ronald Williamson Property, Charlotte, Vermont (Site# 98-2528) - Subsurface Investigation Report

Dear Mr. Williamson:

Lincoln Applied Geology, Inc. (LAG) is pleased to present this Subsurface Investigation Report presenting the results of the Investigation conducted at your property on Church Hill Road, Charlotte, Vermont. The investigation was conducted in response to the discovery of petroleum contaminated soils and a petroleum sheen on the ground water that was noted (by Griffin International) during the removal of three underground storage tanks (UST's) on October 28, 1998. In accordance with the Vermont Department of Environmental Conservation (VDEC) Sites Management Section (SMS) request, this subsurface contaminant investigation was performed to determine the degree and extent of the petroleum contamination. The field work portion of the investigation was performed by LAG on June 11, 1999.

The enclosed report includes well logs, monitoring data, and ground/surface water quality results. Results of our work clearly show that (for all intensive purposes) soil and ground water beneath areas of the site that were investigated have not been impacted by vapor, dissolved, and adsorbed phase petroleum related contamination. It is our opinion that the contamination has been fully delineated. The very minimal contamination that is present is confined to the former UST area. Data collected during the sensitive receptor survey show that the indoor air and on-site shallow water supply have not been impacted. To develop a track record upon which to make reasonable decisions, we recommend one additional round of sampling from the two monitor wells and reevaluation of the on-site water supply and indoor air of the residence this fall (late September). If results are similar, we will recommend that the site receive Sites Management Activity Completed status.

Please do not hesitate to call me or Richard Vandenberg, LAG Project Manager, at (800) 477-4384 if you have any questions, comments, or concerns with regard to the enclosed report.

Sincerely,
Lincoln Applied Geology, Inc.

Jake Peirce

Jake Peirce
Environmental Scientist

JSP/njp
enclosure
cc: Chuck Schwer, VDEC

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Subsurface Investigation Report

Williamson Property
692 Church Hill Road
Charlotte, Vermont
(VDEC Site #99-2528)

Prepared for:

Mr. Ronald Williamson
692 Church Hill Road
Charlotte, Vermont 05445

Phone: (802) 425-2735

Prepared by:

Lincoln Applied Geology, Inc.

July 15, 1999

Prepared by:

Jake Peirce
Environmental Scientist

Reviewed and Approved by:

Stephen Revell, CPG
Senior Hydrogeologist

Lincoln Applied Geology, Inc
Environmental Consultants

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

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Lincoln Applied Geology, Inc
Environmental Consultants

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Executive Summary

On November 3, 1998, Griffin International, Inc. and T.L. Boise Excavating, Inc. completed the removal, closure, and assessment of three USTs (between 550 and 2,000 gallon) at the Williamson Residence on Churchill Road, Charlotte, Vermont. Results of their work showed that the tanks were all in poor condition with large holes noted in each tank. Elevated levels of soil contamination were discovered associated with the tanks. A sheen was noted during the tank removal work floating on the exposed water table. Based on the finding of the tank removal work, the Vermont Department of Environmental Conservation Sites Management Section (SMS) requested that a Subsurface Investigation be completed to define the limits of the soil and ground water contamination beneath the site.

In response to the SMS request, Mr. Ronald Williamson retained Lincoln Applied Geology (LAG) to conduct the required Subsurface Investigation. On June 1, 1999 LAG began the investigation work which included the installation of three borings and two monitor wells, collection of ground water samples from the two wells, a sensitive receptor survey, and preparation of a summary report.

Results of this investigation show that very low concentrations of dissolved phase contamination are only present beneath the former UST area. Concentrations of the gasoline constituent, 1,3,5-trimethylbenzene, were detected above Vermont Ground Water Quality Enforcement Standards (GQES). Results of the receptor survey showed that the ground water within the UST excavation has been impacted, but it has not migrated downgradient. Therefore, it is our opinion that there is no threat to human health or the environment from this contamination.

Based on the confined nature of the contamination, the lack of receptor impact, and the low concentrations present in the source area, no further subsurface investigation is recommended. One additional monitoring and sampling survey is recommend in the fall to verify the low contaminant presence and the lack of receptor impact (i.e. Williamson residence air space and shallow water supply. If conditions remain similar, LAG will recommend that the site receive Sites Management Activities Completed (SMAC).

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Site Description

The Williamson property (the site) is located at 692 Church Hill Road in Charlotte, Vermont. **Figure 1** is a General Location Map showing its location. The property is bounded by Hinesburg Road to the north, Church Hill Road to the west, and fields/wetlands bound the property to the south and east. A shallow well and an on-site wastewater disposal system provide water and wastewater services for the property. Pertinent site features including buildings, the former UST area, roads, and the monitor wells are shown on **Figure 2**.

Site History

On October 28, 1998 Griffin Internation in conjunction with Tom L. Boise Excavating completed the excavation, removal, and assessment of three USTs at the Williamson residence. The UST Closure Report is included as **Appendix A**. Results of this work are summarized below:

UST #1: A 2,000-gallon single wall steel gasoline UST between 40 and 50 years old;

- UST was found in poor condition;
- Several large holes noted in the UST;
- Photoionization detector (PID) soil assay from 10 feet below grade was noted at 243 parts per million (ppm);
- ground water was encountered six feet below grade; and
- a slight petroleum sheen was observed on ground water.

UST #2: A 550-gallon single wall steel UST (unknown product) between 40 and 50 years old;

- UST was found in poor condition;
- Several large holes noted in the UST;
- PID soil assay from 4 feet below grade was 1.4 ppm;
- ground water was encountered six feet below grade; and
- a slight petroleum sheen was observed on ground water.

UST #3: A 1,000-gallon single wall steel (unknown product) between 40 and 50 years old;

- UST was found in poor condition;
- Several large holes noted in the UST;

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- PID soil assays from 7 feet below grade were between 680 and 770 ppm;
- ground water was encountered six feet below grade; and
- a slight petroleum sheen was observed on ground water.

Approximately 294 gallons of fuel and UST bottom wastes were generated during cleaning of the USTs. No soil or ground water samples were collected for laboratory analysis, and the extent and magnitude of soil and ground water contamination outside of the UST area was not defined.

As a result of these findings, the Vermont Department of Environmental Conservation (VDEC) Sites Management Section (SMS) placed the site on the Active Hazardous Waste Sites List and requested that a subsurface investigation be conducted. On June 1, 1999 Lincoln Applied Geology, Inc. (LAG) was retained to conduct the requested investigation. The remaining report presents the results of the field investigation which was initiated on June 11, 1999.

Subsurface Drilling and Site Geology

Two monitor wells (MW-1 and TP-1) and three borings (MW-2, 3, and 4) were drilled on June 11, 1999 by Adams Engineering of Underhill, Vermont with oversight provided by LAG. The wells and borings were installed by Adams Engineering utilizing a vibratory core drill rig. Five foot long soil samples were collected continuously (where possible) and descriptively logged by the onsite Environmental Scientist. The samples were then screened with a properly calibrated PID (equipped with a 10.2 eV lamp) for petroleum related volatile organic compounds (VOCs).

Where ground water was encountered (MW-1 and TP-1) during drilling, a PVC monitor well was installed and the boring was turned into a monitor well. Monitoring wells were constructed of 1.5" diameter PVC with an appropriate length of screen to straddle the water table. Each completed well was properly constructed with sufficient sand pack. A bentonite seal was placed atop the sand pack, the remaining annulus was backfilled with drill cuttings, and a bolt-down well box was cemented flush with grade. The locations of the 2 newly installed wells (MW-1 and TP-1) are shown on **Figure 2**.

The boring was abandoned where no ground water was encountered. No ground water was encountered at locations MW-2, MW-3, and MW-4 due to refusal on a dense basal till unit. The location of the soil borings and other pertinent site features are included on **Figure 2**. To verify if contamination was present at a few boring locations, a soil sample was collected from the deepest depth of penetration and analyzed for VOCs and Total Petroleum Hydrocarbons (TPH) by EPA methods 8021b and 8015M, respectively. A soil sample was collected from MW-3, MW-4, and TP-1 (which was originally thought to be dry).

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Sediments and soils encountered during drilling include the following. In general, the sediments encountered beneath the site include a brown sand and gravel soil from the surface to approximately 6 feet. The sand and gravel unit lies directly atop a brown fine to medium sand unit. A clay was noted between 8 and 15 feet below the surface followed by a dense glacial till. Well and boring logs are attached as **Appendix A**.

The bedrock beneath the site is mapped as Cambrian age quartzite rocks that are between 570 to 500 million year old. No samples of the bedrock were collected to verify its type, it was detected in borings between 4 and 17 feet below the surface throughout the immediate area of the site.

The well logs also include the results of PID assays on each soil sample collected during drilling. No detectable concentrations of VOCs were present in any of the assayed soil samples indicating a lack of ionizable adsorbed phase contamination.

Ground Water Level and Well Headspace PID Monitoring

On June 11, 1999 LAG conducted a top of casing (TOC) stadia survey of all monitor wells and other on-site features pertinent to the subsurface investigation. On June 17th depth to ground water level data and well headspace PID data were collected from monitor wells MW-1 and TP-1. Free floating gasoline product was not detected in any wells. Review of the collected data indicates that depth to ground water varied from 7.57 feet below TOC (MW-1) to 8.20 feet (TP-1). Well headspace PID readings for MW-1 and TP-1 were at background (BG).

Site Hydrogeology

A Ground Water Contour Map could not be prepared because only two wells were installed. Based on the elevation of water in each well, and the natural surroundings the ground water flow direction is assumed to be to the north/northeast.

Water Quality Sampling

On June, 17 1999 water quality samples were collected from wells MW-1 and TP-1, and a tap sample was collected from the Williamson residence tap. All samples were analyzed along with a trip blank for the petroleum constituents BTEX and MTBE via EPA Method 8021b, and TPH via EPA Method 8015 at Green Mountain Laboratories, Inc. in Montpelier, Vermont.

Soil and Ground Water Results

Soil quality results from MW-3, MW-4, and TP-1 are attached as **Appendix C**. Results show that no concentrations of gasoline constituents were present above

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method detection limits in any of the samples that were analyzed.

The water quality results are summarized in **Table 1** and are presented on the Water Quality Summary Map included as **Figure 3**. The laboratory reports are included as **Appendix D**. Review of **Table 1** indicates that concentrations of the gasoline constituents toluene, ethylbenzene, xylene, and 1,3,5- trimethylbeneze were detected in TP-1 which was installed within the former UST area. Low concentrations of TPH were also present in TP-1 (0.473 ppm). It is worth noting that only the concentration of 1,3,5-trimethylbenzene is above its respective Ground Water Quality Enforcement Standard (see **Table 1**).

Potential Sensitive Receptors

On June 11 and 17, 1999 LAG conducted a sensitive receptor survey of the site and surrounding properties. Potential sensitive receptors include indoor air in the Williamson residences adjacent to the tank area and the Williamson shallow water supply 120 feet downgradient of the tank area. PID assay of the indoor air space of the Williamson residence indicate that no gasoline related VOCs are present above background. The tap water sample results shows that the shallow water supply well has also not been impacted.

Based on the lack of significant contamination beyond the constraints of the UST area and the relatively impervious nature of the clay and till soils beneath the site, it is our professional opinion that there are no health related risks associated with the petroleum contamination present beneath the site.

Summary of Findings

Based on the results this subsurface investigation the following conclusions are made:

1. Low concentrations of dissolved phase contamination were discovered within the former UST area. Only 1,3,5-trimethylbenzene was detected above its respective GWQES.

2. There is no evidence that the contamination has migrated beyond the constraints of the UST area

3 The low level of the contamination that is present will readily decline due to natural attenuation and intrinsic bioremediation.

4 There is currently no threat to human health or the environment from this confined low level contamination.

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Environmental Consultants
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Recommendations

In response to the conclusions, the following recommendations are offered:

1. Perform a second site monitoring and water quality sampling survey of wells MW-1 and TP-1to verify the low contaminant presence. The shallow water supply well should be sampled and the indoor airspace should be monitored with a properly calibrated PID during the visit.

2. Once the collected data has been received and reviewed by LAG, a Summary Report will be submitted to the VDEC along with appropriate conclusions and recommendations. If concentrations remain stable or decline we will recommend that the site receive Sites Management Activity Complete (SMAC) status.

A cost estimate to implement the abovementioned recommendations is provided as **Appendix E**.

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Project: Williamson Property
Location: Charlotte, Vermont

Table 1
VDEC Site # 98-2528
Sheet 1 of 1

Ground Water Elevation/Product Level (feet)

Data Point	TOC	06/17/99					
MW-1	89.83	91.66					
TP-1	97.84	89.64					

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

Project: Williamson Property
Location: Charlotte, Vermont

Table 2
VDEC Site # 98-2528

Ground Water Quality Results (ppb)

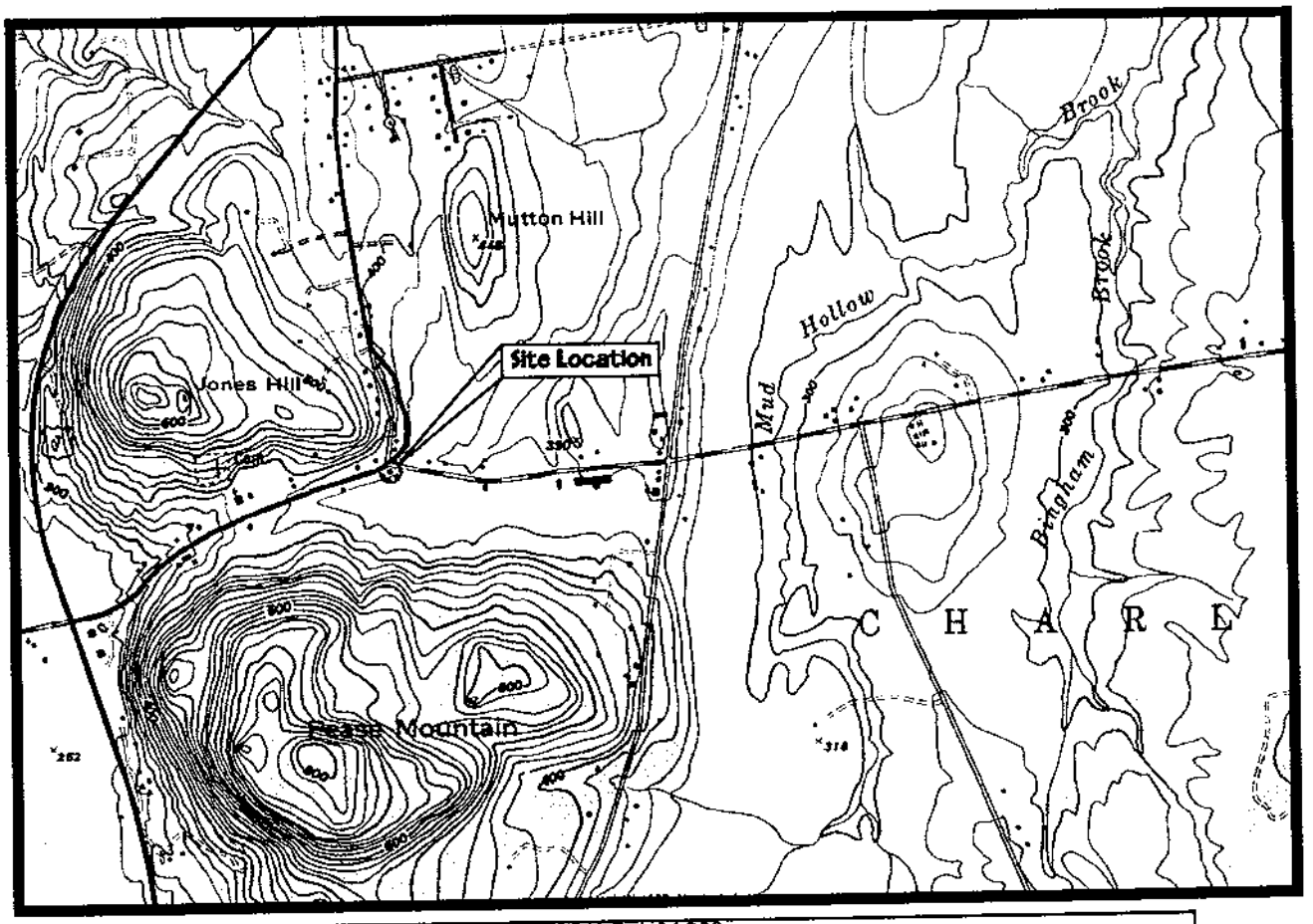
Data Point	Compound	GWQES	06/17/99				
MW-1	Benzene	5	<1				
	Toluene	1000	<1				
	Ethylbenzene	700	<1				
	Xylenes	10000	<3				
	1,3,5-Trimethylbenzene	4	<2				
	1,2,4-Trimethylbenzene	5	<2				
	Naphthalene	20	<5				
	MTBE	40	<5				
	BTEX	N/A	<6				
	TPH (8015M - ppm)	N/A	<0.1				
TP-1	Benzene	5	<1				
	Toluene	1000	2.6				
	Ethylbenzene	700	2.2				
	Xylenes	10000	53				
	1,3,5-Trimethylbenzene	4	**57**				
	1,2,4-Trimethylbenzene	5	3.2				
	Naphthalene	20	<5				
	MTBE	40	<5				
	BTEX	N/A	58.8				
	TPH (8015M - ppm)	N/A	0.473				
Shallow Well	Benzene	5	<1				
	Toluene	1000	<1				
	Ethylbenzene	700	<1				
	Xylenes	10000	<3				
	1,3,5-Trimethylbenzene	4	<2				
	1,2,4-Trimethylbenzene	5	<2				
	Naphthalene	20	<5				
	MTBE	40	<5				
	BTEX	N/A	<6				
	TPH (8015M - ppm)	N/A	<0.1				
Trip Blank	Benzene	5	<1				
	Toluene	1000	<1				
	Ethylbenzene	700	<1				
	Xylenes	10000	<3				
	1,3,5-Trimethylbenzene	4	<2				
	1,2,4-Trimethylbenzene	5	<2				
	Naphthalene	20	<5				
	MTBE	40	<5				
	BTEX	N/A	<6				
	TPH (8015M - ppm)	N/A					

NOTES:
< - Contaminant not detected at specified detection limit
GWQES = Ground Water Quality Enforcement Standard
Shaded Cell = above GWQES

Figure 1

Ron Williamson Property
Charlotte, Vermont

GENERAL LOCATION MAP



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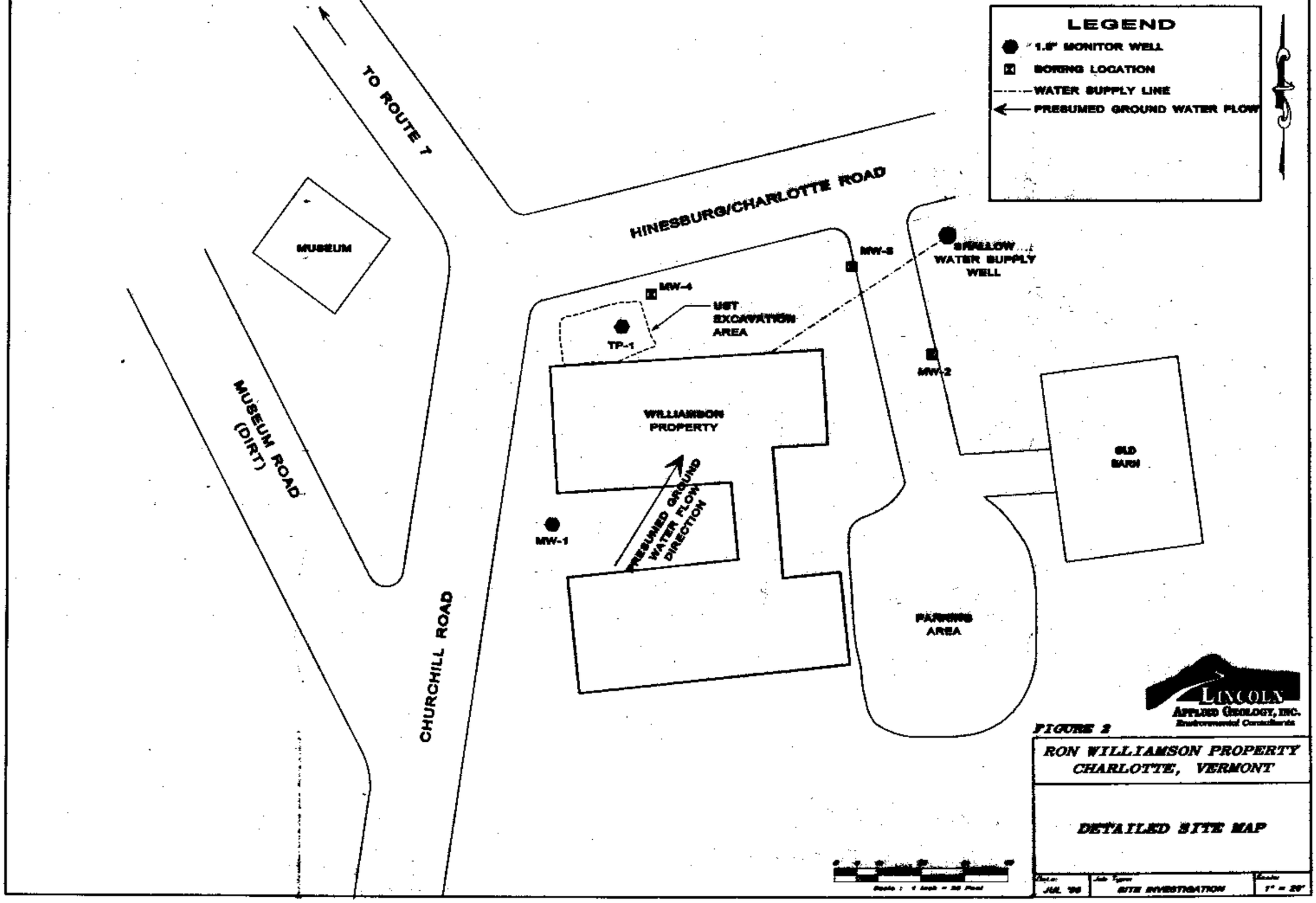
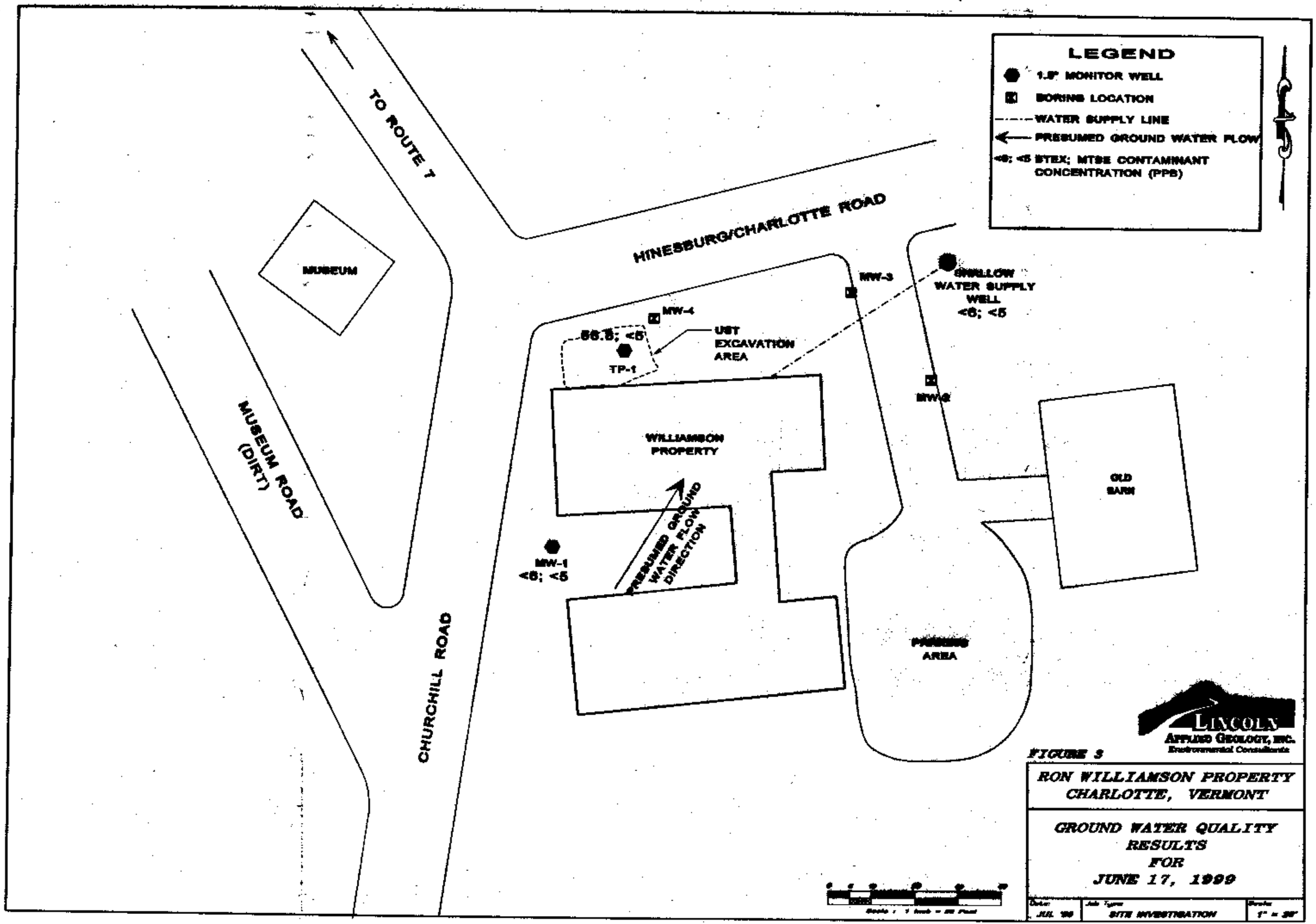

LEGEND
1.5" MONITOR WELL
BORING LOCATION
WATER SUPPLY LINE
PRESUMED GROUND WATER FLOW
TO ROUTE 7
HINESBURG/CHARLOTTE ROAD
MUSEUM
MUSEUM ROAD (DIRT)
CHURCHILL ROAD
MW-6
SIRRLOW WATER SUPPLY WELL
MW-4
UST EXCAVATION AREA
TP-1
MW-2
WILLIAMSON PROPERTY
OLD BARN
PRESUMED GROUND WATER FLOW DIRECTION
MW-1
PARKING AREA
LINCOLN APPLIED GEOLOGY, INC.
Environmental Consultants
FIGURE 2
RON WILLIAMSON PROPERTY
CHARLOTTE, VERMONT
DETAILED SITE MAP
Date: JUL '98
Job Type: SITE INVESTIGATION
Number: 1" = 20'



LINCOLN APPLIED GEOLOGY, INC.
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FIGURE 3

RON WILLIAMSON PROPERTY
CHARLOTTE, VERMONT

GROUND WATER QUALITY
RESULTS
FOR
JUNE 17, 1999

Date:	Job Type:	Scale:
JUL '99	SITE INVESTIGATION	1" = 30'

Appendix A

UST Closure Report

#1 at a depth of approximately 10 feet below grade. The VOC concentration in this sample was 243 ppm. Further exploratory excavation in the vicinity of UST #1 was restricted due to the proximity of the Williamson Residence. Further excavation may have weakened the structure of the residence. A concrete pad was present beneath former UST #1 at a depth of approximately 10 feet below grade.

Next the excavator began to remove UST #2. UST #2 was observed to be in poor condition; there were several large holes in UST #2. One soil sample was collected for field screening from beneath UST #2 at a depth of approximately 4 feet below grade. The VOC concentration in this sample was 1.4 ppm.

The last UST to be removed was UST #3. UST #3 was also observed to be in poor condition; there were several large holes in UST #3. Two soil samples were collected for field screening from beneath UST #3 at a depth of approximately 7 feet below grade. The samples collected from beneath UST #3 contained VOC concentrations of 680 and 770 ppm. Further exploratory excavation in the vicinity of UST #3 was also restricted due to the proximity of the Williamson Residence. Further excavation may have weakened the structure of the residence.

Soils at this site consisted of coarse to fine gravel from grade to a depth of approximately 3.5 feet. Clay with coarse gravel and coarse sand was observed below depths of 3.5 feet. Groundwater was encountered at a depth of approximately 6 feet below grade. A petroleum sheen was observed on the groundwater. All soils with measurable PID readings were backfilled.

The area surrounding the site is primarily residential. Based on visual inspection of the site, and conversations with the site owner, there are believed to be 6 private supply wells within a one half mile radius of the site. The on-site supply well is located approximately 120 to the northeast of the former USTs.

Please call me with any questions that you may have regarding this closure inspection or the site in general.

Sincerely,

Robert Higgins

Robert Higgins
Engineer
Att

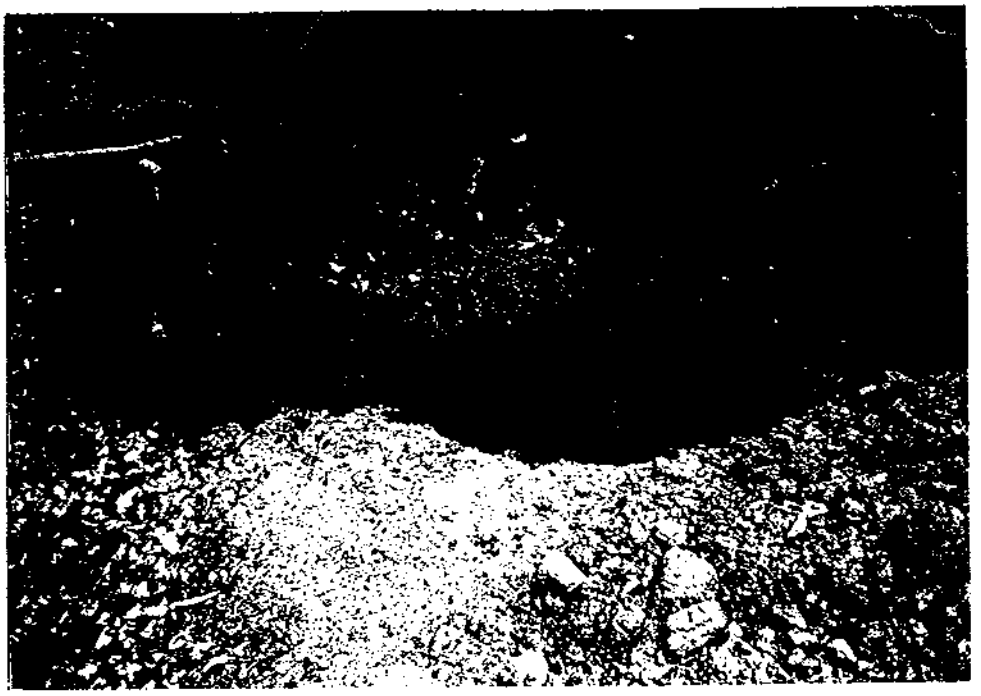
cc: 39841209
Mr. Ron Williamson
Mr. Tom Boise, T.L. Boise Excavating

Williamson Residence UST Closure
694 Church Hill Road
Charlotte, VT

UST #1, Bottom View

UST #1 Tank Pit

Williamson Residence UST Closure
694 Church Hill Road
Charlotte, VT



UST #2, In Place

UST #3, In Place

UNDERGROUND STORAGE TANK PERMANENT CLOSURE FORM

Vermont Agency of Natural Resources, Department of Environmental Conservation, Waste Management Division
103 South Main Street, West Building, Waterbury, Vermont 05671-0404, Telephone: (802) 241-3888

Agency Use Only
Date of scheduled Activity 10/28/1998 Facility ID # — Closing: ___tanks, ___piping, ✓ system
DEC initials: ST SMS # DEC evaluator:

Section A. Facility Information:
Name of facility: OLD STORE (Williamson Residence) Number of employees: N/A
Street address: 694 Church Hill Road Town/city Charlotte
Owner of UST(s) to be closed: Ron Williamson Contact(if different than owner): —
Mailing address of owner: 692 Church Hill Rd Charlotte
Telephone number of owner: 425-2735 Contact telephone #: 425-2735

Section B. UST Closure Information: (please check one)
Reason for initiating UST closure: __Suspected Leak ___Liability __Replacement ✓Abandoned

USTs (piping is considered a part of UST system) undergoing permanent closure. Include condition of USTs

UST #	Product	Size (gallons)	Tank age	Tank Condition	Piping age	Piping condition
1	Gasoline	2,000	40-50 yrs	Poor	40-50 yrs	Fair
2	Unknown	550	↓	↓	↓	↓
3	Unknown	1,000	↓	↓	↓	↓

Which tanks, if any, will be closed in-place: USTs# 0 Authorized by: N/A Date: / /
Disposal/destruction of removed UST(s): Location T.L. Boise Method Scrap Date: 10/28/98
Amount (gal.) and type of waste generated from USTs: 2@ 239 gal Vac Truck +550gal Tank bottom waste
(tank contents are hazardous wastes unless recovered as usable product)
Tank cleaning company (must be trained in confined space entry) T.L. Boise Excavating
Certified hazardous waste hauler : EPIS Generator ID number: UNK

Section C. Initial site characterization:
Work in this section must be completed by a professional environmental consultant or hydrogeologist with experience in environmental sampling for the presence of hazardous materials. A full report from the consultant must accompany this form.
Excavation information: (*some tank pulls require more than one excavation*)

Tank(s) # and Excavation (A,B,C,etc)	Depth (ft)	Excavation size(ft³)	Peak PID reading	Depth of Peak (ft)	Avg PID reading	Bedrock Depth (ft)	Groundwater encountered? (y/n) and at depth (ft)	Soil type (6ft below grade)
UST 1,2	10	400	332	6	45.6	Unk	yes ~6ft	Clay gravel
UST 3	~10	~100	770	7	391	Unk	yes ~6ft	Clay/gravel

Dig Safe Number: Unknown
PID information:
Make: Microtip Model: 2020 Calibration information (date, time, gas): 10/28/98 9:10 Isobutylene

Locate all readings and samples on site diagram
Number of soil samples collected for laboratory analysis? 0 results due date ___/___/___
Have any soils been polyencapsulated on site? Yes___(#yds³___PID range above zero low ___ - ___peak) No ✓
Have any soils been transported off site? Yes___list amount (yds³):___No ✓
Location transported to: N/A DEC official who approved N/A
Amount of soils backfilled(yds³): ~120 PID range above zero low 1H - 770peak
Have limits of contamination been defined? Yes___No ✓
Is there any other known contamination on- site? Yes___No ✓Comments:

Free Phase product encountered? Yes___:*thickness*___ *sheen*___ No ✓
Groundwater encountered? Yes ✓depth(ft) ~6ft No___
Are there existing monitoring wells on-site? Yes___ how many:___(locate on site diagram)No ✓
Have new monitoring wells been installed? Yes___ how many:___(locate on site diagram)No ✓
Samples obtained from monitoring wells for lab analysis? Yes__ results due date ___/___/___ No ✓

Is there a water supply well on site? Yes ✓(check type: shallow ✓ rock___spring___) No___
Number of public water supply wells are located within a 0.5 mile radius? 0 min. distance (ft.): Unk
Number of private water supply wells located within a 0.5 mile radius? 6 min distance (ft.): ~200

Receptors impacted? ✓soil ___indoor air __ambient air ✓groundwater ___surface water ___water supply

Facility ID# N/A

Section D: Tanks/Piping Remaining/installed

Regardless of size, include USTs at site as to *status, e.g. "abandoned", "in use", or "to be installed". (Most installations require permits and advance notice to this office.)

UST#	Product	Size(gallons)	Tank age	*Tank status	Piping age	*Piping Status

✓ There are no other tanks at this site.

Section E. Statements of UST closure compliance:
(must have both signatures or site assessment not complete)

As the party responsible for compliance with the Vermont UST Regulations and related statutes at this facility, I hereby certify that the all of the information provided on this form is true and correct to the best of my knowledge.

Signature of UST owner or owner's authorized representative — Date of signature: 10/28/98

As the environmental consultant on site, I hereby certify that the site assessment requirements were performed in accordance with DEC policy and regulations, and that information which I have provided on this form is true and correct to the best of my knowledge.

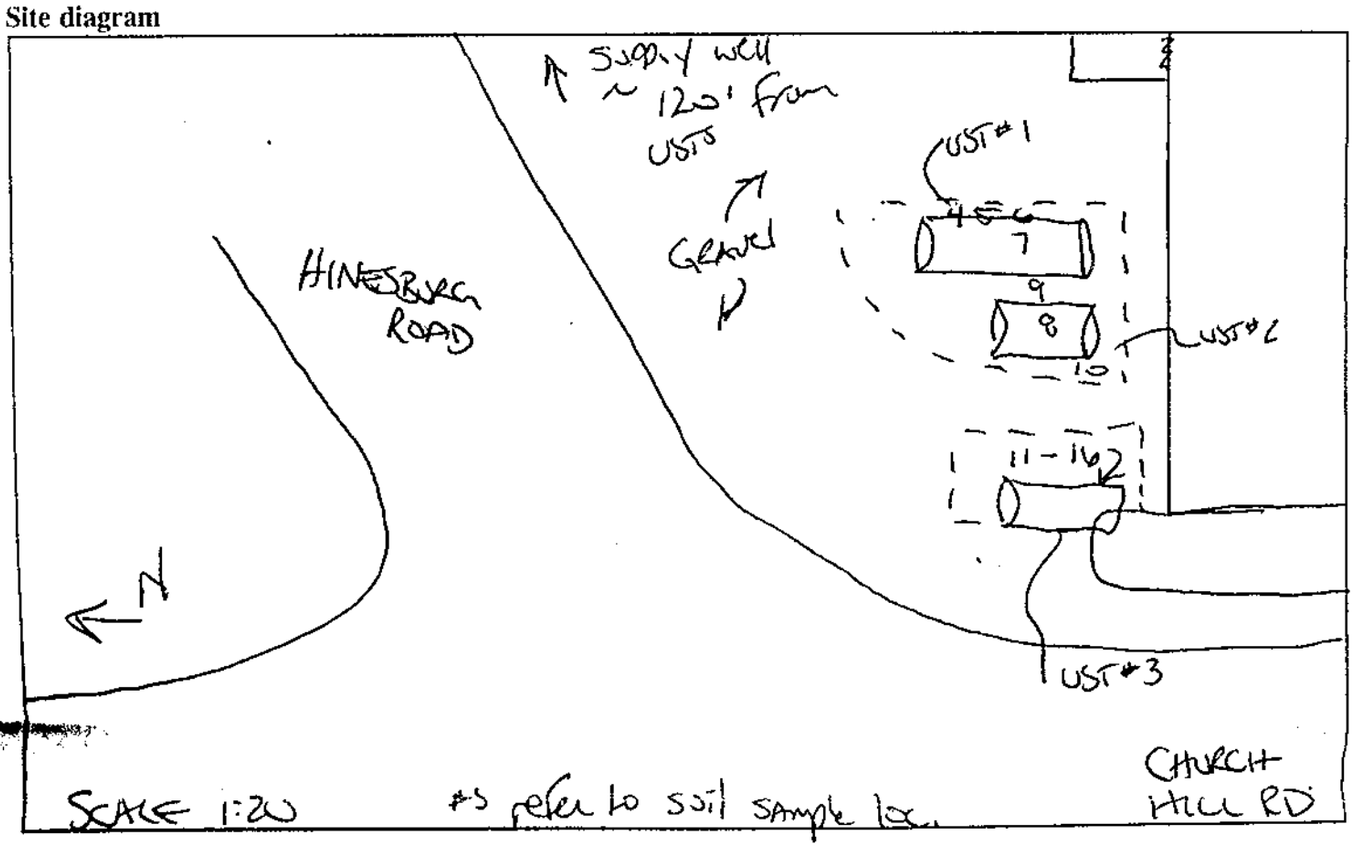
Signature of Environmental Consultant — Date of signature: 10/28/98

Company: GRIFFIN INTERNATIONAL

Telephone #: 865-4288 Date of Closure: 10/28/98 Date of Assessment 10/28/98

Return form along with complete narrative report and photographs to the Department of Environmental Conservation(DEC), Underground Storage Tank Program within 72 hours of closure.

Site diagram



This Closure Form may only be issued for the facility and the date indicated at top of page 1. **Changes in the scheduled closure date should be phoned in at least 48 hours in advance.** Both the yellow and white copies of this form must be returned to the address on the top of page 1 of this form; the pink copy should be retained by the UST owner. A written report from an environmental consultant covering all aspects of closure and site assessment, complete with photographs and any other relevant data, must accompany this form. All procedures must be conducted by qualified personnel, to include training required by 29 CFR 1910.120. Documentation of all methods and materials used must be adequate. All work must be performed in compliance with DEC policy "UST Closure and Site Assessment Requirements" as well as all applicable statues, regulations, and additional policies. The DEC may reject inadequate closure forms and reports.

Appendix B

Geologic Logs

WELL LOG

WELL: MW-1
LOCATION: Ron Williamson Property, Charlotte, VT.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jake Peirce, Lincoln Applied Geology, Inc.
DATE: June 11, 1999

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

Depth	Description	PID (ppm)
0.0'-4.5'	Sand, medium to coarse; brown; and gravel, fine; loose granular structure; dry; no hydrocarbon odor.	BG
5'-6'	Sand,fine to medium, brown; some clay; and gravel, medium to coarse; moist; no hydrocarbon odor.	BG
6'-6.75'	Sand, fine to medium, brown; trace gravel, medium to coarse; trace clay; moist; no hydrocarbon odor.	BG
6.75'-10'	Clay, dense blocky structure; gravel, fine to medium; no hydrocarbon odor.	BG
10'-15'	Sand, brown, fine; and silt; little clay; no hydrocarbon odor.	BG
15'-16'	Clay, dense; angular strucure, no hydrcarbon odor.	BG
16.5'-17'	Clay, very dense, brown, moist, no hydrocarbon odor, pliable structure.	BG
17'-17.3'	Glacial till; gravel, fine to medium; dense.	BG

Well Construction:

Bottom of Boring: 17.5'
Bottom of Well: 17.5'
Well Screen: 15'(2.0'-17') of Sch 40 PVC, 0.010" slot
Solid Riser: 1.5'(0.5'-2.0')
Sand Pack: 16'(17.5'-1.5') of No. 1 sand
Bentonite Seal: .5'(1.5'-1.0') of chips
Backfill: 2'(1'-3') of drill cuttings
Well Box: mounted flush with lawn grade

WELL LOG

WELL: MW-2
LOCATION: Ron Williamson property, Charlotte, VT.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jake Peirce, Lincoln Applied Geology, Inc.
DATE: June 11, 1999

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

Depth	Description	PID (ppm)
0'-4'	Sand, medium to coarse; brown; and gravel, fine; loose granular structure; dry; no hydrocarbon odor.	BG
4'	Refusal	BG

Well Construction:

Bottom of Boring:
Bottom of Well:
Well Screen:
Solid Riser:
Sand Pack:
Bentonite Seal:
Backfill:
Well Box:

WELL LOG

WELL: MW-3
LOCATION: Ron Williamson property, Charlotte, VT. Edge of dirt driveway.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jake Peirce, Lincoln Applied Geology, Inc.
DATE: June 11, 1999

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

Depth	Description	PID (ppm)
0'-5'	Sand, brown, fine to medium; some silt; gravel, fine to medium; no structure; dry.	BG
5'-6'	Sand, brown, fine to medium; gravel, fine to medium.	BG
6'-8'	Clay, brown; sand, fine to medium; pliable structure; some organics.	BG

Well Construction:

Bottom of Boring:
Bottom of Well:
Well Screen:
Solid Riser:
Sand Pack:
Bentonite Seal:
Backfill:
Well Box:

WELL LOG

WELL: MW-4
LOCATION: Ron Williamson property, Charlotte, VT. Edge of UST excavation area.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jake Peirce, Lincoln Applied Geology, Inc.
DATE: June 11, 1999

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

Depth	Description	PID (ppm)
0'-5'	Silt, brown, fine to medium; gravel, medium to coarse; dry; no structure; no hydrocarbon odor.	BG
5'-6'	Gravel, brown, medium to coarse; dry; no hydrocarbon odor.	BG
6'-10'	Till with clay; silt, fine; gravel, fine; blocky structure; damp; no hydrocarbon odor.	BG

Well Construction:

Bottom of Boring:
Bottom of Well:
Well Screen:
Solid Riser:
Sand Pack:
Bentonite Seal:
Backfill:
Well Box:

WELL LOG

WELL: TP-1
LOCATION: Ron Williamson property, Charlotte, VT. Center UST excavation.
DRILLER: Adams Engineering, Inc.
HYDROGEOLOGIST: Jake Peirce, Lincoln Applied Geology, Inc.
DATE: June 11, 1999

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

Depth	Description	PID (ppm)
0'-5'	Silt, brown, fine to medium; gravel, fine to medium; no structure; dry; no hydrcarbon odor.	BG
8'-10'	Sand, brown, fine to medium, some gravel; moist; slight hydrocarbon odor noted.	BG

Well Construction:

Bottom of Boring: 10'
Bottom of Well: 10'
Well Screen: 7'(3'-10')
Solid Riser: 2.5'(0.5'-3.0')
Sand Pack: 7.5'(2.5'-10')
Bentonite Seal: 1.5'(1.0'-2.5')
Backfill: 1.5'(1.0'-2.5')
Well Box: Pushed to grade with drill rig.

Appendix C

Soil Quality Results

GREEN MOUNTAIN LABORATORIES, INC.

27 Cross Road
Middlesex, Vermont 05602

Phone (802) 223 - 1468 Fax (802) 223 - 8688

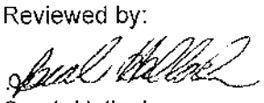
LABORATORY RESULTS

CLIENT NAME:	Lincoln Applied Geology	REFERENCE NO:	5459
ADDRESS:	163 Revell Drive	PROJECT NO:	NA
	Lincoln, VT 05443	DATE OF SAMPLE:	06/11/99
SAMPLE LOCATION:	Williamson Residence	DATE OF RECEIPT:	06/15/99
SAMPLER:	Jake Peirce	DATE OF ANALYSIS:	06/24/99 - 06/25/99
ATTENTION:	Rick Vandenberg	DATE OF REPORT:	06/25/99

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

- 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 - EPA 8260M

GML REF. # : 5459
STATION: MW-3
ANALYSIS DATE: 06/24/99
DATE SAMPLED: 06/11/99
SAMPLE TYPE: SOIL (81.4% DRY WEIGHT)

PARAMETER	PQL (µg/kg)	Conc. (µg/kg)
Benzene	120	ND
Toluene	120	ND
Ethylbenzene	120	ND
1,3,5-Trimethylbenzene	240	ND
1,2,4-Trimethylbenzene	240	ND
Xylenes	360	ND
Naphthalene	600	ND
MTBE	600	ND

Surrogate % Recovery: 102 %

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 - EPA 8260M

GML REF. # : 5459
STATION: MW-4
ANALYSIS DATE: 06/24/99
DATE SAMPLED: 06/11/99
SAMPLE TYPE: SOIL (85.6% DRY WEIGHT)

PARAMETER	PQL (µg/kg)	Conc. (µg/kg)
Benzene	110	ND
Toluene	110	ND
Ethylbenzene	110	ND
1,3,5-Trimethylbenzene	220	ND
1,2,4-Trimethylbenzene	220	ND
Xylenes	330	ND
Naphthalene	550	ND
MTBE	550	ND

Surrogate % Recovery: 104 %

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 - EPA 8260M

GML REF. # : 5459
STATION: TP-1
ANALYSIS DATE: 06/25/99
DATE SAMPLED: 06/11/99
SAMPLE TYPE: SOIL (84.0% DRY WEIGHT)

PARAMETER	PQL (µg/kg)	Conc. (µg/kg)
Benzene	120	ND
Toluene	120	ND
Ethylbenzene	120	ND
1,3,5-Trimethylbenzene	240	ND
1,2,4-Trimethylbenzene	240	ND
Xylenes	360	ND
Naphthalene	600	ND
MTBE	600	ND

Surrogate % Recovery: 107 %

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
E-mail: GML@together.net

GML SAMPLE

Client Name: Lincoln Applied Geology
Address: 163 Revell Dr. Lincoln, VT 05443
Phone / Fax: (802) 453-4384
Project Name: Williamson Residence
Project Number:
Project Manager: Rick Vandenberg
Sampler: Jake Pierce

Page 1 of 1

GML # 5459

#	Sample Location	Date	Time	# of Cont.	Pres.	Sample Type	EPA 8021B + MTBE	TPH by 8015M	Remarks
1	MW-3	6/11/99	11:00	2	—	Soil	✓	✓	
2	MW-4		1330	2	—	Soil	✓	✓	
3	TP-1	↓	1400	2	—	Soil	✓	✓	

Analysis Requested

Chain of Custody

Relinquished By: Jake Pierce	Date/Time: 6/15/99 0800	Received By: Joey Hagan	Date/Time: 6/15/99 1500
Relinquished By: Joey Hagan	Date/Time: 6/15/99 1500	Received By: Jeff Hallock	Date/Time: 6/15/99 1505
Relinquished By:	Date/Time:	Received By:	Date/Time:
Temperature Blank:	Vial Lot ID #:		

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	GML REFERENCE #:	5459
CLIENT ADDRESS:	163 Revell Drive	PROJECT NO:	NA
	Lincoln, VT 05443	DATE OF SAMPLE:	06/11/99
SAMPLE LOCATION:	Williamson Residence	DATE OF RECEIPT:	06/15/99
SAMPLER:	Jake Peirce	DATE OF ANALYSIS:	06/24/99 - 06/25/99
ATTENTION:	Rick Vandenberg	DATE OF REPORT:	07/01/99

Total Petroleum Hydrocarbons (TPH) by EPA Method 8015M (mg/kg – ppm)

Sample	% Dry Weight	PQL	Result
MW-3	81.4	12.0	<12.0
MW-4	85.6	11.0	<11.0
TP-1	84.0	12.0	<12.0

PQL= Practical Quantitation Limit

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
E-mail: GML@together.net

GML SAMPLE #

Client Name: Lincoln Applied Geology
Address: 163 Revell Dr. Lincoln, VT 05443
Phone / Fax: (802) 453-4384
Project Name: Williamson Residence
Project Number:
Project Manager: Rick Vandenberg
Sampler: Jake Kirce

Page 1 of 1

GML # 5459

#	Sample Location	Date	Time	# of Cont.	Pres.	Sample Type	Analysis Requested: EPA 8021B + MTBE	Analysis Requested: TPH by 8015M	Remarks
1	MW-3	6/11/99	11:00	2	—	Soil	✓	✓	
2	MW-4	↓	1330	2	—	Soil	✓	✓	
3	TP-1	↓	1400	2	—	Soil	✓	✓	

Chain of Custody

Relinquished By: Jake Kirce	Date/Time: 6/15/99 0800	Received By: Joey Hagan	Date/Time: 6/15/99 1500
Relinquished By: Joey Hagan	Date/Time: 6/15/99 1500	Received By: Scott Hallock	Date/Time: 6/15/99 15:05
Relinquished By:	Date/Time:	Received By:	Date/Time:
Temperature Blank:	Vial Lot ID #:		

Appendix D

Ground Water Quality Results

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	REFERENCE NO:	5471
ADDRESS:	163 Revell Drive	PROJECT NO:	NA
	Lincoln, VT 05443	DATE OF SAMPLE:	06/17/99
SAMPLE LOCATION:	Williamson Residence	DATE OF RECEIPT:	06/17/99
SAMPLER:	Jake Peirce	DATE OF ANALYSIS:	06/30/99
ATTENTION:	Rick Vandenberg	DATE OF REPORT:	07/01/99

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 - EPA 8260M

GML REF. # :	5471
STATION:	TRIP BLANK
ANALYSIS DATE:	06/30/99
DATE SAMPLED:	06/17/99
SAMPLE TYPE:	WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
1,3,5-Trimethylbenzene	2	ND
1,2,4-Trimethylbenzene	2	ND
Xylenes	3	ND
Naphthalene	5	ND
MTBE	5	ND

Surrogate % Recovery: 105 %

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 - EPA 8260M

GML REF. # : 5471
STATION: MW-1
ANALYSIS DATE: 06/30/99
DATE SAMPLED: 06/17/99
SAMPLE TYPE: WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
1,3,5-Trimethylbenzene	2	ND
1,2,4-Trimethylbenzene	2	ND
Xylenes	3	ND
Naphthalene	5	ND
MTBE	5	ND

Surrogate % Recovery: 104 %

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

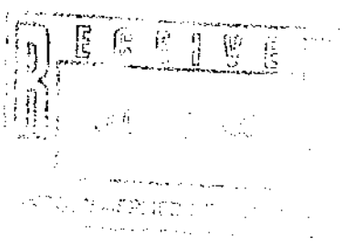
GC/MS METHOD - EPA 8260M

GML REF. # : 5471
STATION: TP-1
ANALYSIS DATE: 06/30/99
DATE SAMPLED: 06/17/99
SAMPLE TYPE: WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	2.6
Ethylbenzene	1	2.2
1,3,5-Trimethylbenzene	2	57
1,2,4-Trimethylbenzene	2	3.2
Xylenes	3	53
Naphthalene	5	ND
MTBE	5	ND

Surrogate % Recovery: 110 %

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 - EPA 8260M

GML REF. # : 5471
STATION: SHALLOW WELL
ANALYSIS DATE: 06/30/99
DATE SAMPLED: 06/17/99
SAMPLE TYPE: WATER

PARAMETER	PQL (µg/L)	Conc. (µg/L)
Benzene	1	ND
Toluene	1	ND
Ethylbenzene	1	ND
1,3,5-Trimethylbenzene	2	ND
1,2,4-Trimethylbenzene	2	ND
Xylenes	3	ND
Naphthalene	5	ND
MTBE	5	ND

Surrogate % Recovery: 105 %

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
E-mail: GML@together.net

GML

SAMPLE

Client Name Lincoln Applied Geology
Address 163 Revell Dr Lincoln, VT 05443
Phone / Fax (802) 453-4384
Project Name Williamson Residence
Project Number
Project Manager Rick Vandenberg
Sampler Jake Peirce

Page 1 of 1

GML # 5471

#	Sample Location	Date	Time	# of Cont.	Pres.	Sample Type	Analysis Requested: EPA 8021B	Analysis Requested: EPA 8015	Remarks
1	Trip Blank	6/17/99	0800	2	HCl	H_2O	✓		
2	mw-1		0910	2	HCl		✓		
2	mw-1		0910	1	—			✓	
3	TP-1		1005	2	HCl		✓		
3	TP-1		1005	1	—			✓	
4	Shallow well		1015	2	HCl		✓		
4	Shallow well	↓	1015	1	—	↓		✓	

Chain of Custody

Relinquished By: Jake Peirce	Date/Time: 6/17/99 1250	Received By: [signature]	Date/Time: 6/17/99 1250
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Temperature Blank:	Vial Lot ID #:		

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	GML REFERENCE #:	5471
CLIENT ADDRESS:	163 Revell Drive	PROJECT NO:	NA
	Lincoln, VT 05443	DATE OF SAMPLE:	06/17/99
SAMPLE LOCATION:	Williamson Residence	DATE OF RECEIPT:	06/17/99
SAMPLER:	Jake Peirce	DATE OF ANALYSIS:	06/30/99
ATTENTION:	Rick Vandenberg	DATE OF REPORT:	07/01/99

Total Petroleum Hydrocarbons (TPH) by EPA Method 8015M (mg/L – ppm)

Sample	PQL	Result
MW-1	0.100	<0.100
TP-1	0.100	0.473
Shallow Well	0.100	<0.100

PQL= Practical Quantitation Limit

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
E-mail: GML@together.net

GML SAMPLE

Client Name: Lincoln Applied Geology
Address: 163 Rowell Dr Lincoln, VT 05443
Phone / Fax: (802) 453-4384
Project Name: Williamson Residence
Project Number:
Project Manager: Rick Vandenberg
Sampler: Jake Peirce

Page 1 of 1

GML # 5471

#	Sample Location	Date	Time	# of Cont.	Pres.	Sample Type	Analysis Requested: EPA 8021B	Analysis Requested: EPA 8015	Remarks
1	Trip Blank	6/17/99	0800	2	HCl	H_2O	✓		
2	mw-1		0910	2	HCl		✓		
2	mw-1		0910	1	—			✓	
3	TP-1		1005	2	HCl		✓		
3	TP-1		1005	1	—			✓	
4	Shallow well		1015	2	HCl		✓		
4	Shallow well	↓	1015	1	—	↓		✓	

Chain of Custody

12:50

Relinquished By: Jake Peirce	Date/Time: 6/17/99 1250	Received By: Paul Wallbrook	Date/Time: 6/17/99
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Temperature Blank:	Vial Lot ID #:		

Appendix E

Cost Estimate

Attachment A

Ron Williamson Residence
Church Hill Road
Charlotte, Vermont
VDEC Site #98-2528
Cost Estimate for a Site Investigation
June 15,1999

Task A. Ground Water Sampling and Sensitive Receptor Survey

Field Technican -	4	hr(s) @	$40.00	per hour	$	160.00
Disposable Bailer (1.5") -	2	@	$8.89	each	$	17.78
PID and Interface Probe -	1	day(s) @	$75.00	per day	$	75.00
EPA 8021B -	4	@	$60.00	each	$	240.00
EPA 8015M -	4	@	$100.00	each	$	400.00
Mileage -	80	mile(s) @	$0.35	per mile	$	28.00
				Subtotal	**$**	**920.78**

Task C. Preparation of Summary Report and SMAC Request

Principal/Senior Hydrogeologist -	0.2	hr(s) @	$85.00	per hour	$	17.00
Hydrogeologist/Site Manager -	0.5	hr(s) @	$65.00	per hour	$	32.50
Geologist -	3	hr(s) @	$45.00	per hour	$	135.00
Computer/CAD Technician -	3	hr(s) @	$45.00	per hour	$	135.00
Administrative Assistant -	2	hr(s) @	$35.00	per hour	$	70.00
				Subtotal	**$**	**389.50**

Total A, B, C >>>> $ 1,310.28

Lincoln Applied Geology, Inc
Environmental Consultants

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