

JUN 14 1993



June 11, 1993

Chuck Schwer
State of Vermont
Department of Environmental Conservation
Hazardous Materials Management Div.
103 South Main St.
Waterbury, VT 05671-0404

RE: Vergennes Variety, VTDEC Site #92-1339

Dear Chuck,

Enclosed is the report on the investigation of subsurface petroleum contamination at the above referenced location.

Please call me with any questions that you may have regarding the report.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter M. Murray". The signature is written in a cursive style with a long, sweeping tail.

Peter M. Murray
Project Hydrogeologist

cc: William Simendinger

**REPORT ON THE INVESTIGATION
OF SUBSURFACE PETROLEUM CONTAMINATION
VERGENNES VARIETY
VERGENNES, VERMONT**

June, 1993

Prepared for:

**Wesco, Inc.
South Burlington, Vermont**

Prepared by:

**Griffin International, Inc.
2B Dorset Lane
Williston, Vermont
(802) 879-7708**

TABLE OF CONTENTS

SECTION	PAGE
I. INTRODUCTION	1
II. SITE BACKGROUND	
A. Site History	1
B. Site Description	2
III. INVESTIGATIVE PROCEDURES	
A. Monitoring Well Installation	2
B. Groundwater Sampling and Analysis	3
C. Receptor Survey	3
IV. RISK ASSESSMENT	4
V. CONCLUSIONS	4
VI. RECOMMENDATIONS	5
APPENDIX A: Site Maps	
APPENDIX B: Well Log	

I. INTRODUCTION

This report details the investigation of subsurface petroleum contamination at Vergennes Variety, in Vergennes, Vermont. The investigation has been conducted by Griffin International, Inc. (Griffin) for Wesco, Inc. Wesco, Inc. owns Vergennes Variety.

Subsurface petroleum contamination at Vergennes Variety was discovered during the removal of two underground storage tanks (USTs) in November, 1992. In response, the Vermont Department of Environmental Conservation (VTDEC) requested that this investigation be conducted to determine the degree and extent of contamination and to assess the risk that the contamination may pose to potential receptors. The investigation has included installation of one groundwater monitoring well and a survey of the area to identify potential receptors.

II. SITE BACKGROUND

A. Site History

On November 30, 1992, two USTs were excavated and removed from Vergennes Variety. One of the tanks, Tank #4, had a capacity of 2,000 gallons and was used to store diesel. This tank was in use until shortly before its removal. The existence of Tank #5 was unknown until it was uncovered during the removal of Tank #4. It had an approximate capacity of 1,000 gallons and may have been used to store gasoline.

Griffin conducted an inspection of both USTs and surrounding soils during removal of the tanks. Both tanks appeared to be in fair condition with no indication of leaks. Griffin prepared a report on the inspection which was submitted to VTDEC on December 1, 1992.

Soils surrounding the USTs contained volatile organic compound (VOC) concentrations up to 168 parts per million (ppm) as measured by a portable photo-ionization device (PID). Odors in these soils resembled old, weathered petroleum product. It appears that the contamination is likely a mixture of gasoline and diesel. No soils were removed from the tank pit and clean fill was used to fill in the remainder of the hole.

In addition to screening soils near the former USTs, Griffin screened air in several vent points installed near the new USTs, at the southwest end of the site. In addition, Griffin screened soils in the tank pit for the new diesel UST. No VOCs were detected in this area.

B. Site Description

Vergennes Variety is located on the southeast side of Main Street, north of the central business district, in the City of Vergennes (see Site Location Map, in Appendix A). The surrounding area contains a mix of land uses including residential and commercial. There is a service station with several active USTs located directly across Main Street. Vergennes Video is located approximately 85 feet northeast of Vergennes Variety. In addition, there are several residences within 200 feet of Vergennes Variety. All homes and businesses in the area are served by the Vergennes-Panton Water District which draws water from Lake Champlain.

Main Street runs along the top of a small southwest/northeast trending topographic ridge. Both sides of this ridge are drained by small streams which flow into Otter Creek, approximately 1/2 mile southwest of Vergennes Variety. Both of these streams flow within 1,800 feet of the site. The ridge is a bedrock feature which rises 50 to 80 feet above the two streams. The bedrock is composed of interbedded dolomite, limestone, calcareous sandstone and marble. There are several complicated geologic contacts and faults in this area. The bedrock is overlain by a thin layer of lake bottom silty clay.

Vergennes Variety currently sells three grades of gasoline and diesel. The fuel is stored in new, double walled, steel USTs at the southwest end of the property. Fuel is dispensed at pump islands located between the building and Main Street. There are currently no single walled USTs at this site.

III. INVESTIGATIVE PROCEDURES

A. Monitoring Well Installation

On April 7, 1993, Green Mountain Boring installed one groundwater monitoring well, MW-1, in the immediate vicinity of the two USTs which were removed in November, 1992 (see Site Map, in Appendix A). The well was installed under the direct supervision of a Griffin Hydrogeologist. Drilling was accomplished with a hollow stem auger drill rig using 4.25" inner diameter augers.

The borehole for MW-1 was extended to a depth of 8 feet below grade, at which point, bedrock refusal was encountered. Soil samples were collected from the borehole off the auger flights and using a split spoon sampler. The soils were logged by the Hydrogeologist and screened for VOCs by PID.

Soils to a depth of 2 feet consisted of dry sand and gravel fill. This material contained an odor resembling gasoline and contained VOC concentrations of up to 150 ppm. Soils retrieved from a depth of 2 to 4 feet were apparently native materials and consisted of wet clay with a little sand. VOC concentrations of

up to 148 ppm were detected in these soils. The 4 to 6 foot split spoon sample contained moist silty clay. There was a slight gasoline odor in this sample. It contained up to 20 ppm VOCs. The augers encountered refusal at 8 feet. An attempt to retrieve a sample at this depth using the split spoon was unsuccessful.

The well is constructed of 6 feet of 2 inch diameter PVC well screen with solid riser extending to grade. A silica sand pack was installed in the annulus between the screen and the borehole wall. A bentonite seal was installed at the top of the borehole to prevent surface runoff infiltration. The well is protected by a locking well cap and an 8 inch diameter, flush mounted road box. Since no water had accumulated in the well at its completion, it was not developed.

B. Groundwater Sampling and Analysis

Approximately one week after installation of MW-1, Griffin attempted to obtain a groundwater sample from the well for laboratory analysis. The well was found to be dry, indicating that there is little or no migrating groundwater contained in the overburden deposits at this site.

C. Receptor Survey

During the course of this investigation, Griffin has conducted a survey of potential receptors of the subsurface petroleum contamination detected at Vergennes Variety. At this point, the only known receptor is the soil in the vicinity of the former USTs.

The receptor survey has consisted of a visual inspection of the area surrounding Vergennes Variety, review of area USGS topographic maps and aerial photographs and interviews with local officials.

Based on the local topography, it would appear that any groundwater in the overburden would flow east/southeast. Although there was no water in the overburden beneath Vergennes Variety, there may be groundwater perched above the bedrock in areas where there is no pavement to prevent surface water infiltration. If there is groundwater in the overburden, migration rates are likely to be relatively low due to the high silt and clay content of the soils. Without conducting detailed bedrock analyses, it is impossible to predict the impact or movement of any groundwater contained in the underlying bedrock.

If the contamination has migrated through the overburden, local buildings may be at risk from VOC vapors entering through the foundations. Ambient air was screened in the building closest to the former USTs, the Vergennes Variety building. No VOCs were

detected. To date, there have been no reports of petroleum vapors in other nearby buildings.

Based on conversations with Vergennes-Panton Water District officials, it appears that there are no private water wells within one mile of the site. The Water District draws water from Lake Champlain, approximately 4.5 miles west of the site.

IV. RISK ASSESSMENT

Based on data collected during this investigation, it does not appear that nearby potential receptors of subsurface petroleum contamination at Vergennes Variety are at risk of being impacted. Since all homes and businesses in the area are served by the Vergennes-Panton Water District, impact to local drinking water is highly unlikely. The lack of any detectable petroleum vapors in the Vergennes Variety building, which is hydraulically downgradient of the assumed contamination source, indicates that this building and other nearby buildings are at little or no risk of being impacted by vapors. The significant decrease, with depth, in contamination concentrations in the borehole for MW-1 indicates that bedrock beneath the site may not be significantly impacted. Since the entire area is covered with asphalt, leaching of contaminants into the bedrock and lateral migration, through the overburden, from the source area is significantly reduced. Due to the considerable distance between the source area and the two closest streams, it is highly unlikely that they will be impacted.

V. CONCLUSIONS

Based on the findings of this investigation, Griffin has arrived at the following conclusions regarding subsurface petroleum contamination at this site:

1. There have been releases of petroleum products to the subsurface in the vicinity of the fuel dispensers and former USTs. The releases likely resulted from overfilling of the USTs and leaks in the piping between the USTs and the dispensers. The contamination likely consists of a mixture of gasoline and diesel. The sources of contamination have been removed.
2. The releases have resulted in contamination of soils in the immediate vicinity of the former USTs and dispensers. The contamination now exists in the adsorbed phase. Since no groundwater was present in these soils during this investigation, there is likely little or no resulting groundwater contamination.

3. The extent of soil contamination has not been fully defined. Based on VOC concentrations in soils retrieved from the borehole for MW-1, it does not appear that the vertical extent of contamination is significant, however. In addition, it is likely that the contamination has not migrated significant distances laterally, due to the lack of groundwater, the low permeability of the soils and the asphalt cap. Lack of soil contamination at the southwest end of the site supports this conclusion.
4. To date, the only confirmed receptor of the contamination is nearby soils. The risk to other potential receptors appears to be very low to non-existent.
5. Over time, the natural processes of dilution, dispersion, volatilization and biodegradation will reduce contamination concentrations to below detectable levels. Due to the low permeability of the soils, the lack of groundwater and the asphalt cap, reduction of contamination concentrations will be very gradual.

VI. RECOMMENDATIONS

Based on the above conclusions, we do not believe that additional investigation of subsurface petroleum contamination is necessary at this site.

APPENDIX A

Site Maps

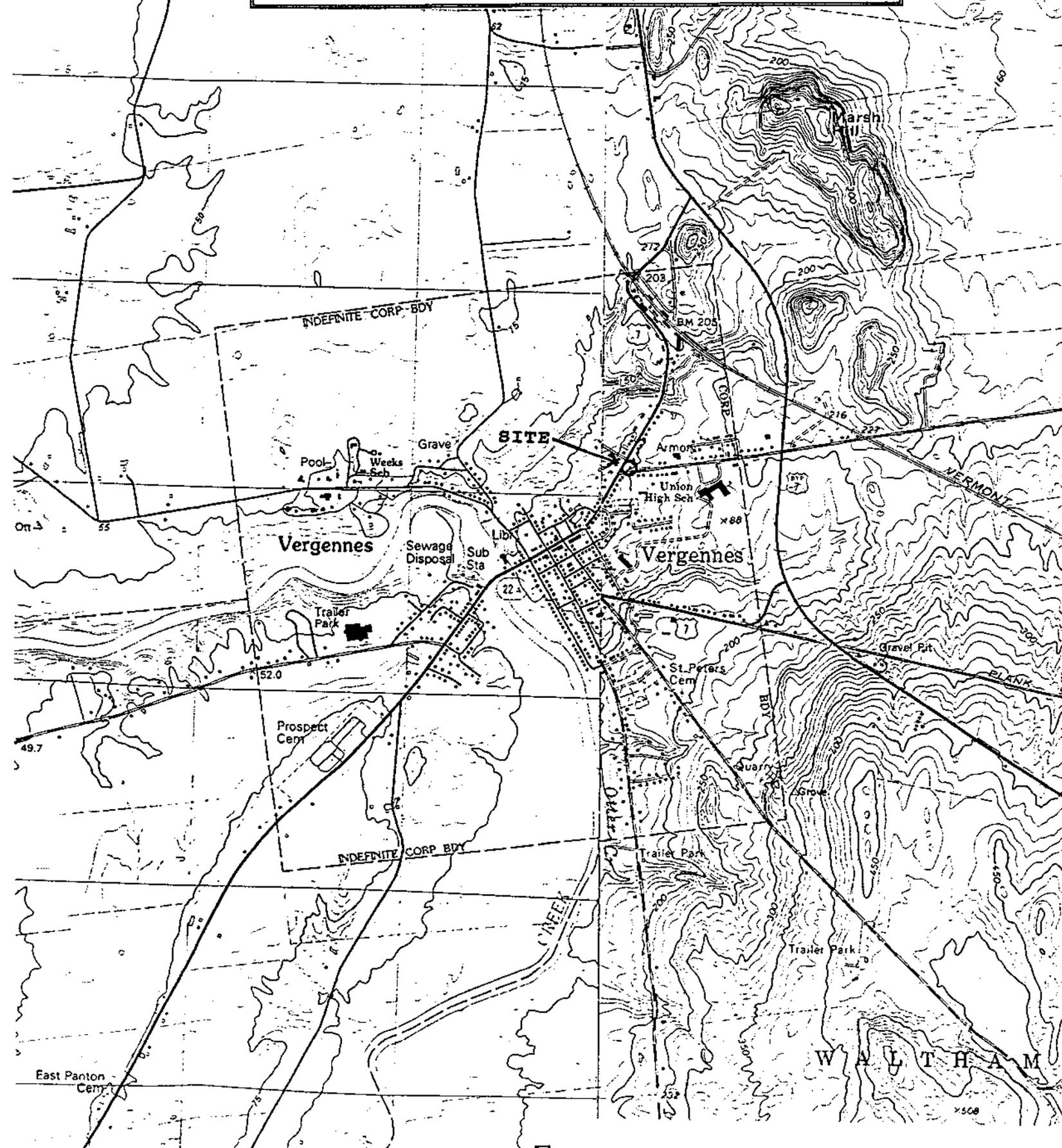
SITE LOCATION MAP

**VERGENNES VARIETY
VERGENNES, VERMONT**

VTDEC SITE NO. 92-1339

**MAP SOURCE: USGS MONKTON BORO, VT QUADRANGLE 1963
AND WESTPORT NEW YORK-VERMONT QUADRANGLE 1980**

SCALE 1: 24,000



SITE MAP

PROJECT: VERGENNES VARIETY
LOCATION: VERGENNES, VERMONT
GRIFFIN PROJECT NO.: 11924321
VTDEC SITE NO.: 92-1339

- MONITORING WELL
- ⊙ VAPOR MONITORING POINT



VERGENNES
VIDEO



LITTLE
CITY
CITGO

MAIN
STREET

MW-1 ●

GASOLINE?

OLD PUMP ISLAND

DIESEL

PUMPS

FORMER
UST
LOCATIONS

PUMPS

PUMPS

VERGENNES
VARIETY

DIESEL

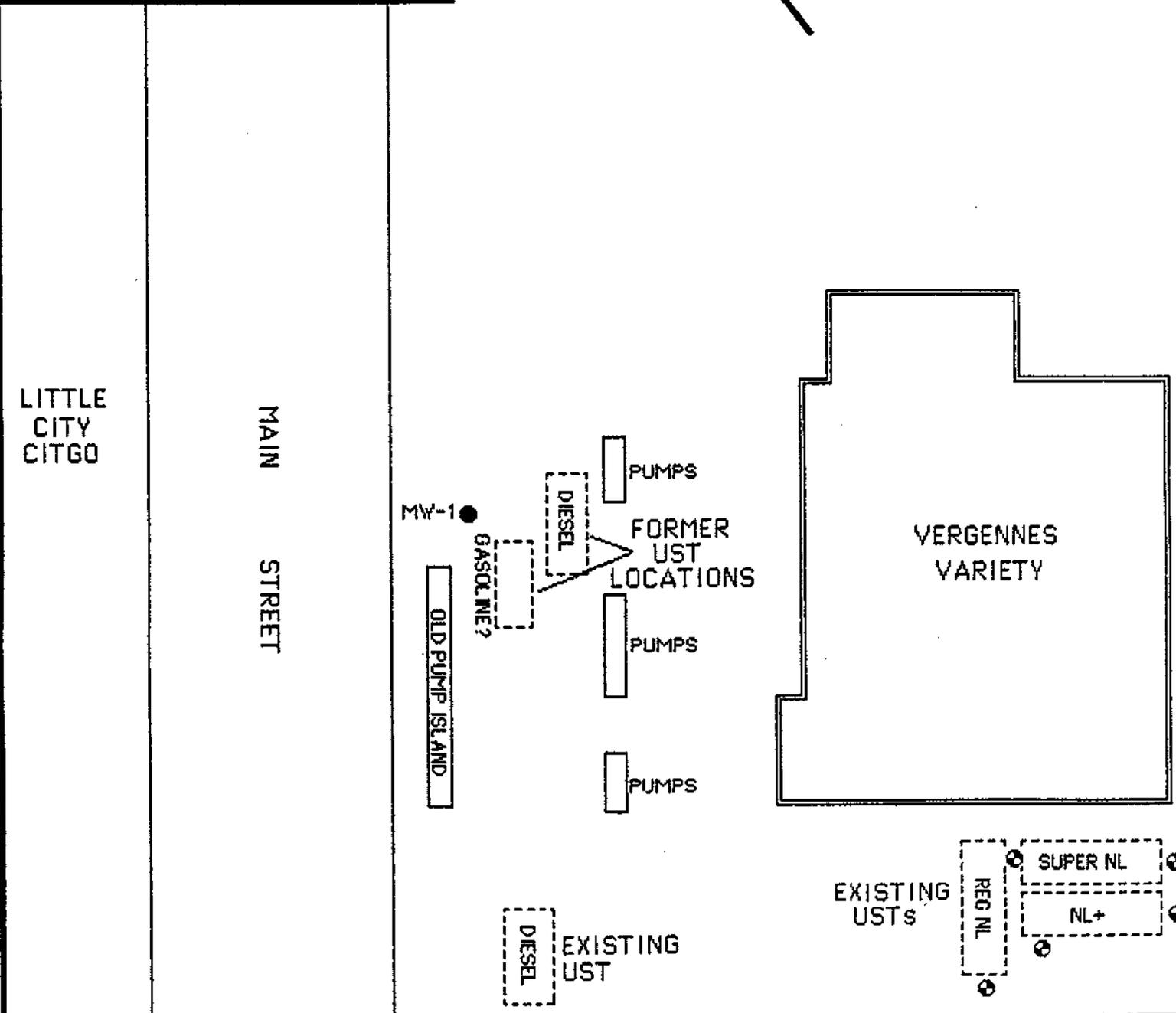
EXISTING
UST

EXISTING
USTs

REG NL

SUPER NL

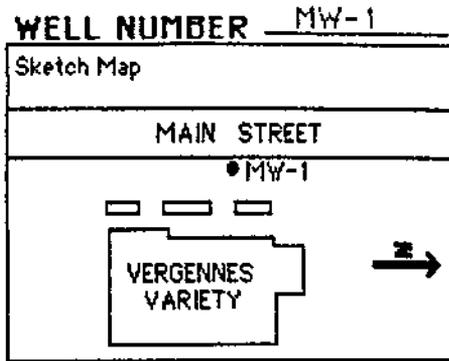
NL+



APPENDIX B

Well Log

PROJECT VERGENNES VARIETY
 LOCATION VERGENNES, VERMONT
 DATE DRILLED 4/7/93 TOTAL DEPTH OF HOLE 8'
 DIAMETER 6"
 SCREEN DIA. 2" LENGTH 6' SLOT SIZE .010"
 CASING DIA. 2" LENGTH 1.5' TYPE PVC
 DRILLING CO. GREEN MT. BORING DRILLING METHOD HOLLOW STEM AUGER
 DRILLER JAMIE BERNASCONI LOG BY P. MURRAY



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
0		ROAD BOX TOP CAP		
1		RISER BENTONITE		Dry SAND and GRAVEL fill Gasoline odor, 150 ppm
2		SAND PACK		Wet, dark brown silty CLAY, little sand Gasoline odor, 148 ppm
3		WELL SCREEN	4'-6': 4,7,9,11	Moist, gray, brown silty CLAY Slight gasoline odor, 20 ppm
4				
5				
6				
7				
8		BOTTOM PLUG		BASE OF EXPLORATION AT 8' REFUSAL ON BEDROCK
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				