

JAN 31 2000



January 25, 2000

Ms. Linda Provencher  
State of Vermont; Department of Environmental Conservation  
Sites Management Section  
103 South Main Street/West Building  
Waterbury, VT 05671

Re: Phase I Site Assessment; Main St. Shopping Center; St. Albans, Vermont  
(NCES Job No. 2679)

Dear Ms. Provencher:

Enclosed please find a copy of the Initial Site investigation conducted at the Main Street Shopping Center in St. Albans, Vermont. Based on the findings North Country Environmental Services has recommended an additional round of groundwater sampling be conducted at the site in March 2000 and additional recommendations will be evaluated at that time.

If you have any questions, please feel free to contact the undersigned in our Milford Office.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'P.B. Aldrich'.

Peter B. Aldrich  
Project Manager

99-2703

**Corporate Office:** 31 Granite Street • Suite 8 • Milford, MA 01757 • (508) 634-9800 • Fax (508) 634-8259

**Vermont Office:** 11 Mill Street • Barre, VT 05641 • (802) 479-5299 • Fax (802) 479-5499

**Connecticut Office:** • 461 Cooke Street • Farmington, CT 06032 • (860) 409-9033 • Fax (860) 409-9044

JAN 31 2000

Phase (check one)	Type (check one)
<input checked="" type="checkbox"/> Initial Site Investigation	Work Scope
<input type="checkbox"/> Corrective Action Feasibility Investigation	<input checked="" type="checkbox"/> Technical Report
<input type="checkbox"/> Corrective Action Plan	PCF Reimbursement Request
<input type="checkbox"/> Corrective Action Summary Report	General Correspondence

### INITIAL SITE INVESTIGATION

**Grand Union Shopping Center  
Main Street  
St. Albans, VT 05478  
SMS # 99-2703**

**Prepared for:**

**Pomerleau Real Estate  
69 College Street, (PO Box 6)  
Burlington, VT 05401**

**Prepared By:**

**North Country Environmental Services, Inc.  
31 Granite Street, Suite 8  
Milford, MA 01757**

**NCES Job # 2679**

**Contact: Peter B. Aldrich**

**January, 2000**

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## EXECUTIVE SUMMARY

Five Underground Storage Tanks (UST) were closed at the subject site on September 9, and 13, 1999. Four of the tanks were closed by removal, and the fifth tank was closed in place. During removal of the tanks field screenings of the excavated soils indicated volatile organic content in excess of the State of Vermont regulatory guideline of 20 PPM. In the excavation for Tank #2 heavy petroleum sheen was observed on the surface of the groundwater table. Approximately 55 gallons of impacted groundwater was pumped from the excavation and disposed of at an approved facility.

Based on the observations made by NCES during the tank closures and reported to at the Vermont Department of Environmental Conservation (VTDEC), a Site Investigation was requested to be completed. On November 30, 1999 five soil borings were completed on the Site to define the nature and extent of the contamination. Four of the borings were completed as monitoring wells. The monitoring wells were sounded and sampled to assess and define impact (if any) to groundwater.

Petroleum constituents were detected in two of the four wells on Site. Concentrations of Benzene in well NC-3 exceeded the Vermont Primary Groundwater Quality Standards. The overburden aquifer is approximately three feet below grade at the site and appears to be flowing in a westerly direction. The area is mixed residential and business usage, and is serviced by a municipal water and sewer system.

NCES recommends additional round of sampling and gauging of the groundwater monitoring wells to estimate movement (if any) of the dissolved petroleum constituents, and compare levels during seasonal groundwater level fluctuations.

## 1.0 INTRODUCTION

The purpose of this report is to outline the results of a site investigation at the Grand Union Shopping Center in St. Albans, Vermont (the Site). The site investigation activities were performed on behalf of Mr. Steve Ploesser of Pomerleau Real Estate of Burlington, Vermont, under the direction of The Sites Management Section of the Vermont Department of Environmental Conservation.

## 2.0 SCOPE OF WORK PERFORMED

Groundwater monitoring and subsurface exploration activities were initiated to determine the extents of subsurface contamination at the site and to delineate any dissolved contamination plume resulting from the five UST closed at the site. All site activities are performed as outlined in the Site Investigation Guidance published by the VTDEC. The scope of work completed at the Site includes the following tasks:

Install <sup>four</sup> ~~three~~ (4) Monitoring Wells (MW's) to determine the degree and extent of contamination. One monitoring well (1) to be installed in a theoretically upgradient location and three (3)-monitoring wells to be installed in a theoretically down gradient location (see Site Map Appendix A). Soil samples from each well's boring will be screened in the field with a photoionization detector (PID). Soils will be examined and logged.

Sample and analyze these newly installed monitoring wells after well development, as for Volatile Organic Compounds (VOC) by EPA Method 8260 and Total Petroleum Hydrocarbons (TPH) by EPA Method 8100 modified.

Gauge monitoring wells to establish local groundwater flow characteristics.

Identify potential sensitive receptors in the area.

Submittal of a summary report to the SMS which outlines the work performed, including conclusions and recommendations, analytical data, site map with any potential receptors shown, a groundwater contour map, a groundwater contaminant plume map, an area map and detailed well logs. In addition, tables or graphs detailing the trend of Volatile Organic Concentrations (VOC) in the wells should be developed.

## 3.0 SITE DESCRIPTION

The subject site is a commercial property located on Main Street in the village of St. Albans, Vermont (see Site Locus Plan). The area is comprised of buildings of both commercial and residential use. The village is supplied by municipal water and sewer systems that enter the site from the western (Main Street) side of the building. Natural gas service enters the site from the eastern (Messenger Street) side of the property. Electrical and telephone service to the property is from pole mounted service on the eastern side of the property. The site is shown on the attached Site Plan.

#### 4.0 SOIL BORING AND MONITORING WELL INSTALLATION

On November 30, 199, NCES personnel were on site to advance five (5) soil borings and install monitoring wells in order to determine the degree and extent of subsurface contamination. Soil Exploration Corporation of Leominster, Massachusetts performed all drilling and monitoring well installations under direct NCES supervision.

All borings were completed using a truck mounted rotary drill rig with 4.25-inch diameter hollow stem augers. Soil samples were collected from each boring utilizing 24 inch long by 2-inch ID split spoon samplers. Split spoon samples were collected at five-foot intervals during the boring advancement. Following all sampling, each sampler was decontaminated in the field. Soil samples collected from soil borings were screened in the field for the Presence of TOV by the Jar Headspace Method using a pre-calibrated Photoionization detector (PID). TOV levels above ambient were observed in all of the soil borings except NC-5. A summary of PID readings is shown in the following table.

**Table 1, Soil PID Screening Results (parts per million, PPM)**

Approx. Depth	NC-1	NC-2	NC-3	NC-4	NC-5
0-2	12	36	8	28	0
5-7	196	8	320	66	0
10-12	28	N/A	48	5	0

Soil samples were collected from undisturbed material ahead of the augers using 2.5-inch diameter stainless steel split spoons driven two feet using a 140-pound hammer falling 30 inches. All down hole drilling equipment and tools were decontaminated prior to use at each boring location to prevent potential cross contamination. Four of the five borings were completed as monitoring wells in the overburden soils to depths of approximately 10 feet below grade. Copies of all boring logs are included in Appendix A. The well locations are indicated on the attached Site Plan.

All monitoring wells were constructed of 2-inch diameter schedule 40 PVC pipes with flush threads and end caps. The screen sections of each well were constructed of .010 inch slotted, 2-inch diameter schedule 40 PVC pipe with flush threads. The well screen in each well was installed to intercept the elevation of the upper level groundwater. The annular space was filled with washed silica sand to a level approximately two feet above the well screen. A bentonite seal was then installed above the sand pack and natural fill was used in the remainder of the annular space. Watertight roadway boxes were then placed at grade and sealed with concrete to complete the installation. Well construction diagrams are attached in Appendix B.

After well installation, all monitoring wells were developed to initiate groundwater flow, settle the filter pack and to remove fines. Development was accomplished using disposable polyethylene bailers.

## 5.0 GROUNDWATER ANALYSIS

On December 8, 1999, NCES personnel were on site to sample all existing Monitoring Wells. Groundwater samples were collected from Monitoring Wells, NC-1, NC-3, NC-4, and NC-5. Before sampling, each well's water depth was measured, to the nearest .10 of a foot with an Oil Recovery Service (ORS) probe, and a description of the color and odor of the groundwater was logged in the field. (See Table 1. below).

**Table 1. Groundwater Depth, Odor, and Sheen descriptions.**

WELL #	SHEEN	ODOR	WATER DEPTH (in feet)
NC-1	NO	NO	3.9
NC-3	NO	NO	3.2
NC-4	NO	YES	3.3
NC-5	NO	NO	0.75

A minimum of three (3) well volumes of groundwater were removed from each monitoring well and each well was then allowed to recharge prior to sample collection. All groundwater samples were properly packaged, preserved and sent under a signed chain of custody to Geolabs, Inc. in Braintree, Massachusetts for EPA Method 8260 and EPA 8100 (mod.) analysis. The results of groundwater sampling are presented in Table 2. All boldfaced compounds are above Vermont Groundwater Enforcement Standards (VTGWES) or Vermont Health Advisory levels (VHA). Please refer to Appendix C for a copy of the analytical results.

**Table 2. Groundwater Analysis Results (all units µg/L except TPH in mg/L)**

Contaminant	Well				VTGWES or VHA*
	NC-1	NC-3	NC-4	NC-5	
BENZENE	<5.0	<b>9.68</b>	<5	<5	5 ppb
TOLUENE	<5.0	<5	<5	<5	1000 ppb
ETHYLBENZENE	13.5	27.6	<5.0	<5.0	700 ppb
XYLENES	46.1	116	<5.0	<5.0	10,000 ppb
n-BUTYLBENZENE	6.36	15.2	<5.0	<5.0	None est.
CHLOROMETHANE	<5.0	<b>10.2</b>	<5.0	<5.0	3.0 ppb*
ISOPROPYLBENZENE	<5.0	18.3	<5.0	<5.0	None est.
p-ISOPROPYLTOLUENE	8.85	17.3	<5.0	<5.0	None est.
NAPHTHALENE	<b>59.3</b>	<b>87.6</b>	<25.0	<25.0	20 ppb
n-PROPYLBENZENE	5.72	37.4	<5.0	<5.0	none est
tert-BUTYLBENZENE	7.5	5.16	<5.0	<5.0	None est.
1,2,4-TRIMETHYLBENZENE	<b>26.4</b>	<b>126</b>	<5.0	<5.0	5.0 ppb
1,3,5-TRIMETHYLBENZENE	<b>14.8</b>	<b>30.3</b>	<5.0	<5.0	4.0 ppb
TPH	2.00	7.72	<0.2	<0.2	None est.

**NOTE:** µg/L = parts per billion

No compounds were detected in wells NC-4 and NC-5 above practical quantification limits for the analytical methods used.

Naphthalene was detected in monitoring well NC-1 at a concentration of 59.9 µg/l (ppb) which is above the VTGWES of 20 ppb. The compounds 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were also observed at concentrations above their respective VTGWES. Ethylbenzene and xylenes were detected at concentrations of 13.5 and 46.1, respectively. However, these levels are significantly lower than their respective VTGWES.

Monitoring well NC-3 displayed the highest levels of contamination. A benzene level of 9.68 ppb was observed, which is in excess of the VTGWES of 5 ppb. The compounds 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were also observed at concentrations above their respective VTGWES. The petroleum compounds chloromethane, naphthalene were detected at 10.2 and 87.6 ppb respectively. These concentrations are in excess of the respective VTGWES. Other petroleum compounds (alkybenzenes) were detected above practical quantification levels for the analytical methods used however there are no published limits for these compounds.

## **6.0 POTENTIAL RECEPTORS**

The subject site and the village are serviced by a municipal water system. The source is the St. Albans Reservoir located approximately 3.2 miles southeast of the subject site. The estimated groundwater flow direction based on topography and adjacent water bodies is to the southwest. The potential for impact to the reservoir from the conditions at the subject site is limited.

There are two surface waters in the area surrounding the subject site. The Steven's Brook flows northerly through the town, then loops southwesterly and drains into Lake Champlain. The Brook is approximately 300 feet west of the site. Lake Champlain is located westerly from the site and is approximately 3 miles from the subject site.

The closest residential properties are located to the immediate east of the subject site along Messenger Street. The residences are approximately 100 feet from the work area and have basements. The residences are theoretically upgradient, and also higher in elevation. The potential for vapor migration into these dwellings is limited. The building on the subject site is slab on grade construction, and therefore vapor migration is not an issue.

The only utility in the affected area that could act as a conduit is the gas line entering off of Messenger Street. The gas line enters the site at an elevation higher than the affected area, and then terminates at meters at grade near the building wall. The potential for this utility to act as a preferential pathway is likely, however migration of vapors to the properties at a higher elevation is unlikely.

No other potential receptors were identified at the site.

## **7.0 SITE GEOLOGY**

The surficial geology at the site consists of dense; fine to medium-grained sands with some silt, and traces of fine gravel and cobbles. The surficial deposits are most likely

glacial lake deposits. Refusal was encountered at approximately 10' BGS during the drilling program. The refusal was assumed to be in glacial till.

Bedrock was not encountered during this phase of work. A review of the *Bedrock Geologic GIS Map of Vermont* indicated that the bedrock in the area of the site is from the Sweetsburg formation. The Sweetsburg formation consists of Cambrian aged slates and conglomerates. The map also indicates that the site is on the upper plate of a thrust fault located to the west of the village.

## 8.0 SITE HYDROGEOLOGY

Groundwater measurements were taken in all of the monitoring wells. An overburden aquifer was observed approximately 3 feet below the grade surface. Based on observations made on-site, the local groundwater flow is most likely in the southwesterly direction. Localized observations may be influenced by preferential flow pathways due to construction in the subsurface (basements, utilities, etc.) Adjacent surface waters and topography suggest that the regional groundwater flow is most likely in a westerly direction.

no groundwater contour maps

## 9.0 CONCLUSIONS AND RECCOMENDATIONS

Following the completion of a multiple tank closure at the site, the Sites Management Section (SMS) of the VTDEC requested that a Site Investigation be completed for the site. The Site Investigation included: Installation of 5 soil borings, completion of (4) Monitoring Wells, Sampling and analysis of the Monitoring Wells, and evaluation of potential receptors.

During the installation of the Monitoring Wells, the soil was screened in the field with a PID. PID readings indicated. TOV concentrations from 12-320 PPM were observed in samples from borings NC-1-NC-4. No TOV concentrations were observed in the NC-5 boring.

Monitoring wells were installed in borings NC-1, NC-3, NC-4, and NC-5. All of the wells were developed and sampled for TPH and VOC by EPA methods 8100 and 8260 respectively. The analytical results for the groundwater indicate concentrations of petroleum compounds in monitoring wells NC-1, and NC-3. In monitoring well NC-3, Benzene, chloromethane, naphthalene, and Trimethylbenzene (1,2,4 and 1,3,5 isomers) concentrations exceeded the VTGWES. In monitoring well NC-1, naphthalene and trimethylbenzene (both 1,2,4 and 1,3,5 isomers) concentrations exceeded the VTGES. Monitoring wells, NC-4 and NC-5 had no detectable petroleum compounds. All compounds above VTGWES standards are bolded in Table 2.

? Not full 8260, and not analyzed (no PID)

The source of the contamination (the former UST's) has been removed. There are no immediately threatened receptors in the area. NCES recommends that an additional round of groundwater samples be collected in March 2000 and analyzed for VOC by EPA method 8260 to assess the following:

- estimate plume migration (if any),

- evaluate contaminant trends
- asses biodegradation of the contaminants

After evaluating the analytical data, additional recommendations will be made regarding further actions at this site.

~~to~~ mention of saturated soils which Keri Sewell called me about on 11/30/99. - NC needs to follow up.

~~location~~ of NC-2 needs to be on map.

~~to~~ need gw contour map

~~Analysis~~ needs to be by 8001B so MTSE is also analyzed.

~~Gw~~ cont. found in two of the excavations, therefore 2 deductibles.

~~area~~ map

~~Need~~ to screen basements as a precautionary measure (of residences)

~~need~~ to do some work to determine if gas line is acting, or may act, as a prefer pathway (i.e. soil barrier)

# TEST BORING LOG

SHEET 1

**Soil Exploration Corp.**  
 Geotechnical Drilling  
 Groundwater Monitor Well  
 148 Pioneer Drive  
 Leominster, MA 01453  
 978 840-0391

**North Country Environmental**  
**Site: Pomerleau Real Estate**  
**Shopping Plaza, North Main Street**  
**St. Albans, VT**

**BORING NC-1**

**PROJECT NO. 99-1169**

**DATE: December 1, 1999**

Ground Elevation:  
 Date Started: November 30, 1999  
 Date Finished: November 30, 1999  
 Driller: DL

**GROUNDWATER OBSERVATIONS**

DATE	DEPTH	CASING	STABILIZATION

Soil Engineer/Geologist:

Depth Ft.	Casing bl/ft	Sample		Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
		No.	Pen/Rec			
1		1		0'0"-2'0"	7-9-9-11	Moist to wet, medium dense, fine to coarse sand, some organic silt, trace fine gravel and cobbles.
5		2		5'0"-7'0"	3-3-27-38	
10		3		10'0"-11'5"	38-40-120/5"	
15						8'0" Wet, very dense, very fine to fine sand and inorganic silt, trace fine gravel. Till
20						11'5" Refusal at 11'5" with split spoon sampler, 120/5". Water level at 3'6" upon completion. Set well point at 10'0".
25						
30						
35						
39						

Notes: Hollow Stem Auger Size - 4-1/4"

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 - 30 M Dense, 30 - 50 Dense, 50+ V Dense. Cohesive: 0 - 2 V Soft, 2 - 4 Soft, 4 - 8 M Stiff 8 - 15 Stiff, 15 - 30 V. Stiff, 30 + Hard.	Trace 0 to 10% Little 10 to 20% Some 20 to 35% And 50% or More	CASING      SAMPLE      CORE TYPE ID SIZE (IN) HAMMER WGT (LB) HAMMER FALL (IN)
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# TEST BORING LOG

SHEET 2

**Soil Exploration Corp.**  
 Geotechnical Drilling  
 Groundwater Monitor Well  
 148 Pioneer Drive  
 Leominster, MA 01453  
 978 840-0391

**North Country Environmental**  
**Site: Pomerleau Real Estate**  
**Shopping Plaza, North Main Street**  
**St. Albans, VT**

**BORING NC-2**

**PROJECT NO. 99-1169**

**DATE: December 1, 1999**

Ground Elevation:

Date Started: November 30, 1999

Date Finished: November 30, 1999

Driller: DL

Soil Engineer/Geologist:

**GROUNDWATER OBSERVATIONS**

DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing b/r	Sample		Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
		No.	Pen/Rec			
1		1		0'0"-2'0"	15-15-10-11	Moist to wet, medium dense, fine to coarse sand, some organic silt, trace fine gravel.
5		2		5'0"-7'0"	3-5-10-15	4'0" Wet, medium dense, very fine to fine sand and inorganic silt, trace fine gravel. Till
10						9'0" Refusal at 9'0" with hollow stem auger. Water level at 3'6" upon completion.
15						
20						
25						
30						
35						
39						

Notes: Hollow Stem Auger Size - 4-1/4"

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 - 30 M Dense, 30 - 50 Dense, 50+ V Dense. Cohesive: 0 - 2 V Soft, 2 - 4 Soft, 4 - 8 M Stiff 8 - 15 Stiff, 15 - 30 V. Stiff, 30 + Hard.	Trace 0 to 10% Little 10 to 20% Some 20 to 35% And 50% or More	CASING      SAMPLE      CORE TYPE ID SIZE (IN) HAMMER WGT (LB) HAMMER FALL (IN)
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# TEST BORING LOG

SHEET 3

**Soil Exploration Corp.**  
 Geotechnical Drilling  
 Groundwater Monitor Well  
 148 Pioneer Drive  
 Leonminster, MA 01453  
 978 840-0391

**North Country Environmental**  
**Site: Pomerleau Real Estate**  
**Shopping Plaza, North Main Street**  
**St. Albans, VT**

**BORING NC-3**

**PROJECT NO. 99-1169**

**DATE: December 1, 1999**

Ground Elevation:  
 Date Started: November 30, 1999  
 Date Finished: November 30, 1999  
 Driller: DL

**GROUNDWATER OBSERVATIONS**

DATE	DEPTH	CASING	STABILIZATION

Soil Engineer/Geologist:

Depth Ft.	Casing bd/ft	Sample			Strata	Visual Identification of Soil and / or Rock Sample
		No.	Pen/Rec	Depth		
1		1		0'0"-2'0"	5-5-4-5	Moist to wet, loose, fine to medium sand, some organic silt, trace fine gravel.
5		2 2A		5'0"-6'0" 6'0"-7'0"	2-3 15-17	6'0" Wet, dense, very fine to fine sand and inorganic silt, trace fine gravel. Till
10						9'6" Refusal at 9'6" with hollow stem auger. Water level at 3'6" upon completion. Set well point at 10'0".
15						
20						
25						
30						
35						
39						

Notes: Hollow Stem Auger Size - 4-1/4"

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 - 30 M Dense, 30 - 50 Dense, 50+ V Dense. Cohesive: 0 - 2 V Soft, 2 - 4 Soft, 4 - 8 M Stiff 8 - 15 Stiff, 15 - 30 V. Stiff, 30 + Hard.	Trace 0 to 10% Little 10 to 20% Some 20 to 35% And 50% or More	CASING      SAMPLE      CORE TYPE ID SIZE (IN) HAMMER WGT (LB) HAMMER FALL (IN)
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# TEST BORING LOG

SHEET 4

**Soil Exploration Corp.**  
 Geotechnical Drilling  
 Groundwater Monitor Well  
 148 Pioneer Drive  
 Leominster, MA 01453  
 978 840-0391

**North Country Environmental**  
**Site: Pomerleau Real Estate**  
**Shopping Plaza, North Main Street**  
**St. Albans, VT**

BORING NC-4

PROJECT NO. 99-1169

DATE: December 1, 1999

Ground Elevation:

Date Started: November 30, 1999

Date Finished: November 30, 1999

Driller: DL

Soil Engineer/Geologist:

### GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing bl/ft	Sample		Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
		No.	Pen/Rec			
1		1		0'0"-2'0"	9-5-9-9	Moist to wet, medium dense, fine to medium sand, some organic silt, trace fine gravel.
5		2		5'0"-7'0"	11-11-15-19	
10		3		10'0"-10'2"	120/2"	
15						8'0" Wet, very dense, very fine to fine sand and inorganic silt, trace fine gravel.
20						10'2" Refusal at 10'2" with split spoon sampler, 120/2". Water level at 3'6" upon completion. Set well point at 10'0".
25						
30						
35						
39						

Notes: Hollow Stem Auger Size - 4-1/4"

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 - 30 M Dense, 30 - 50 Dense, 50+ V Dense. Cohesive: 0 - 2 V Soft, 2 - 4 Soft, 4 - 8 M Stiff 8 - 15 Stiff, 15 - 30 V. Stiff, 30 + Hard.	Trace 0 to 10% Little 10 to 20% Some 20 to 35% And 50% or More	CASING      SAMPLE      CORE TYPE ID SIZE (IN) HAMMER WGT (LB) HAMMER FALL (IN)
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# TEST BORING LOG

SHEET 5

**Soil Exploration Corp.**  
 Geotechnical Drilling  
 Groundwater Monitor Well  
 148 Pioneer Drive  
 Leominster, MA 01453  
 978 840-0391

**North Country Environmental**  
**Site: Pomerleau Real Estate**  
**Shopping Plaza, North Main Street**  
**St. Albans, VT**

**BORING NC-5**

**PROJECT NO. 99-1169**

**DATE: December 1, 1999**

Ground Elevation:

Date Started: November 30, 1999

Date Finished: November 30, 1999

Driller: DL

Soil Engineer/Geologist:

**GROUNDWATER OBSERVATIONS**

DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing bl/ft	Sample		Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
		No.	Pen/Rec			
1		1		0'3"-2'3"	7-17-15-17	0'3" Asphalt - 0'3" Moist to wet, dense to very dense, very fine to fine sand, and inorganic silt, fine gravel and cobbles, till.
5		2		5'0"-7'0"	20-29-20-41	
10		3		10'0"-10'10"	27-120/4"	10'10" Refusal at 10'10" with split spoon sampler, 120/4". Water level at 4'0" upon completion. Set well point at 10'0".
15						
20						
25						
30						
35						
39						

Notes: Hollow Stem Auger Size - 4-1/4"

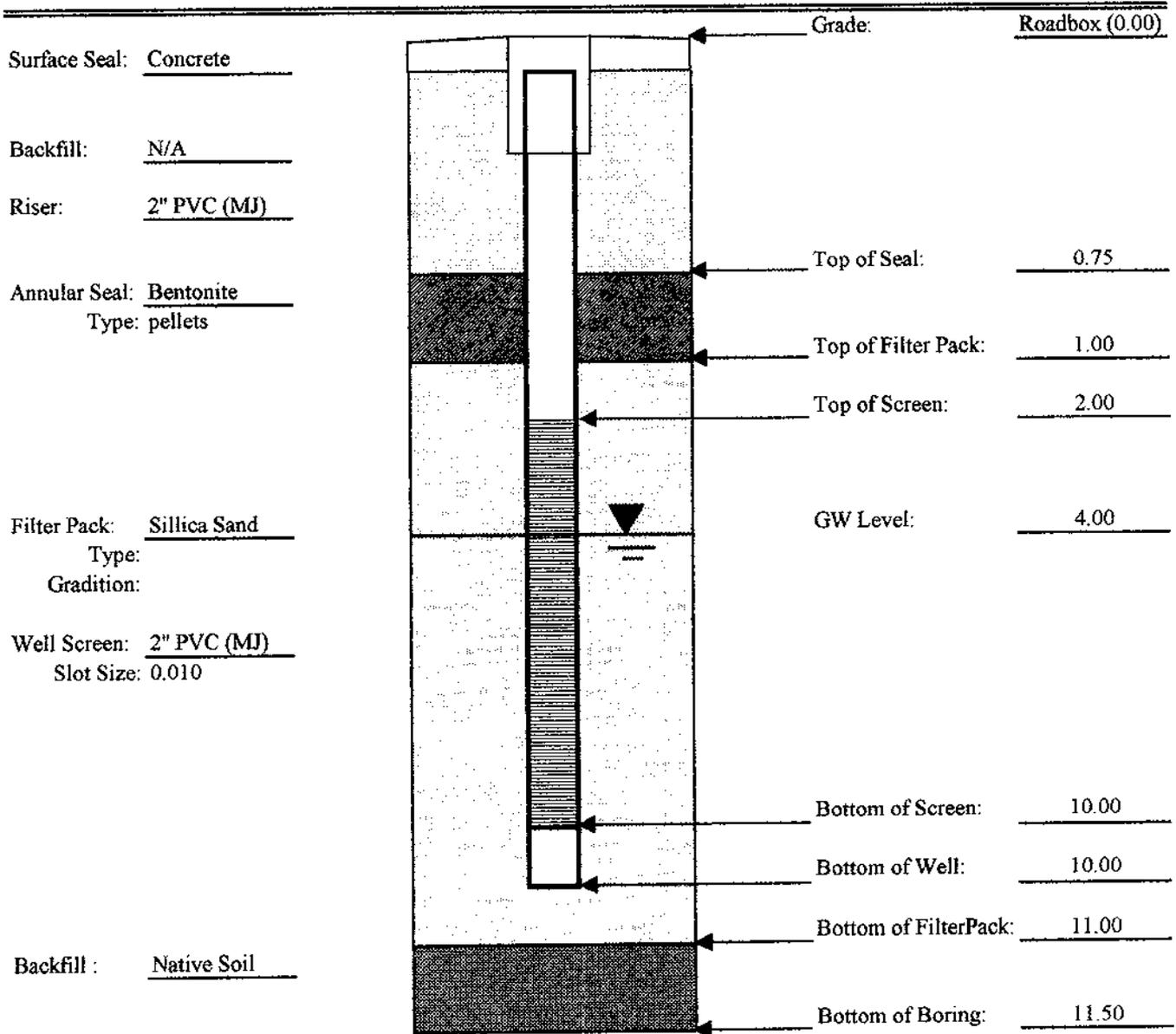
Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 - 30 M Dense, 30 - 50 Dense, 50+ V Dense. Cohesive: 0 - 2 V Soft, 2 - 4 Soft, 4 - 8 M Stiff 8 - 15 Stiff, 15 - 30 V. Stiff, 30 + Hard.	Trace 0 to 10% Little 10 to 20% Some 20 to 35% And 50% or More	CASING      SAMPLE      CORE TYPE ID SIZE (IN) HAMMER WGT (LB) HAMMER FALL (IN)
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Noth Country Environmental Services  
 31 Granite Street, Suite 8  
 Milford, Massachusetts 01759

Well No. NC-1  
 Completion Date: 30-Nov-99  
 Inspector R. Berger

**Well Completion Diagram**



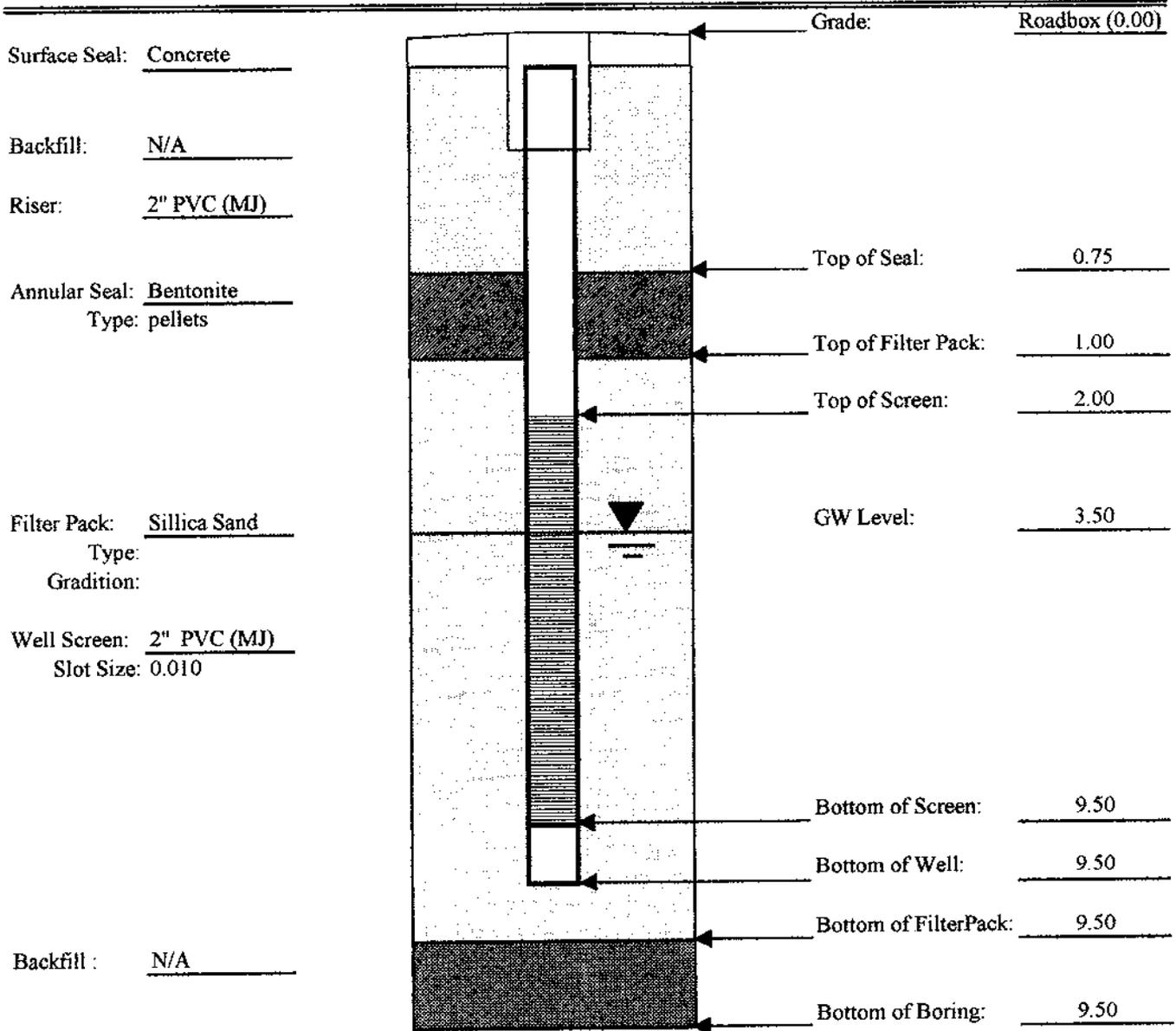
**Notes:** All measurements given from grade



Noth Country Environmental Services  
 31 Granite Street, Suite 8  
 Milford, Massachusetts 01759

Well No. NC-3  
 Completion Date: 30-Nov-99  
 Inspector R. Berger

**Well Completion Diagram**



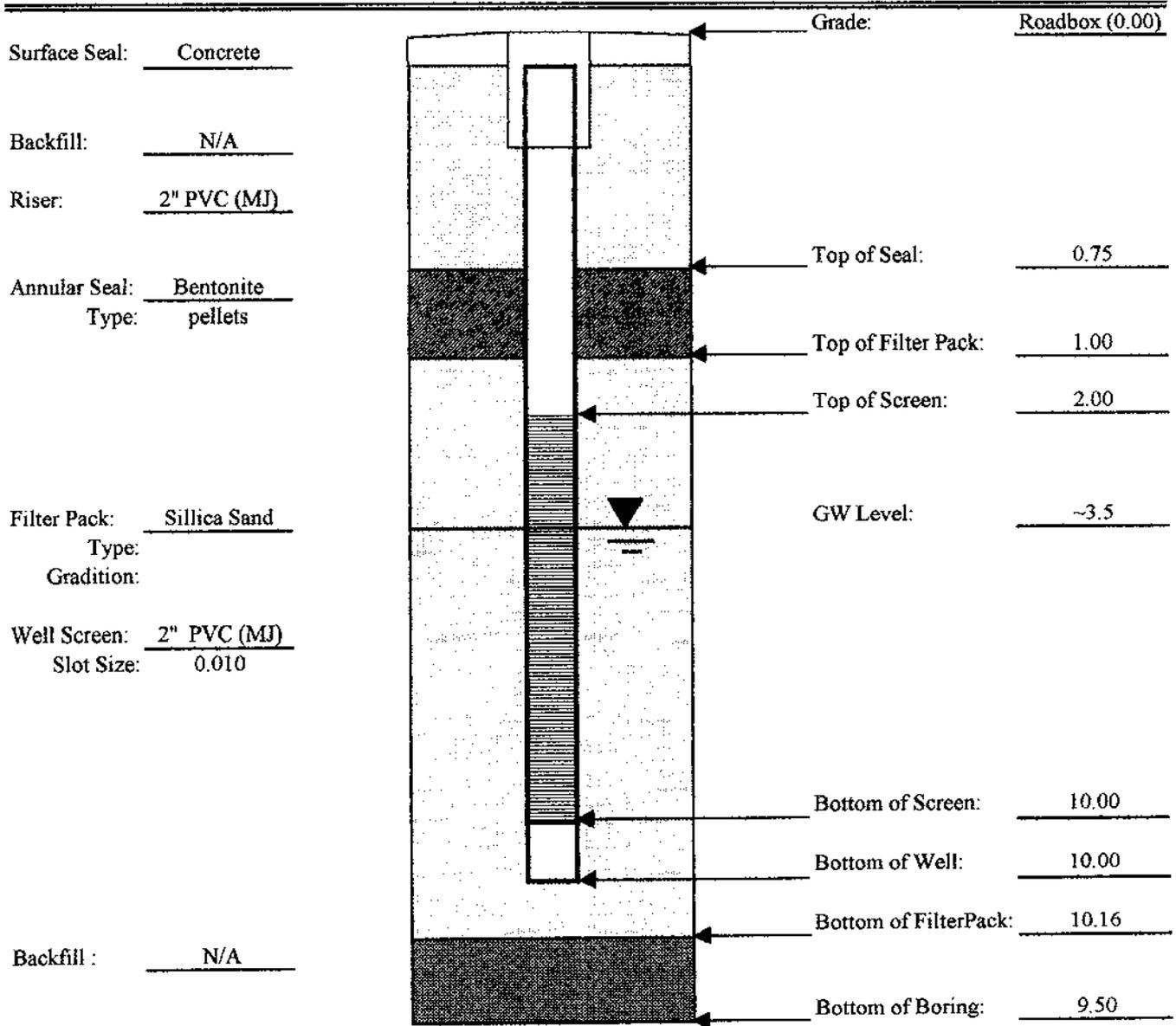
**Notes:** All measurements given from grade



Noth Country Environmental Services  
 31 Granite Street, Suite 8  
 Milford, Massachusetts 01759

Well No. NC-4  
 Completion Date: 30-Nov-99  
 Inspector R. Berger

**Well Completion Diagram**



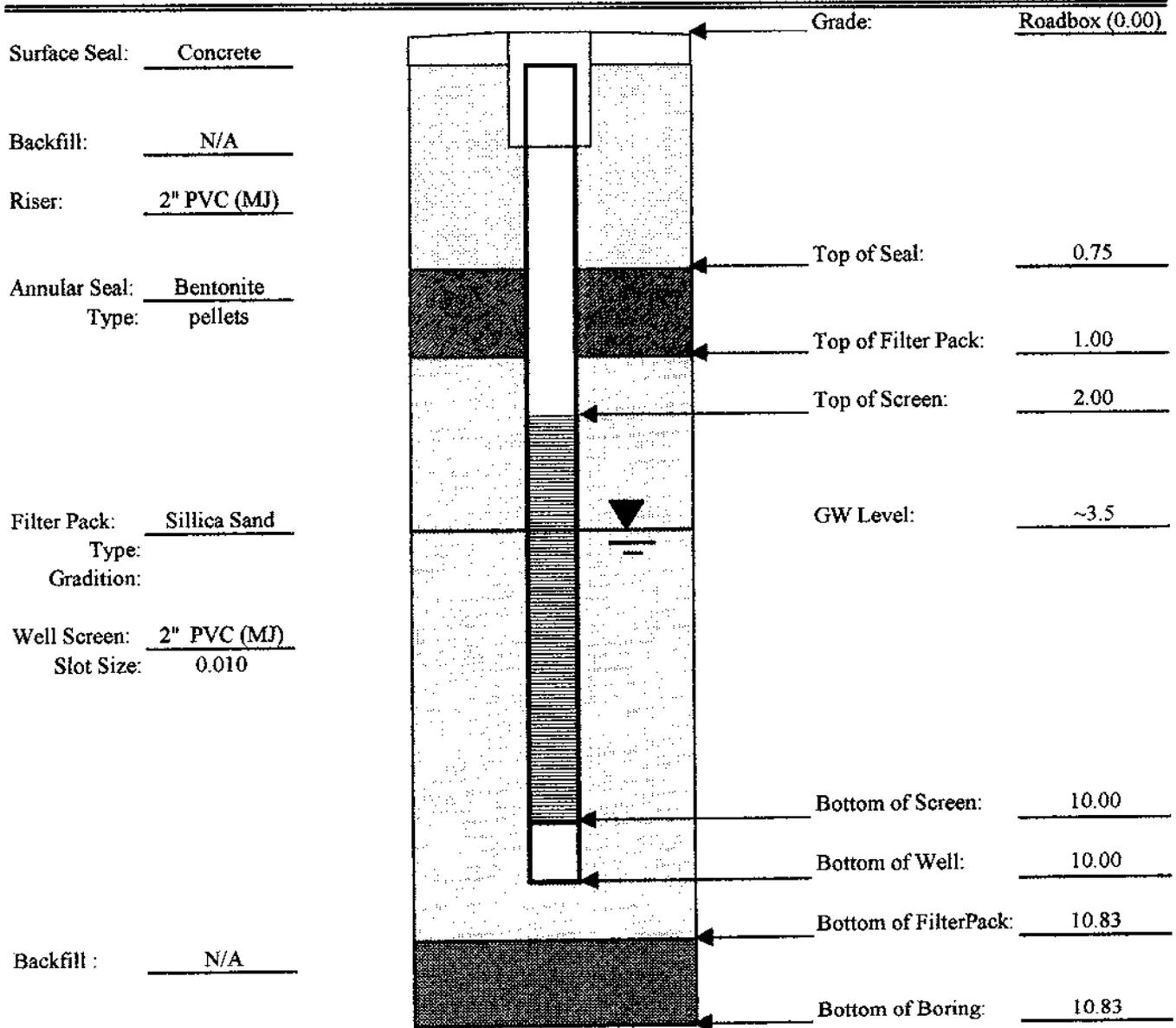
**Notes:** All measurements given in feet from from grade



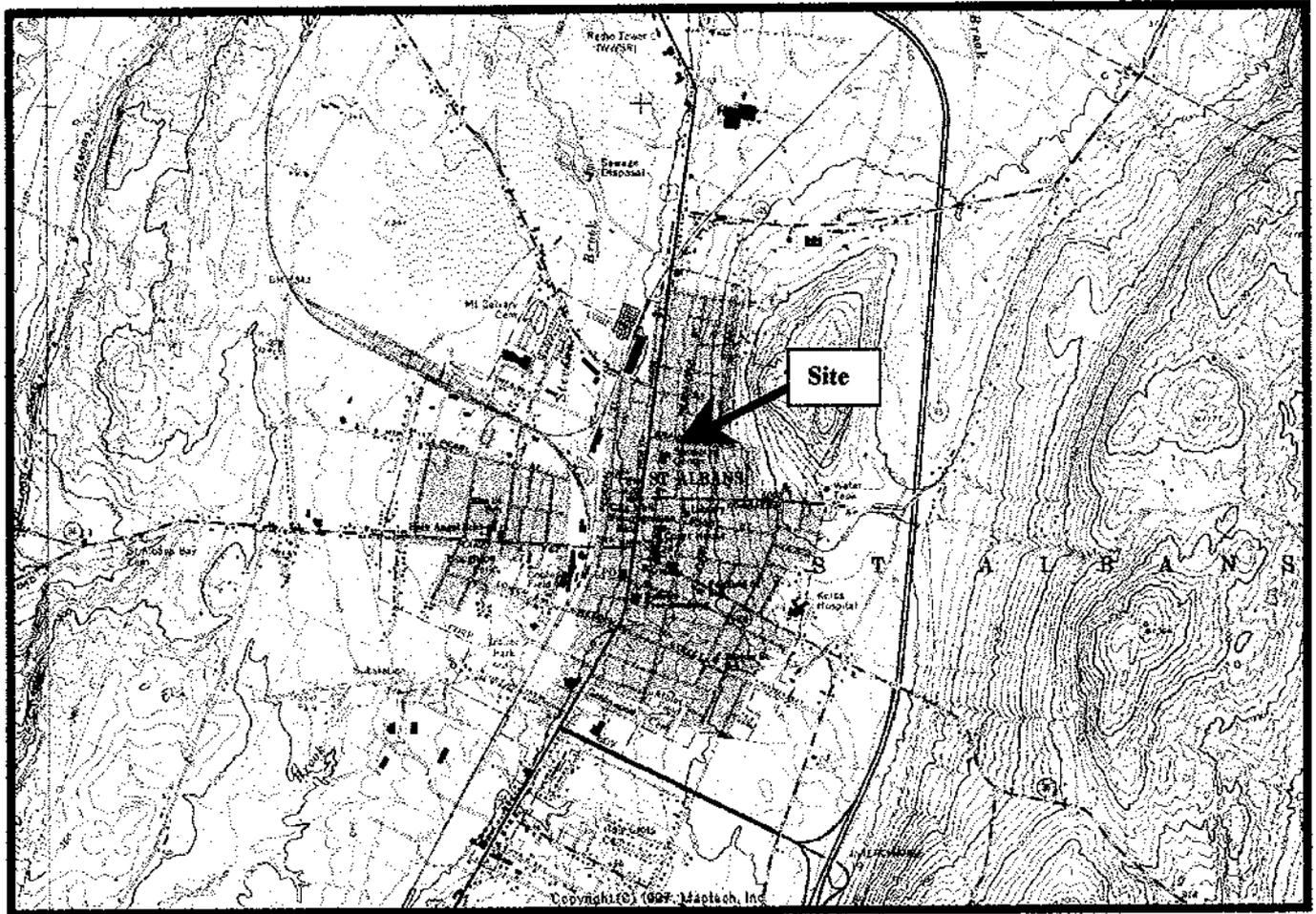
Noth Country Environmental Services  
 31 Granite Street, Suite 8  
 Milford, Massachusetts 01759

Well No. NC-5  
 Completion Date: 30-Nov-99  
 Inspector R. Berger

**Well Completion Diagram**



**Notes:** All measurements given in feet from from grade

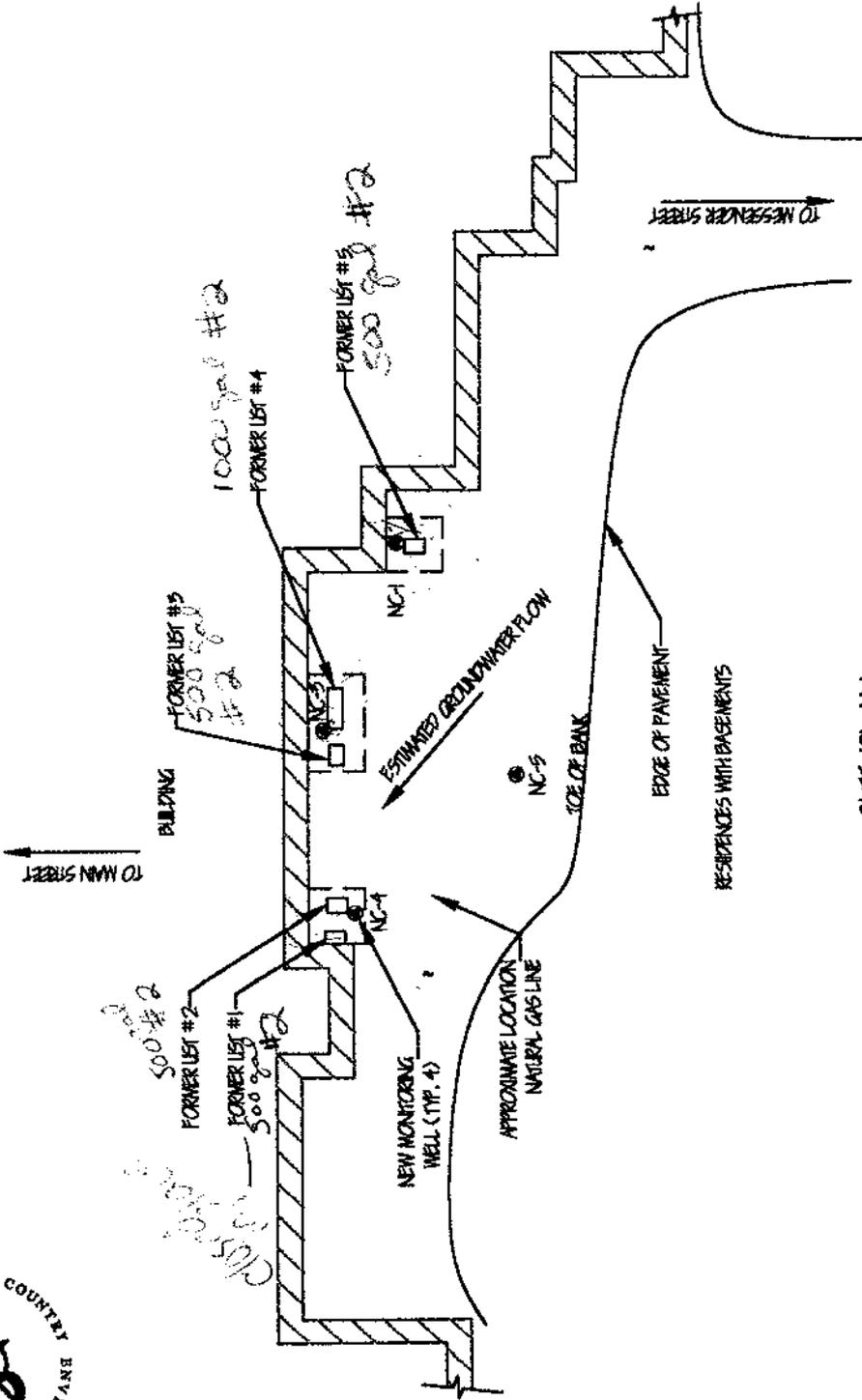


**St. Albans Shopping Center  
Main Street  
St. Albans, Vermont**

**Site Location Plan  
Not to Scale**



Map excerpted from USGS map for St. Albans, Vermont



**SITE PLAN**  
SCALE 1" = 50'



No.	Revisions/Notes	Date

North County  
Environmental Services  
21 Granite Street  
Suite 1  
Albany, N.Y. 12207  
(518) 486-1000

Phase I  
Pomerleau Real Estate  
Shopping Center  
St. Albans, Vermont

Project No. 2079  
Date: January 2000  
Sheet # 1 of 2

**GeoLabs, Inc.**  
*Environmental Laboratories*

**PREPARED FOR:** North Country Environmental Services, Inc.  
31 Granite Street  
Suite 8  
Milford, MA 01757

**Attn: Peter Cook**

**PROJECT ID:** NCES Job #2679  
St. Albans, VT

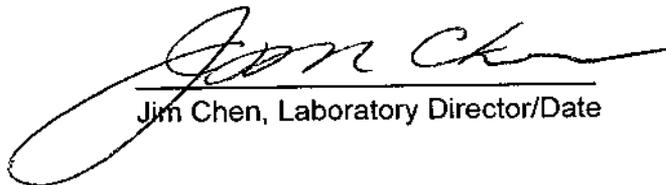
**GEOLABS CERTIFICATION #:** MA-015

**SAMPLE NUMBER:** 89264-89267

**DATE PREPARED:** December 16, 1999

**PREPARED BY:** Christine Johnson

**APPROVED BY:**

  
Jim Chen, Laboratory Director/Date

**GeoLabs, Inc.**  
**Environmental Laboratories**

CLIENT NAME:	<b>NORTH COUNTRY ENV.</b>	PROJECT ID:	NCES JOB #2679
SAMPLE TYPE:	GROUND WATER	REPORT DATE:	12/16/99
COLLECTION DATE:	12/08/99	ANALYZED BY:	DW 12/15/99
REC'D BY LAB:	12/13/99	EXTRACTION DATE:	12/14/99
COLLECTED BY:	CLIENT	DIGESTION DATE:	N/A
PRESERVATIVE:	SULFURIC ACID		

**TOTAL PETROLEUM HYDROCARBONS**

<b>SAMPLE NUMBER</b>	<b>SAMPLE LOCATION</b>	<b>TPH (mg/L)</b>	<b>DETECTION LIMIT (mg/L)</b>
89264	NC-1	2.00	0.20
89265	NC-3	7.72	0.20
89266	NC-4	ND	0.20
89267	NC-5	ND	0.20

ND = NOT DETECTED

**Method Reference:**

EPA Method            8100 (1)    Modified

1) U.S. EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 1986, 3rd Edition.

**GeoLabs, Inc.**  
**Environmental Laboratories**

CLIENT NAME:	NORTH COUNTRY ENV.	PROJECT ID:	NCES JOB #2679
SAMPLE TYPE:	GROUND WATER	REPORT DATE:	12/16/99
COLLECTION DATE:	12/08/99	ANALYZED BY:	YL 12/14/99
REC'D BY LAB:	12/13/99	EXTRACTION DATE:	N/A
COLLECTED BY:	CLIENT	DIGESTION DATE:	N/A
PRESERVATIVE:	HYDROCHLORIC ACID		

**VOLATILE ORGANICS**

<b>SAMPLE NUMBER:</b>	89264	89265
<b>SAMPLE LOCATION:</b>	NC-1	NC-3

	RESULTS (µg/L)	DETECTION LIMIT (µg/L)
Benzene	ND	9.68
Bromobenzene	ND	5.0
Bromochloromethane	ND	2.0
Bromoform	ND	5.0
Bromomethane	ND	5.0
<b>n-butylbenzene</b>	<b>6.36</b>	<b>15.2</b>
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	5.0
Chloroform	ND	5.0
<b>Chloromethane</b>	<b>ND</b>	<b>10.2</b>
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
Dibromomethane	ND	5.0
Dibromochloromethane	ND	5.0
Dichlorobromomethane	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	0.96
1,1-Dichloropropene	ND	5.0
1,2-Dibromoethane	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dichloropropane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,3-Dichloropropane	ND	5.0
1,4-Dichlorobenzene	ND	5.0
2,2-Dichloropropane	ND	5.0
c-1,2-Dichloroethene	ND	5.0
c-1,3-Dichloropropene	ND	5.0
t-1,2-Dichloroethene	ND	5.0

**GeoLabs, Inc.**  
**Environmental Laboratories**

CLIENT NAME:	<b>NORTH COUNTRY ENV.</b>	PROJECT ID:	NCES JOB #2679
SAMPLE TYPE:	GROUND WATER	REPORT DATE:	12/16/99
COLLECTION DATE:	12/08/99	ANALYZED BY:	YL 12/14/99
REC'D BY LAB:	12/13/99	EXTRACTION DATE:	N/A
COLLECTED BY:	CLIENT	DIGESTION DATE:	N/A
PRESERVATIVE:	HYDROCHLORIC ACID		

**VOLATILE ORGANICS**

<b>SAMPLE NUMBER:</b>	89264	89265
<b>SAMPLE LOCATION:</b>	NC-1	NC-3

	RESULTS (µg/L)	RESULTS (µg/L)	DETECTION LIMIT (µg/L)
t-1,3-Dichloropropene	ND	ND	5.0
<b>Ethylbenzene</b>	<b>13.5</b>	<b>27.6</b>	5.0
Hexachlorobutadiene	ND	ND	0.19
<b>Isopropylbenzene</b>	ND	<b>18.3</b>	5.0
<b>p-Isopropyltoluene</b>	<b>8.85</b>	<b>17.3</b>	5.0
Methylene Chloride	ND	ND	10.0
<b>Naphthalene</b>	<b>59.30</b>	<b>87.6</b>	25.0
<b>n-propylbenzene</b>	<b>5.72</b>	<b>37.4</b>	5.0
<b>Sec-butylbenzene</b>	<b>7.50</b>	ND	5.0
Styrene	ND	ND	5.0
<b>tert-butylbenzene</b>	ND	<b>5.16</b>	5.0
Tetrachloroethene	ND	ND	5.0
Toluene	ND	ND	5.0
Trichloroethene	ND	ND	5.0
Trichlorofluoromethane	ND	ND	5.0
1,1,1-Trichloroethane	ND	ND	5.0
1,1,2-Trichloroethane	ND	ND	5.0
1,1,2,2-Tetrachloroethane	ND	ND	5.0
1,1,1,2-Tetrachloroethane	ND	ND	5.0
1,2,3-Trichloropropane	ND	ND	5.0
1,2,3-Trichlorobenzene	ND	ND	5.0
1,2,4-Trichlorobenzene	ND	ND	5.0
<b>1,2,4-Trimethylbenzene</b>	<b>26.4</b>	<b>126</b>	5.0
<b>1,3,5-Trimethylbenzene</b>	<b>14.8</b>	<b>30.3</b>	5.0
Vinyl Chloride	ND	ND	2.0
<b>Xylenes</b>	<b>46.1</b>	<b>116</b>	5.0

ND = NOT DETECTED

**Method Reference:**

EPA Method            8260A (1) GC/MS

1) U.S. EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 1996, 3rd Edition.

**GeoLabs, Inc.**  
**Environmental Laboratories**

CLIENT NAME:	NORTH COUNTRY ENV.	PROJECT ID:	NCES JOB #2679
SAMPLE TYPE:	GROUND WATER	REPORT DATE:	12/16/99
COLLECTION DATE:	12/08/99	ANALYZED BY:	YL 12/13/99
REC'D BY LAB:	12/13/99	EXTRACTION DATE:	N/A
COLLECTED BY:	CLIENT	DIGESTION DATE:	N/A
PRESERVATIVE:	HYDROCHLORIC ACID		

**VOLATILE ORGANICS**

<b>SAMPLE NUMBER:</b>	89266	89267
<b>SAMPLE LOCATION:</b>	NC-4	NC-5

	RESULTS (µg/L)	DETECTION LIMIT (µg/L)
Benzene	ND	5.0
Bromobenzene	ND	5.0
Bromochloromethane	ND	2.0
Bromoform	ND	5.0
Bromomethane	ND	5.0
n-butylbenzene	ND	5.0
Carbon tetrachloride	ND	5.0
Chlorobenzene	ND	5.0
Chloroethane	ND	5.0
Chloroform	ND	5.0
Chloromethane	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
Dibromomethane	ND	5.0
Dibromochloromethane	ND	5.0
Dichlorobromomethane	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,1-Dichloroethane	ND	5.0
1,1-Dichloroethene	ND	0.96
1,1-Dichloropropene	ND	5.0
1,2-Dibromoethane	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dichloropropane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,3-Dichloropropane	ND	5.0
1,4-Dichlorobenzene	ND	5.0
2,2-Dichloropropane	ND	5.0
c-1,2-Dichloroethene	ND	5.0
c-1,3-Dichloropropene	ND	5.0
t-1,2-Dichloroethene	ND	5.0

**GeoLabs, Inc.**  
**Environmental Laboratories**

CLIENT NAME:	<b>NORTH COUNTRY ENV.</b>	PROJECT ID:	NCES JOB #2679
SAMPLE TYPE:	GROUND WATER	REPORT DATE:	12/16/99
COLLECTION DATE:	12/08/99	ANALYZED BY:	YL 12/13/99
REC'D BY LAB:	12/13/99	EXTRACTION DATE:	N/A
COLLECTED BY:	CLIENT	DIGESTION DATE:	N/A
PRESERVATIVE:	HYDROCHLORIC ACID		

**VOLATILE ORGANICS**

<b>SAMPLE NUMBER:</b>	89266	89267
<b>SAMPLE LOCATION:</b>	NC-4	NC-5

	RESULTS (µg/L)		DETECTION LIMIT (µg/L)
t-1,3-Dichloropropene	ND	ND	5.0
Ethylbenzene	ND	ND	5.0
Hexachlorobutadiene	ND	ND	0.19
Isopropylbenzene	ND	ND	5.0
p-Isopropyltoluene	ND	ND	5.0
Methylene Chloride	ND	ND	10.0
Naphthalene	ND	ND	25.0
n-propylbenzene	ND	ND	5.0
Sec-butylbenzene	ND	ND	5.0
Styrene	ND	ND	5.0
tert-butylbenzene	ND	ND	5.0
Tetrachloroethene	ND	ND	5.0
Toluene	ND	ND	5.0
Trichloroethene	ND	ND	5.0
Trichlorofluoromethane	ND	ND	5.0
1,1,1-Trichloroethane	ND	ND	5.0
1,1,2-Trichloroethane	ND	ND	5.0
1,1,2,2-Tetrachloroethane	ND	ND	5.0
1,1,1,2-Tetrachloroethane	ND	ND	5.0
1,2,3-Trichloropropane	ND	ND	5.0
1,2,3-Trichlorobenzene	ND	ND	5.0
1,2,4-Trichlorobenzene	ND	ND	5.0
1,2,4-Trimethylbenzene	ND	ND	5.0
1,3,5-Trimethylbenzene	ND	ND	5.0
Vinyl Chloride	ND	ND	2.0
Xylenes	ND	ND	5.0

ND = NOT DETECTED

**Method Reference:**

EPA Method            8260A (1) GC/MS

1) U.S. EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 1996, 3rd Edition.

**GEOLABS, INC.  
10 PLAIN STREET  
BRAintree, MA 02184  
MA-015**

### **LIMITATIONS & EXCLUSIONS**

All the professional opinions presented in this report are based solely on the scope of work conducted and sources referred to in our report. The data presented by GeoLabs in this report was collected and analyzed using generally accepted industry methods and practices at the time the report was generated. This report represents the conditions, locations and materials that were observed at the time the work was conducted. No inferences regarding other conditions, locations or materials, at a later or earlier time may be made based on the contents of the report. No other warranty, express or implied is made.

This report was prepared for the sole use of our client. Portions of the report may not be used independent of the entire report.

All analyses were performed within required holding times, in accordance with EPA protocols and using accepted QA/QC procedures. The information contained in this report is, to the best of my knowledge, accurate and complete.

**GeoLabs, Inc.**  
**Environmental Laboratories**  
 10 Plain Street  
 Braintree, MA 02184  
 Office: 781-848-7844  
 Fax: 781-848-7811

**Turnaround Time**

**RUSH:** 12hrs   
 24hrs   
 48hrs   
 72hrs   
**STANDARD:** 5 Days   
 Rush   
 Approved By: \_\_\_\_\_

**SPECIAL INSTRUCTIONS**

\*Adj. pH < 2 w/ H<sub>2</sub>SO<sub>4</sub>  
 lot M0799.066

Client: NCEP  
 Address: 31 Granite St Site 8  
Millis, MA 01757  
 Phone: 508-634-9800  
 Fax: 508-634-8259  
 Contact: P. Cook

Project Number: # 2679  
 Project Location: Sit. Albans VT  
 Purchase Order #: 99-1166  
 Collected By: BS

**ANALYSES REQUESTED**

SAMPLE ID	COLLECTION		SAMPLE LOCATION	CONTAINER		M A T R I X	C O M P	G R A B	P R E S	GEOLABS SAMPLE NUMBER	TPH Bloom	EPA Box (B)							L A B P H	
	D A T E	T I M E		T Y P E	Q U A N T															
NC-1	10/8/99	AM	Well NC-1	A	1	GW		✓	7	89264	✓									7
NC-3		"	Well NC-3	A	1	GW		✓	7	89265	✓									7
NC-4		"	Well NC-4	A	1	GW		✓	7	89266	✓									7
NC-5		"	Well NC-5	A	1	GW		✓	7	89267	✓									7
NC-1	12/8/99	AM	Well NC-1	V	2	GW		✓	1/7	264	✓									
NC-3		"	Well NC-3	V	2	GW		✓	1/7	265	✓									
NC-4		"	Well NC-4	V	2	GW		✓	1/7	266	✓									
NC-5		"	Well NC-5	V	2	GW		✓	1/7	267	✓									

\*  
\*  
\*  
\*

**CONTAINER CODES:**  
 A = Amber  
 B = Bag  
 G = Glass  
 P = Plastic  
 S = Summa Canister  
 O = Other

**MATRIX CODES:**  
 GW = Ground Water  
 WW = Wastewater  
 DW = Drinking Water  
 SL = Sludge  
 S = Soil A = Air  
 O = Oil OT = Other

**PRESERVATIVE CODES:**  
 1 = HCl 7 = ICE  
 2 = HNO<sub>3</sub>  
 3 = H<sub>2</sub>SO<sub>4</sub>  
 4 = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 5 = NaOH  
 6 = MeOH

Relinquished By: [Signature] Date/Time: 12/10/99  
 Relinquished By: E. Gomer 12-13-99  
 Relinquished By: \_\_\_\_\_

Received By: E. Gomer Date/Time: 12-13-99 10:25 AM  
 Received By: \_\_\_\_\_  
 Received By GeoLabs: [Signature] 12/13 12:05

**GEOLABS CHAIN OF CUSTODY**