TWIN STATE ENVIRONMENTAL CORP.
P.O. Box 711, St. Albans, VT 05478 • TEL: (802) 527-8144 FAX: (802) 527-0198

JUN 23 1993

June 22, 1993

Ms. Trina Bianchi
The Nordic Group
P.O. Box 1100
Burlington, VT 05402-1100

RE: Nordic Subsurface Investigation
SMS Site 92-1318
TSEC Project No. 93-016

Dear Ms. Bianchi;

Enclosed is a report of the Subsurface Investigation surrounding the former underground storage tank area at your facility in South Burlington, Vermont.

If you have any questions, please do not hesitate to call our office at (802) 527-8144.

Sincerely,

TWIN STATE ENVIRONMENTAL CORPORATION

John R. Diego
Project Manager

JRD/abc
c.c.: Ms. Lynda Wedderspoon, SMS

tbianchi.ltr

DRAFT WORK PLAN
SUBSURFACE INVESTIGATION

THE NORDIC GROUP, INC.

June 21, 1993

Prepared for:

The Nordic Group, Inc.

Prepared by:

Twin State Environmental Corporation
P.O. Box 711
St. Albans, Vermont 05478

1.0 INTRODUCTION

This report has been prepared by Twin State Environmental Corporation (TSEC) for work previously performed by NEIM for the Nordic Group, Inc. This report summarizes the field activities performed by NEIM and their sub-contractor as outlined in a Work Plan for a Subsurface Investigation prepared for the Nordic Group by NEIM, dated December 11, 1992.

This site investigation at the Nordic Ford facility on Shelburne Road in South Burlington, Vermont stems from the removal of three (3) underground storage tanks (USTs) from the site by the former Jet-Line Services, Inc. on October 23 and 26, 1992. During the course of removal, an apparent release of petroleum was encountered and subsequently 50 cubic years of contaminated soil was stockpiled on site and encapsulated in plastic.

2.0 OBJECTIVE

The objective of the field activities was to evaluate the subsurface conditions of petroleum contamination in the soil and groundwater. On the basis of the investigation, an evaluation of the potential impact on receptors is also made. Remedial options for the stockpiled soils have also been made and are discussed in this report.

3.0 DISCUSSION OF FIELD ACTIVITIES

NEIM and its drilling subcontractor, Adams Engineering, arrived on site on January 22, 1993 to conduct the soil boring explorations. Prior to drilling, a site walk over was conducted by the Project Manager to locate any DIG SAFE markings. No visible utility markings were found, contrary to the existence of a primary electrical transformer and several phone and utility lines adjacent to the building. Subsequent phone inquiries with DIG SAFE indicated that the site utilities were not cleared due to miscommunication with respect to the address given to DIG SAFE.

Based on the presence of underground utilities surrounding the UST cavity, it was determined unsafe to drill until the utilities were properly identified.

Following the reissuance of a DIG SAFE number (9304-2648), NEIM and Adams Engineering remobilized to the site on February 5, 1993. Various utilities including Green Mountain Power,

New England Telephone, and Vermont Gas System marked their respective underground utilities. Due to the proximity of several primary underground electrical lines, the Green Mountain Power representative was on-site during the drilling and boring event. The locations of various underground utilities are depicted in Appendix A, Site Plan.

Soil boring locations are shown in Appendix A. The actual locations of the soil borings varied from the proposed locations due to underground utilities locations. Also, enclosed in Appendix A are soil boring logs describing the soil type and photoionization (PID) measurements as benzene equivalents. A total of 11 soil borings were conducted surrounding the tank cavity.

4.0 RESULTS AND FINDINGS

Soil borings conducted along the east side of the tank cavity include SB-1 through SB-4. The soils encountered in these borings consisted of blacktop over a gravel sub-base over still brown clay and silt. PID readings from these borings were non-detectable.

Soil borings SB-5 and SB-6 were installed along the north side of the tank cavity proximate to the edge of the UST excavation. Soils encountered in SB-5 included reworked blue gray silt and clay and gravel fill. Positive measurements were recorded between 6 and 10 feet below grade of 43 to 45 parts per million (ppm). Since the boring was located along the northern edge of the UST excavation, a 1.5 inch diameter well screen was temporarily installed at this location. The purpose of this well was to evaluate the presence of groundwater pending the results of the remaining soil borings.

Similar conditions were encountered in soil boring SB-6. The soils encountered consisted of blacktop and sub-base over gray silt clay with refusal of concrete rubble at 4 feet below grade. A PID concentration of 90 ppm was recorded at a depth of approximately 3 feet.

Soil borings SB-7 and SB-8 were conducted along the west side of the UST cavity proximate to the overhead door and trash bin area. Both borings were terminated at 1 foot below grade due to refusal of concrete. Reportedly, persons knowledgeable of the site indicated that a concrete skirt may exist in the vicinity of SB-7 and SB-8.

Due to the underground utilities, trash bins, and snow banks, soil borings SB-9, 10 and 11 were moved outward from the proposed locations away from the tank cavity. Soils encountered in SB-

9 and SB-10 included blacktop and sub-base over native tough brown silt to a depth of 5 feet. There were no positive PID readings recorded from either of these soil borings. Soil boring SB-11 located north of the planter island consisted of blacktop and sub-base over tough brown silt to a depth of 6 feet. Blue gray clay was encountered between 6 to 8 feet. The boring was terminated at 8 feet. There were no detectable PID measurements recorded.

5.0 CONCLUSIONS

- The stockpiled soil is contaminated based upon data and information generated during the tank excavation and removal.

- The area surrounding the UST cavity where native silts and clays were encountered did not indicate signs of petroleum contamination.

- On the basis of the 11 soil borings collected, it was found that soil contamination exists along the north side of the UST cavity and presumably within the cavity itself.

- The backfilled soils currently in the UST cavity are more permeable than the native silts and clays surrounding the UST cavity, and this may allow groundwater to accumulate in the tank cavity.

- Migration of contaminated groundwater from the site is expected to be minimal due to low permeable soils encountered surrounding the tank cavity. There are no sensitive receptors proximate to the former UST cavity that would be impacted from the contamination within the tank cavity.

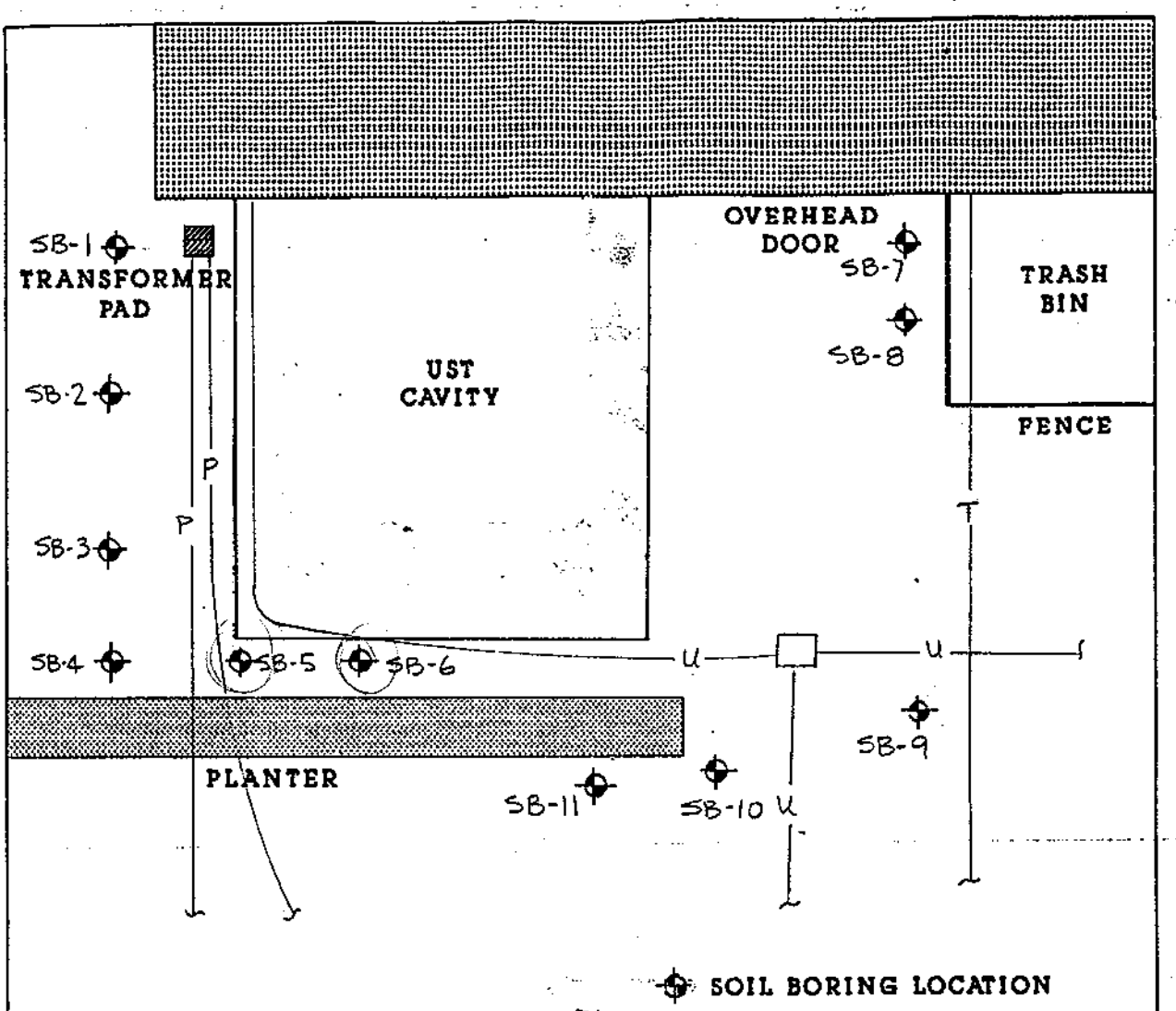
6.0 RECOMMENDATIONS

- Stockpiled soils should be remediated by removal and subsequent out of state cold asphalt batching.

- Remediation of the contaminated soils and groundwater in the tank cavity could be mitigated by the installation of a recovery well equipped with a water table depression pump and a vapor extraction system to enhance the removal of volatile organics from the back-filled soils.

Implementation of these recommendations may reduce the liability of the existing contamination in the stockpiled soils and within the tank cavity.

APPENDIX A



NORDIC FORD SITE PLAN
ROUTE 7
SOUTH BURLINGTON, VT

SMS SITE NO. 92-1318

NEIM PROJECT NO. 9212.432

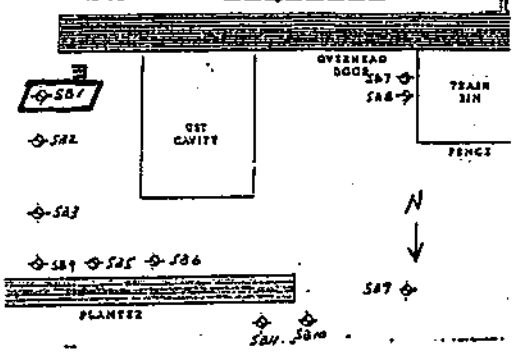
REVISED 3/10/93 TSEC

12/31/92

PROJECT NAME NORDEC FORD
PROJECT NO. 9212.423
DATE DRILLED 2-5-93 DEPTH OF HOLE 10'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE ____
DRILLING FIRM ADAMS ENG ___DRILLER G.A.
METHOD _____

NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT

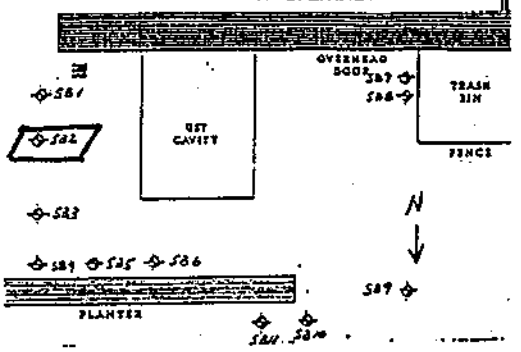
SB NO. 1



DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				BLACK TOP OVER GRAVEL SUB BASE, OVER STIFF BROWN CLAY SILT
1				
2				
3				
4				
5		PID 0 PPM		
6				
7				
8				
9				
10		PID 0 PPM		

PROJECT NAME NORDEC FORD
PROJECT NO. 9212.423
DATE DRILLED 2-5-93 DEPTH OF HOLE 10'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE ____
DRILLING FIRM ADAMS ENG DRILLER G.A.
METHOD _____

SB NO. 2



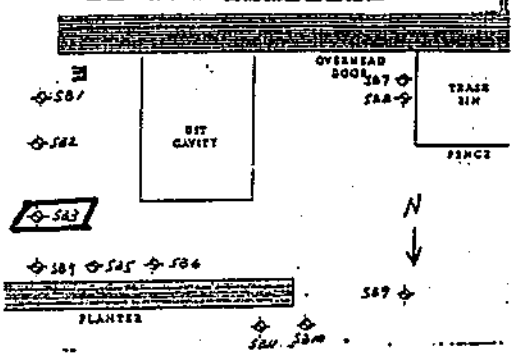
NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT

DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				BLACK TOP OVER GRAVEL SUB BASE, OVER STIFF BROWN CLAY SILT
1				
2				
3				
4				
5		PID 0 PPM		
6				
7				
8				
9				
10		PID 0 PPM		

PROJECT NAME NORDIC FORD
PROJECT NO. 9212.423
DATE DRILLED 2-5-93 DEPTH OF HOLE 10'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE ____
DRILLING FIRM ADAMS ENG DRILLER G.A.
METHOD _____

SB NO. 3

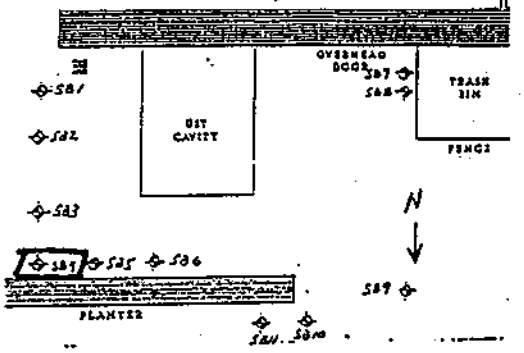
NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT



DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				BLACK TOP OVER GRAVEL SUB BASE, OVER STIFF BROWN CLAY SILT
1				
2				
3				
4				
5		PID 0 PPM		
6				
7				
8				
9				
10		PID 0 PPM		

PROJECT NAME NORDEC FORD
PROJECT NO. 9212.423
DATE DRILLED 2-5-93 DEPTH OF HOLE 10'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE ____
DRILLING FIRM ADAMS ENG DRILLER G.A.
METHOD _____

SB NO. 4



NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT

DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				BLACK TOP OVER GRAVEL SUB BASE, OVER STIFF BROWN CLAY SILT
1				
2				
3				
4				
5		PID 0 PPM		
6				
7				
8				
9				
10		PID 0 PPM		

PROJECT NAME NORDIC FORD

PROJECT NO. 9212-423

DATE DRILLED 2-5-93 DEPTH OF HOLE 10'

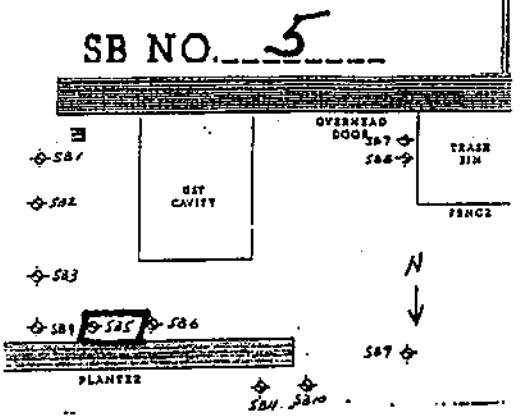
SCREEN DIA. _____ LENGTH ___ SLOT____

RISER DIA. ____ LENGTH ____ TYPE ____

DRILLING FIRM ADAMS ENG. DRILLER G.A.

METHOD _____

SB NO. 5

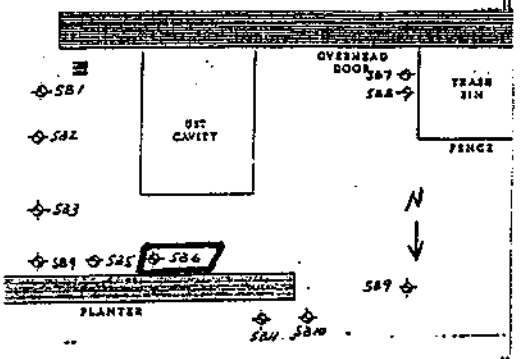


NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT

DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0		0-2' BLACK TOP & SUB BASE.		-.3' TOP OF WELL 1.5" PVC SUBSEQUENTLY ABANDONED BY FILLING WITH CEMENT.
1				-.4' TOP OF WYOBEN GROUT
2				-.8' BOTTOM OF GROUT, TOP OF SAND PACK.
3				-1.3', TOP OF SCREEN 1.5" x 5' .006 SLOT
4				-2>10' BLUE GRAY SILT/CLAY & GRAVEL FILL OR REWORK, SATURATED AT TIP.
5				
6		PID 45 PPM STRONG FUEL ODOR		
7				
8				
9				
10		PID 43 PPM STRONG FUEL ODOR		

PROJECT NAME NORDIC FORD
PROJECT NO. 9212.423
DATE DRILLED 2-5-93 DEPTH OF HOLE 4'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE _____
DRILLING FIRM ADAMS ENG. DRILLER G.A.
METHOD _____

SB NO. 6



NEIM INC.
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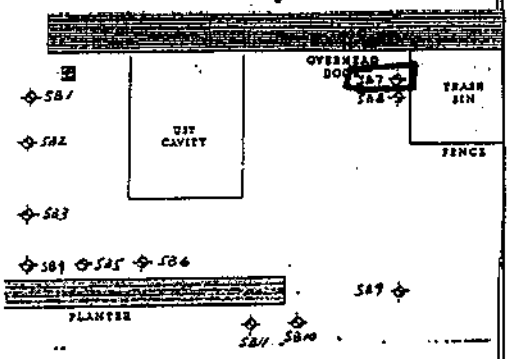
SO. BURLINGTON, VT

DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				0-4' BLACK TOP + SUB BASE
1				
2				
3		PID 90 PPM STRONG FUEL ODOR		GRAY, SILTY CLAY
4				CONCRETE RUBBLE
				REFUSAL AT 4'

PROJECT NAME NORDIC FORD
PROJECT NO. 9212.423
DATE DRILLED 2-5-93 DEPTH OF HOLE 1'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE ____
DRILLING FIRM ADAMS ENG. DRILLER E.A.
METHOD _____

SB NO. 7



NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT

DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				REFUSAL, ROCK OR CONCRETE AT -1'
1				

PROJECT NAME NORDIC FORD

PROJECT NO. 9212.423

DATE DRILLED 2-5-93 DEPTH OF HOLE 1

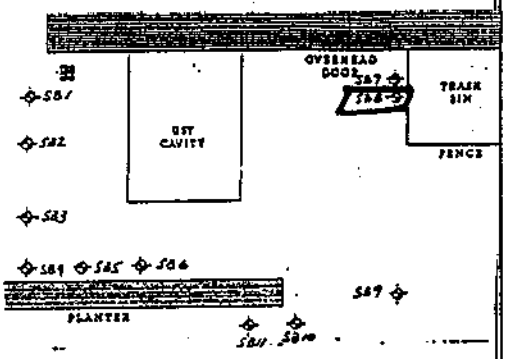
SCREEN DIA. _____ LENGTH ___ SLOT____

RISER DIA. ____ LENGTH ____ TYPE ____

DRILLING FIRM ADAMS ENG. DRILLER E.A.

METHOD _____

SB NO. 8

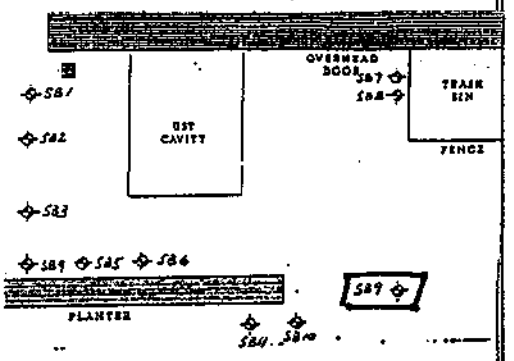


NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT

DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				REFUSAL, ROCK OR CONCRETE AT -1'
1				

PROJECT NAME NORDIC FORD
PROJECT NO. 9212.423
DATE DRILLED 2-5-93 DEPTH OF HOLE 5'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE ____
DRILLING FIRM ADAMS ENG. DRILLER G.A.
METHOD _____

SB NO. 9



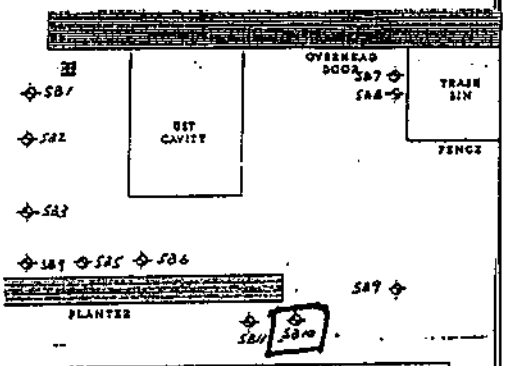
NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT

DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				0-1' BLACKTOP & SUB BASE OVER TOUGH BROWN SILT
1				
2				
3				
4				
5		PID 0 PPM		>-5' CLEAN

PROJECT NAME NORDIC FORD
PROJECT NO. 9212.423
DATE DRILLED 2-5-93 DEPTH OF HOLE 5'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE ____
DRILLING FIRM ADAMS ENG DRILLER G.A.
METHOD _____

SB NO. 10

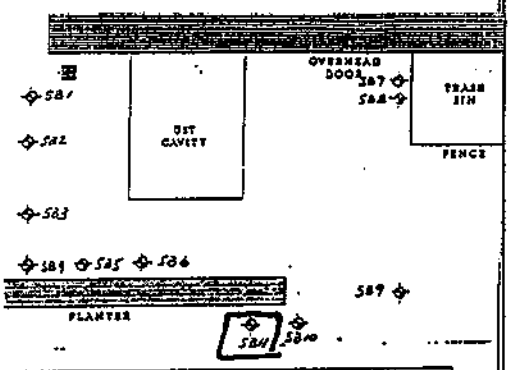
NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT



DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				0 > -1' BLACK TOP & SUB BASE OVER TOUGH BROWN SILT
1				
2				
3				
4				> -5' CLEAN
5		PID 0 PPM		

PROJECT NAME NORDIC FORD
PROJECT NO. 9211c423
DATE DRILLED 2-5-93 DEPTH OF HOLE 8'
SCREEN DIA. _____ LENGTH ___ SLOT____
RISER DIA. ____ LENGTH ____ TYPE ____
DRILLING FIRM ADAMS ENG. DRILLER E.A.
METHOD _____

SB NO. 11



NEIM INC.
76 ETHAN ALLEN DRIVE
SO. BURLINGTON, VT

DEPTH IN FEEY	SOIL BORING	NOTES	BLOWS PER 6 INCHES	SOIL DESCRIPTION
0				0>1' BLACK TOP & SUB BASE.
1				
2				-1>6' TOUGH BROWN SILT
3				
4				
5				
6				-6>8' BLUE GRAY SILT/CLAY
7				
8		PID 0 PPM		