Marin Environmental, Inc.

Ground Water of Vermont Division

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WASTE MANAGEMENT DIVISION

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www.marinenv.com

22 May 1997

Mr. Dan Yates
Lyndonville Savings Bank
98 Broad Street
Lyndonville, VT 05851

RE: *Initial Site Investigation Report,*
Norris Trucking and Paving

Dear Mr. Yates,

Enclosed find one bound copy of the Initial Site Investigation for Norris Trucking and Paving, located in Burke, Vermont. This report outlines the findings of the site investigation completed 20 May 1997.

Please contact me or Ron Miller, Regional Manager, if you have any questions or comments regarding this report.

Sincerely,

Terry W. Robbins
Environmental Scientist

enclosure

cc: Mr. Chuck Schwer, VT DEC
Mr. Ulric Norris, Norris Trucking and Paving
Ms. Terry Owens, Thomas Hirchak Realty

Ref: 96098C01.DOC

Marin Environmental, Inc.

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INITIAL SITE INVESTIGATION REPORT

NORRIS TRUCKING AND PAVING

Sutton Road
Burke, VT

15 May, 1997

Prepared for:

Lyndonville Savings Bank
98 Broad Street
Lyndonville, VT 05851

Contact: Dan Yates
Phone: 802-626-1111

Prepared by:

Marin Environmental, Inc.
Ground Water of Vermont
1700 Hegeman Avenue
Colchester, VT 05446

Contact: Terry W. Robbins
Phone: 802-655-0011

MARIN Project #: V96-098
MARIN Document #: 96098R02.DOC

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EXECUTIVE SUMMARY

The Ground Water of Vermont division of Marin Environmental, Inc. (MARIN) has conducted an initial site investigation at Norris Trucking and Paving located on Sutton Road, Burke, VT and has concluded the following:

- Petroleum releases from former underground storage tank (UST) systems at the site appear to have resulted in a minor impact to ground water in the vicinity of the former UST systems. Analytical results of ground-water samples collected from six of seven on-site monitoring wells did not detect the presence of petroleum compounds above the Vermont Groundwater Enforcement Standards (VGES).
- Observations made during the UST closure and ground-water sample results from monitoring wells completed in and downgradient of the former UST locations suggest that residual contamination is limited to the immediate vicinity of the former USTs.
- The residual subsurface contamination at the site does not appear to pose a threat to any nearby sensitive receptors.
- No drinking-water supplies appear to be at risk from the residual contamination at the site.
- Surficial materials at the site consist mainly of gray coarse sand and gravel, with occasional brown medium-to-fine sands. On 20 May 1997, the water table was found to be about 3 to 11 feet below ground surface, and exhibited a southwesterly trending gradient of about 22 percent.

On the basis of the results of this investigation, MARIN makes the following recommendations:

1. The six on-site monitoring wells should be resampled to confirm the January 1997 and May 1997 analytical results. The samples should be analyzed for gasoline-related compounds by EPA Method 8020.
2. If the subsequent ground-water analytical results confirm the findings of the January/May 1997 analytical data (no exceedance of VGESs), MARIN recommends that the site be considered for "Site Management Activities Completed" (SMAC) status by the Vermont Department of Environmental Conservation (VT DEC) .

1.0 INTRODUCTION

This report details the results of an initial site investigation conducted at Norris Trucking and Paving located on Sutton Road in the town of Burke, Vermont (Figure 1). This report has been prepared by the Ground Water of Vermont division of Marin Environmental, Inc. (MARIN) under the direction of Dan Yates of Lyndonville Savings Bank, the current owner of the facility. The site investigation was initiated with Vermont Department of Environmental Conservation (VT DEC) approval following the discovery of subsurface petroleum contamination during the removal of two underground storage tanks (USTs) on 10 October 1996.

1.1 Site Location and Physical Setting

The site is occupied by a 2,750 square foot maintenance building and a small residence, both located south of the excavated USTs. The ground surface around the maintenance building has an average elevation of about 800 feet above mean sea level and slopes toward the southwest. The presumed direction of ground-water flow in the area is toward the south-southwest in the direction of the Calendar Brook, which is located approximately 900 feet west of the garage (USGS, 1988).

Drinking water for the site is supplied by a spring, located approximately 600 feet uphill to the east of the former tank locations, and a water supply well, located on an adjacent property approximately 375 feet south of the tank cavity.

1.2 Site History

The property was previously owned by Ulric Norris and used to store and repair paving trucks and heavy equipment.

On 10 October 1996, MARIN supervised the removal of two underground storage tanks (USTs) — a 4,000-gallon out-of-service gasoline UST (UST #1), and an 8,000-gallon out-of-service diesel UST, (UST #2).

The two USTs were located north of the maintenance building in a large unpaved area and were oriented in a parallel fashion. The pump island for both USTs was located five feet to the north of the USTs. The fill pipes for the USTs were stubbed directly to the surface at the south ends of the tanks. Vent and suction lines were located at the north end of USTs and ran to the pump island.

Upon removal, UST #1 was found to be in fair condition with some surface rust and pits. UST #2 was also found in fair condition with some surface rust but some deeper pits were observed. No holes were observed in either UST.

Piping and the pump island associated with the USTs were removed on 28 September 1996 during the UST cleaning and could not be inspected at the date of closure.

Soils in the UST excavations consisted of brown medium sand and gravel from the surface to a depth of nine feet, underlain by tight gray silt to the bottom of excavation at a depth of 12 feet.

Ground water was not observed in any of the excavations but was observed at a depth of approximately 13.5 feet in the three monitoring wells, which were located around the USTs and adjacent to the pump island. Petroleum odors and sheens were observed in MW-1 and MW-2. No petroleum odors and sheens were observed in MW-3. No free product was observed in the excavations or monitoring wells.

Petroleum odors and stained soils were detected along the sides of UST #2, around the fill pipe, and in the area of the former pump island. No petroleum odors or stained soils were observed in the UST #1 excavation.

Soils in the vicinity of the USTs were screened for the presence of volatile organic compounds (VOCs) with a Thermo Environmental Model 580B portable photoionization detector (PID). The PID was calibrated with isobutylene gas to a benzene reference. Soil samples were placed in Ziploc bags, which were then sealed, warmed to room temperature, and agitated. Bag headspace was then screened for the presence of VOCs with the PID.

PID readings on soil samples collected from the UST #1 excavation ranged from 0.1 to 9.3 parts per million (ppm) and averaged 1.0 ppm. The highest PID concentration was detected at the fill pipe.

PID readings on soil samples collected from the UST #2 excavation ranged from 1.1 to 275 ppm and averaged 80 ppm. The highest PID concentration were detected along the south end of the tank near the fill pipe.

PID readings on soil samples collected from under the pump island ranged from 44.6 to 226 ppm and averaged 130 ppm.

Removal of all contaminated soils was not considered feasible, due to the large area of contamination and the visual evidence of ground water impact in two of the three monitoring wells, so all excavated soils were backfilled.

MARIN initiated an initial site investigation under the VT DEC "Expressway" process after receiving approval on 6 November 1996 from Mr. Dan Yates of Lyndonville Savings Bank, and the VT DEC.

1.3 Objectives and Scope of Work

The objectives of this initial site investigation were to:

- Evaluate the degree and extent of petroleum contamination in soil and ground-water;
- Qualitatively assess the risks to environmental and public health via relevant sensitive receptors and potential contaminant migration pathways; and
- Identify potentially appropriate monitoring and/or remedial actions based on the site conditions.

To accomplish these purposes, MARIN has:

- Supervised the installation of two soil borings/monitoring wells, and determined the extent of petroleum contamination, and the local ground-water flow direction.

- Screened subsurface soils from the soil borings for the possible presence of volatile organic compounds (VOCs) using a photoionization detector (PID).
- Collected and submitted ground-water samples from the on-site monitoring wells for laboratory analysis of volatile petroleum compounds and total petroleum hydrocarbons.
- Identified sensitive receptors in the area, and assessed the risk posed by the contamination to these potential receptors.
- Evaluated the need for treatment and/or a long-term monitoring plan for the site.
- Prepared this summary report, which details the work performed, qualitatively assesses risks, provides conclusions and offers recommendations for further action.

2.0 INVESTIGATIVE PROCEDURES AND RESULTS

2.1 Soil Boring / Monitoring Well Installation

On 19 December 1996, a MARIN hydrogeologist supervised the completion of two soil borings/monitoring wells (MW-6 and MW-7). Approximate monitoring well locations are shown on Figure 2. The soil borings were installed using vibratory drilling technique by Adams Engineering of Underhill, Vermont.

The soils encountered in each boring generally consisted of gray coarse sand and gravel, with occasional brown medium-fine sands. Both borings were completed to approximately 15-16 feet below ground surface (bgs). Ground water was encountered between 11 and 12 feet bgs at the time of drilling. Soil samples were collected continuously from each boring using a five-foot long core tube lined with polyethylene. Soil recovery was generally very good, ranging between 67 and 80 percent. The soil samples were screened for the possible presence of VOCs with a photoionization detector (PID) and logged for lithology by a MARIN geologist. All downhole drilling and sampling equipment was decontaminated during use as appropriate.

Two-inch-diameter PVC monitoring wells with 10 feet of 0.010-inch slots were installed to 15 feet bgs at MW-6, and to 16 feet bgs at MW-7. The tops of the screen sections were set about five to six feet above the ground-water level. Sections of solid PVC were added to bring the tops of the well casings to approximately 0.5 feet bgs. Clean silica #1 filter sand was placed in the borehole annulus around each well to nominally three to four feet above the slotted interval. A bentonite pellet seal, approximately 1.0 feet thick, was set above the sand pack and the remainder of the annular space was backfilled with native material. Each completed monitoring well was protected by a flush-mounted steel roadbox cemented into place. Each well casing was topped with a water-tight compression cap. Both of the monitoring wells were developed after installation using a peristaltic pump. Monitoring-well construction details are included on the soil-boring and well-construction logs in Appendix A.

2.2 Soil-Screening Results

During the evaluation of soil borings on 19 December 1996, PID readings at monitoring wells MW-6 and MW-7, both of which are located downgradient of the former USTs, ranged from 0.8 to 2.1 ppm. PID screening results are included on the boring logs in Appendix A.

The MARIN geologist screened soil samples from each soil boring for the possible presence of volatile organic compounds (VOCs) using a Thermo Environmental Model 580B portable photoionization detector (PID). The PID was calibrated with an isobutylene standard gas to a benzene reference.

2.3 Determination of Ground-Water Flow Direction and Gradient

Ground water in the unconfined surficial aquifer directly beneath the site appears to be flowing in a south-southwesterly direction, toward the Calendar Brook. The average gradient of the local ground-water table on 20 May 1997 was about 22 percent. Water-level measurements and elevation calculations for 20 May 1997 are presented in Table 1. The ground-water contour map in Figure 3 was prepared using this data.

TABLE 1. Ground-Water Elevation Data

Well I. D.	Top of Casing Elevation *	Depth to Water (feet, TOC)	Ground Water Elevation
MW-1	97.87	4.53	93.34
MW-2	97.63	10.48	87.15
MW-3	97.92	7.59	88.32
MW-4	98.25	4.75	93.50
MW-5	100.00	2.65	97.35
MW-6	95.76	8.85	86.91
MW-7	96.01	8.98	87.03

*Top of casing (TOC) and ground water elevations are relative to an arbitrary site datum of 100.00 feet

Fluid levels were measured in the seven monitoring wells on 20 May 1997. The depth to water varied from 2.65 feet (MW-5) to 10.48 feet (MW-2) below top-of-casing. No free-phase petroleum was observed in any of the on-site monitoring wells. Static water-table elevations were computed for each monitoring well by subtracting the measured depth-to-water readings from the surveyed top-of-casing elevations, which are relative to an arbitrary site datum of 100.00 feet.

The shallow aquifer at the site consists mainly of gray coarse sand and gravel, with occasional brown medium-to-fine sands. These soil characteristics typically exhibit effective porosities of about 0.2 to 0.35 and hydraulic conductivities of about 3 to 300 ft/day (Fetter, 1994).

Assuming Darcian flow, these estimated ranges of porosity and conductivity combine with the calculated ground-water gradient of 22 percent to yield an estimated range of ground-water flow velocities in the surficial aquifer of between 2 and 330 ft/day.

2.4 Ground-Water Sampling and Analysis

Review of the ground-water analytical results indicates that none of the Vermont Groundwater Enforcement Standards (VGESs) for benzene, toluene, ethylbenzene, xylenes (BTEX) were exceeded in any of the ground water samples collected on-site. The samples collected from MW-2 and MW-3 contained very small quantities of ethylbenzene, 5.0 ppb (parts per billion) and 11.1 ppb respectively, as well as total xylenes at 5.0 ppb and 4.2 ppb, respectively. Trace levels (less than 2 parts per million - ppm) of total petroleum hydrocarbons (TPH) were detected in MW-1 and duplicate. Ground-water analytical results are summarized below in Table 2; the contaminant distribution is shown on Figure 4. Laboratory report forms are included in Appendix B.

TABLE 2. Ground-Water Analytical Results
January/May 1997

Well I.D.	Benzene	Ethyl benzene	Toluene	Xylenes	MTBE	TPH
MW-1	ND <1	ND <1	ND <1	ND <1	ND <1	**1.26 ppm**
MW-2	**TBQ <1**	**5.0**	ND <1	**5.0**	ND <1	ND <0.8 ppm
MW-3	ND <1	**11.1**	**TBQ <1**	**4.2**	ND <1	ND <0.8 ppm
MW-5	ND <1	ND <1	ND <1	ND <1	ND <1	ND <0.8 ppm
MW-6	ND <1	ND <1	ND <1	ND <1	ND <1	ND <0.8 ppm
MW-7	ND <1	ND <1	ND <1	ND <1	ND <1	ND <0.8ppm
Duplicate (MW-1)	ND <1	ND <1	ND <1	ND <1	ND <1	**1.08 ppm**
VGES*	**5**	**680**	**2,240**	**400**	**40**	**---**

Results reported as parts per billion (ppb), unless noted otherwise.
ND = Compound not detected above indicated detection limit.
TBQ = Compound detected at trace levels below quantitation limit indicated.
VGES = Vermont Groundwater Enforcement Standard, * Vermont Health Advisory for MTBE.

Ground-water samples were collected from four existing monitoring wells on 27 January 1997, and from two wells on 3 May 1997. The delay between sampling events was caused by winter weather conditions; ice build-up within and above the new wells' roadboxes prevented access to the well interiors, despite several visits.

Each monitoring well was purged and then sampled using the dedicated bailer and dropline. Purge water was discharged directly to the ground in the vicinity of each well. A trip blank and a duplicate sample were collected during the January sampling event and a trip blank only

during the May event, for quality assurance/quality control (QA/QC) purposes. All field procedures were conducted in accordance with MARIN standard protocols.

The ground-water samples were submitted to Endyne, Inc. of Williston, Vermont, where they were analyzed for the possible presence of benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl-tertiary butyl ether (MTBE) by EPA Method 8020 and total petroleum hydrocarbons (TPH) by modified EPA Method 8100. Analytical results from the QA/QC samples indicate that adequate QA/QC was maintained during sample collection and analysis. No petroleum compounds were detected in the trip blank, and analytical results for the duplicate sample were identical for VOCs (none detected) and within 20 percent for TPH.

3.0 SENSITIVE RECEPTOR SURVEY AND RISK ASSESSMENT

3.1 Sensitive Receptor Survey

MARIN conducted a survey to identify sensitive receptors in the vicinity of Norris Trucking and Paving that could potentially be impacted by residual soil contamination. The following sensitive receptors were identified in the vicinity of the site:

- The basement of the on-site residence located approximately 175 feet south of the former USTs and pump island.
- A drinking water spring located approximately 600 feet to the east and upgradient of the site.
- A water supply well located on an adjacent property approximately 375 feet south of the former USTs.
- Calendar Brook, located approximately 900 feet southwest of the former tank cavities.

3.2 Risk Assessment

MARIN assessed the risks that the residual subsurface contamination poses to the receptors identified above. In general, human exposure to petroleum related contamination is possible through inhalation, ingestion, or direct contact while impacts to environmental receptors are due either to a direct release or contaminant migration through one receptor to another or along a preferential pathway.

The findings of our risk assessment indicate that the residual subsurface petroleum contamination at the site does not appear to pose a significant threat to any nearby sensitive receptors. Observations made during the UST closure and recent ground-water sample results from monitoring wells completed in and downgradient of the former USTs suggest that residual contamination is limited to the immediate vicinity of the former USTs. Current information suggests that it is unlikely that any significant ground-water contamination would either migrate 900 feet to the Calendar Brook, 375 feet cross-gradient to the water supply well on the adjacent property or to the upgradient on-site water supply .

4.0 CONCLUSIONS

Based on the results of the site investigation described above, MARIN concludes the following:

- Petroleum releases from former underground storage tank (UST) systems at the site appear to have resulted in a minor impact to ground water in the vicinity of the former UST systems. Analytical results of ground-water samples collected from four on-site monitoring wells did not detect the presence of petroleum compounds above the VGESs.
- Observations made during the UST closure and ground-water sample results from monitoring wells completed in and downgradient of the former UST locations suggest that residual contamination is limited to the immediate vicinity of the former USTs.
- The residual subsurface contamination at the site does not appear to pose a threat to any near by sensitive receptors.
- No drinking-water supplies appear to be at risk from the residual contamination at the site.
- Surficial materials at the site consist predominately of gray coarse sand and gravel, with occasional brown medium-to-fine sands. On 20 May 1997, the water table was found to be about 3 to 11 feet below ground surface, and exhibited a southwesterly trending gradient of about 22 percent.

5.0 RECOMMENDATIONS

On the basis of the results of this investigation and the conclusions stated above, MARIN recommends the following:

1. The six on-site monitoring wells should be resampled to confirm the January/May 1997 analytical results. The samples should be analyzed for BTEX compounds and MTBE by EPA Method 8020, and for Total Petroleum Hydrocarbons (TPH) by modified EPA Method 8100.

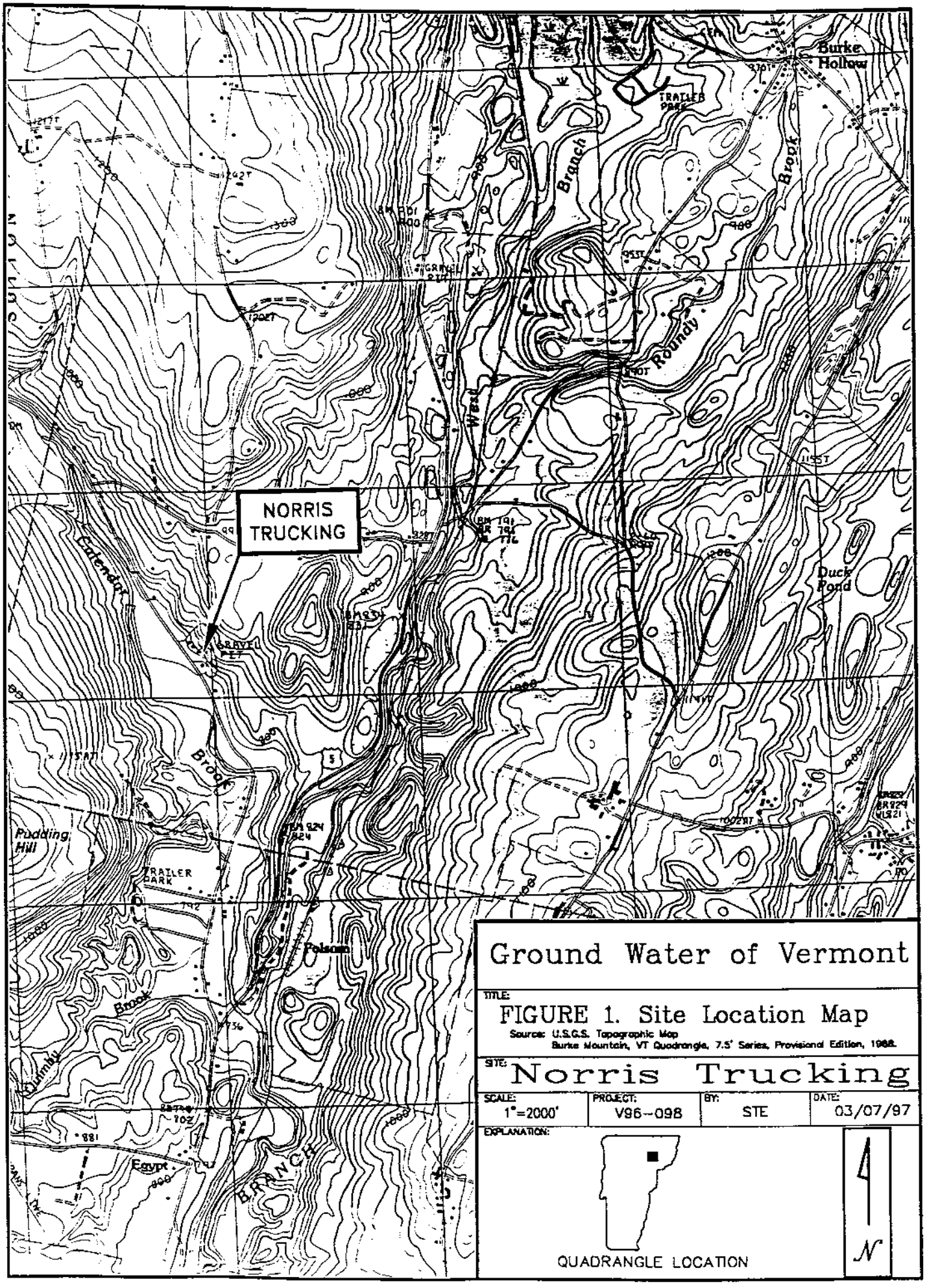
2. If the subsequent ground-water analytical results confirm the findings of the January/May 1997 analytical data (no exceedance of VGESs), MARIN recommends that the site be considered for a "Site Management Activities Completed" (SMAC) status by the Vermont Department of Environmental Conservation (VT DEC).

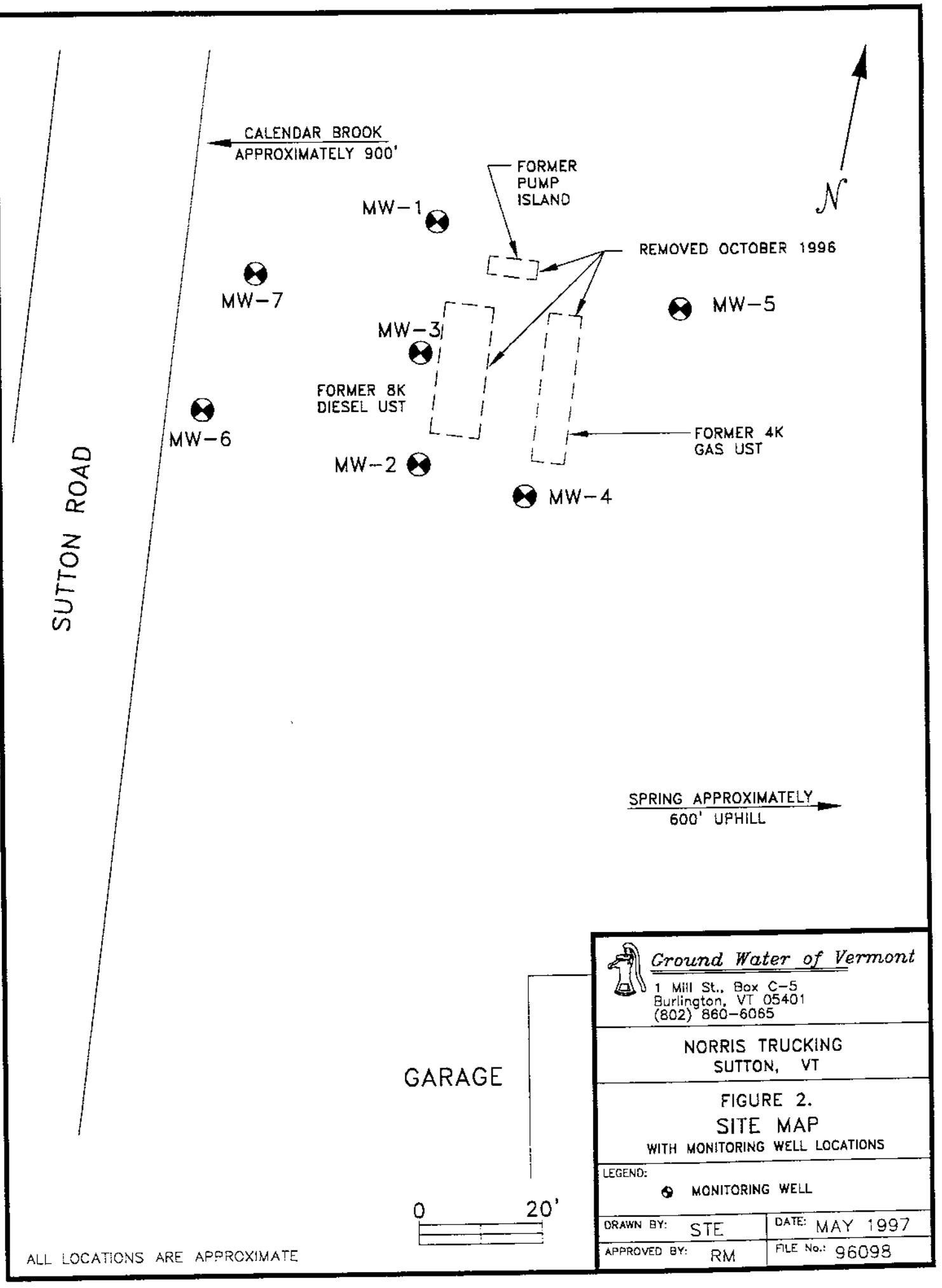
6.0 REFERENCES

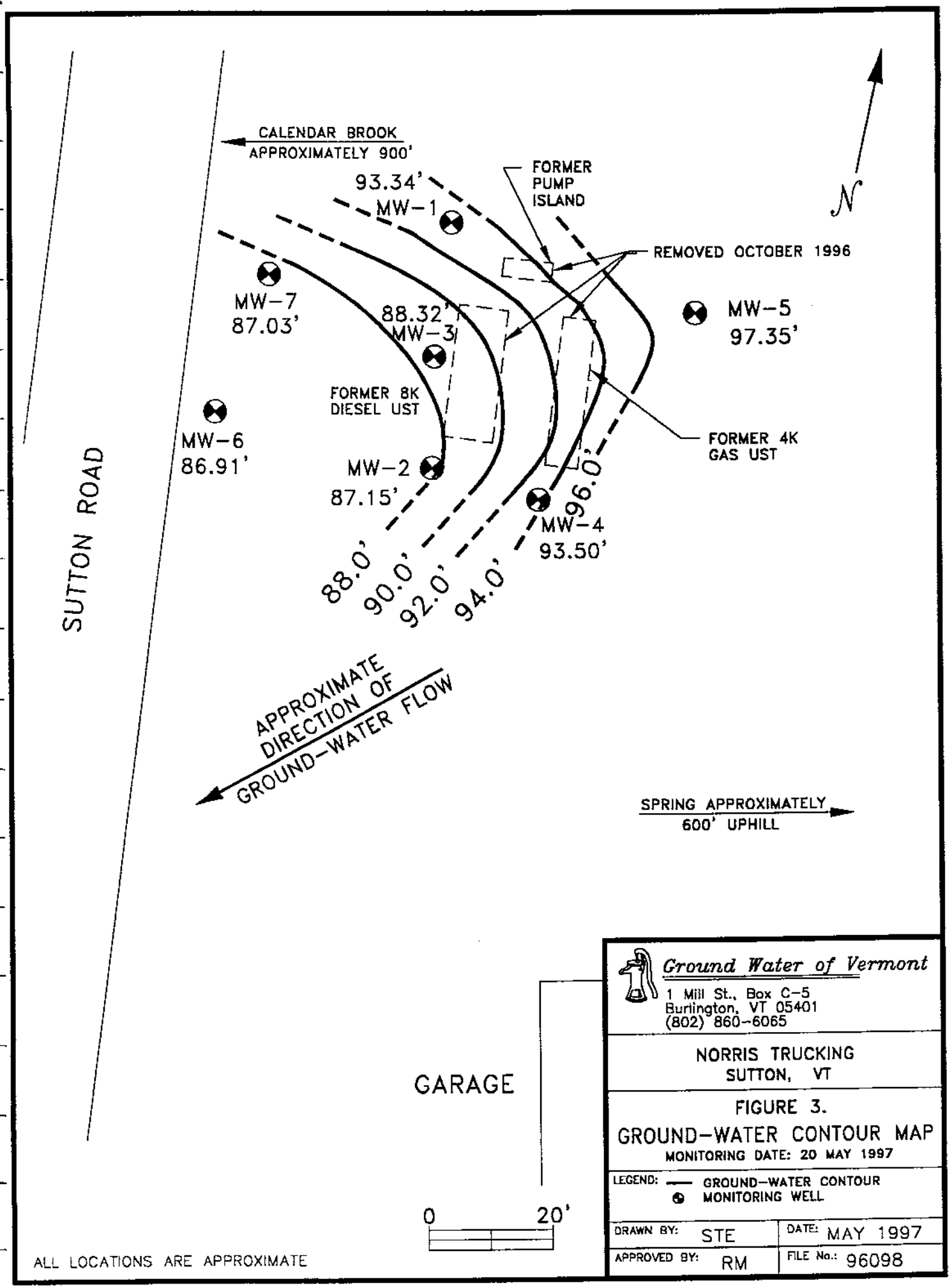
Doll, C.G. and others, 1961. *Geologic Map of Vermont*, Office of the State Geologist.

Fetter, C.W., 1994. *Applied Hydrogeology, 3rd Ed.*, Prentice Hall, Englewood Cliffs, New Jersey, 691 p.

USGS, 1988. Burke Mountain, VT Quadrangle . U.S. Geological Survey. 7.5x15 minute series (topographic). Provisional Edition, 1988.


NORRIS TRUCKING
Burke Hollow
Branch
Brook
Roundy
Duck Pond
Eatenday
Brook
Pudding Hill
TRAILER PARK
Folsom
Brook
Egypt
BRANCH
Ground Water of Vermont
TITLE:
FIGURE 1. Site Location Map
Source: U.S.G.S. Topographic Map
Burke Mountain, VT Quadrangle, 7.5' Series, Provisional Edition, 1988.
SITE:
Norris Trucking
SCALE: 1"=2000'
PROJECT: V96-098
BY: STE
DATE: 03/07/97
EXPLANATION:
QUADRANGLE LOCATION
N


CALENDAR BROOK
APPROXIMATELY 900'
FORMER
PUMP
ISLAND
MW-1
REMOVED OCTOBER 1996
MW-7
MW-5
MW-3
FORMER 8K
DIESEL UST
MW-6
FORMER 4K
GAS UST
MW-2
MW-4
SUTTON ROAD
SPRING APPROXIMATELY
600' UPHILL
GARAGE
0
20'
ALL LOCATIONS ARE APPROXIMATE
Ground Water of Vermont
1 Mill St., Box C-5
Burlington, VT 05401
(802) 860-6065
NORRIS TRUCKING
SUTTON, VT
FIGURE 2.
SITE MAP
WITH MONITORING WELL LOCATIONS
LEGEND:
MONITORING WELL
DRAWN BY: STE
DATE: MAY 1997
APPROVED BY: RM
FILE No.: 96098



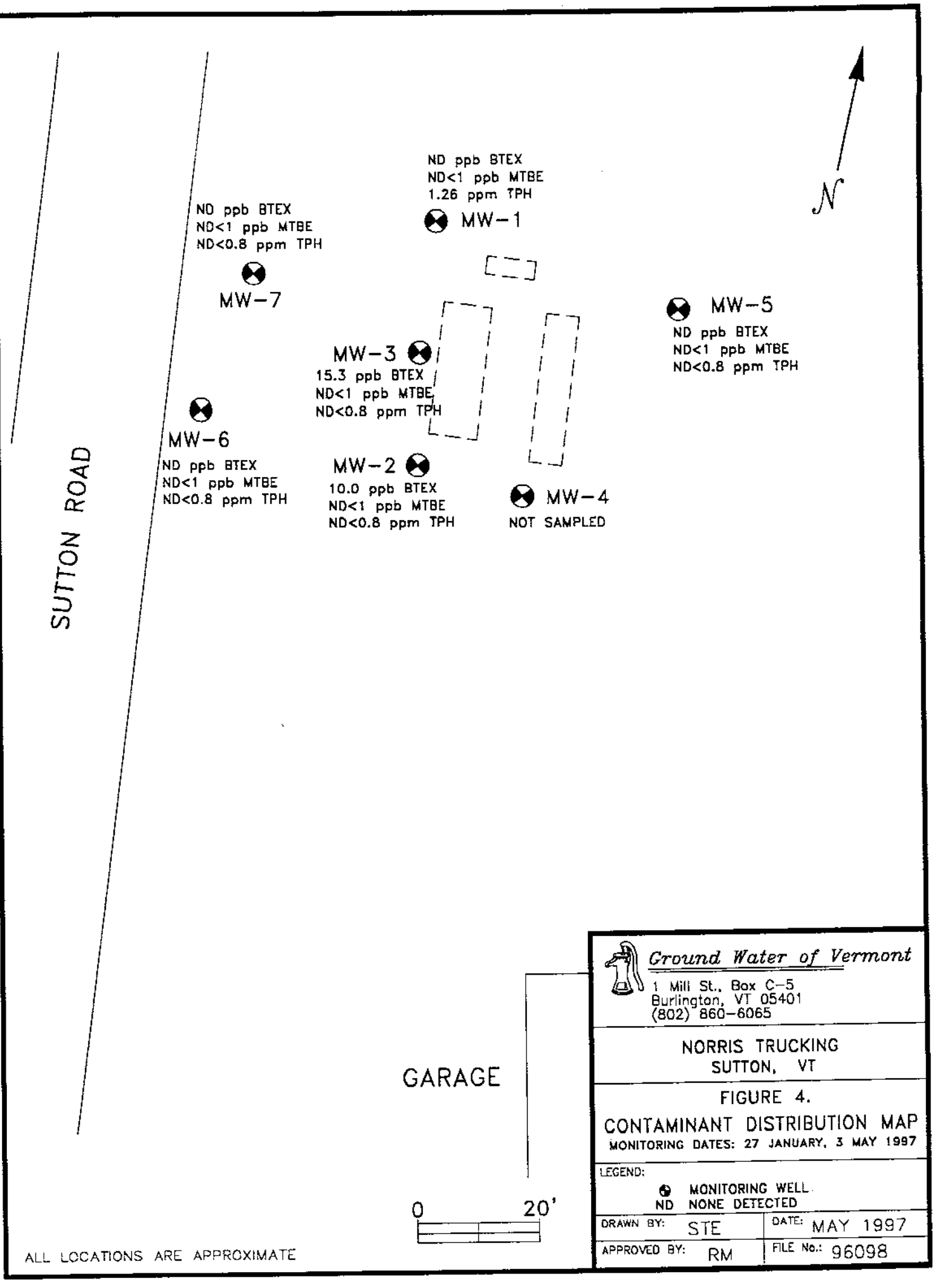
Ground Water of Vermont
1 Mill St., Box C-5
Burlington, VT 05401
(802) 860-6065

NORRIS TRUCKING
SUTTON, VT

FIGURE 3.
GROUND-WATER CONTOUR MAP
MONITORING DATE: 20 MAY 1997

LEGEND: — GROUND-WATER CONTOUR
⊕ MONITORING WELL

DRAWN BY: STE	DATE: MAY 1997
APPROVED BY: RM	FILE No.: 96098



Ground Water of Vermont
1 Mill St., Box C-5
Burlington, VT 05401
(802) 860-6065

NORRIS TRUCKING
SUTTON, VT

FIGURE 4.
CONTAMINANT DISTRIBUTION MAP
MONITORING DATES: 27 JANUARY, 3 MAY 1997

LEGEND:
MONITORING WELL
ND NONE DETECTED

DRAWN BY: STE	DATE: MAY 1997
APPROVED BY: RM	FILE No.: 96098

Ground Water of Vermont

FIELD SUPERVISOR Brian Staver
CONTRACTOR Adams Engineering
DRILLERS Jerry Adams

JOB LOCATION Norris Trucking Sutton, VT
DATE 12/19/96

DRILLING METHOD Vibratory
BORING DIAMETER 2.375"

AND 40 – 50%
SOME 10 – 40%
TRACE 0 – 10%

BORING LOCATION sketch on back or on-site plan with measurements
BORING # MW-6
TOTAL DEPTH 15'

DEPTH	SAMPLES	SAMPLE NUMBER	BLOWS PER 6" (0/6, 6/12, 12/18, 18/24)	REC.	SAMPLE DESCRIPTION	STRAT CHG	PID Readings in Parts Per Million Volume / GENERAL DESCRIPTION	WELL DETAIL	DEPTH
				4'	Gray Sand & Gravel ↓		0-5' dry 0.8 ppmv	Riser: Active	
					Olive silt and fine sand				
5'				3'	Brown medium-fine Sand				5'
					Brown medium-fine Sand		5'-10' dry 1.2-2.0 ppmv		
					Gray Coarse Sand and Gravel				
					Gray fine sand and silt		wet		10'
10'				3'	Grey medium-fine Sand			Screen: Sand	
					Gray/Br Coarse Sand & Gravel	▽	10'-15' wet 1.5-2.1 ppmv		
					olive/br silt & fine Sand				
					Gray Coarse to fine Sand				
15'					Gray Sand & Gravel				15'
					Gray silt & Sand				
20'									20'
25'									25'
30'									30'
35'									35'
40'									40'

MATERIALS USED	SIZE/TYPE	QUANTITY	MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	2" PVC	10'	GROUT	Yes	
SLOT SIZE	.010" PVC	10'	BACKFILL		
RISER PIPE	2" PVC	5'	WATER USED	no	
GRADED SAND	#1	1 gallon	STEAM CLEANER		
PELLET BENTONITE					
GRANULAR BENTONITE	Yes	½ gallon			

Ground Water of Vermont

FIELD SUPERVISOR Brian Starer
CONTRACTOR Adams Engineering
DRILLERS Jerry Adams

JOB LOCATION Norris Trucking Sutton, VT
DATE 12/19/96

DRILLING METHOD Vibratory
BORING DIAMETER 2.375"

AND 40 – 50%
SOME 10 – 40%
TRACE 0 – 10%

BORING LOCATION sketch on back or on-site plan with measurements

BORING # MW-7

TOTAL DEPTH 16'

DEPTH	SAMPLES	SAMPLE NUMBER	BLOWS PER 6" (0/6, 6/12, 12/18, 18/24)	REC.	SAMPLE DESCRIPTION	STRAT CHG	PID Readings in PPMV / GENERAL DESCRIPTION Parts per million volume	WELL DETAIL	DEPTH
				4'	Gray Sand & Gravel		1'-5' dry 0.2 - 0.5 ppmv		
					Brown silt & fine sand				
5'					Brown medium-fine Sand		5'-9.5' dry 0.2 - 0.8 ppmv		5'
					Gray Coarse Sand & GRAVEL ↓				
10'					Gray silt & fine Sand ↓		9.5'-16' wet 0.2 - 0.9 ppmv		10'
					GRAY Sand & GRAVEL				
15'					Gray silt & fine Sand ↓				15'
20'									20'
25'									25'
30'									30'
35'									35'
40'									40'

WELL DETAIL: native, 7-11, riser, Screen, Sand

MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	2" PVC	10'
SLOT SIZE	.010 PVC	10'
RISER PIPE	2" PVC	5'
GRADED SAND	#1	1 gallon
PELLET BENTONITE		
GRANULAR BENTONITE	Yes	½ gallon

MATERIALS USED	SIZE/TYPE	QUANTITY
GROUT	Yes	
BACKFILL		
WATER USED	no	
STEAM CLEANER		

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: GroundWater of Vermont
PROJECT NAME: Norris Trucking
DATE REPORTED: February 5, 1997
DATE SAMPLED: January 27, 1997

PROJECT CODE: GWVT1750
REF. #: 99,326 - 99,331

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: February 5, 1997
CLIENT: GroundWater of Vermont
PROJECT: Norris Trucking
PROJECT CODE: GWVT1750
COLLECTED BY: Kara Sweeney
DATE SAMPLED: January 27, 1997
DATE RECEIVED: January 29, 1997

Reference #	Sample ID	Concentration (mg/L)[1]
99,326	Trip Blank; 0700	ND[2]
99,327	MW5; 1430	ND
99,328	MW2; 1500	ND
99,329	MW3; 1530	ND
99,330	MW1; 1543	1.26
99,331	Duplicate	1.08

Notes:

1 Method detection limit is 0.8 mg/L.
2 None detected

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2080

CHAIN-OF-CUSTODY RECORD

Project Name: NORRIS TRUCKING Site Location: BURKE, VT	Reporting Address: GWV	Billing Address: GWV
Endyne Project Number: GWVT1750	Company: GWV Contact Name/Phone #: RON MILLER 860-6065	Sampler Name: KARA SWEENEY Phone #: 860-6065

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
99,326	TRIP BLANK	W	X		1/27/97 0700	2	40mL VOA		27* +30**	I+HCl	
99,327	MW5				1430						
99,328	MW2				1500						
99,329	MW3				1530						
99,330	MW1				1543						
99,331	DUPLICATE										

Relinquished by: Signature	Received ~~by~~ Signature Tonya M. Andrews	Date/Time 1/29/97 0945
Relinquished by: Signature	Received by: Signature	Date/Time

New York State Project: Yes ____ No ____

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27*	EPA 8010/8020 + MTBE
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify): TPH by 8100 (modified)										

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REPORT OF LABORATORY ANALYSIS

CLIENT: GroundWater of Vermont
PROJECT NAME: Norris Trucking
REPORT DATE: February 4, 1997
DATE SAMPLED: January 27, 1997

PROJECT CODE: GWVT1749
REF. #: 99,320 - 99,325

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody.

Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in referenced method and the within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within Laboratory QA/QC guideline unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

RECEIVED
FEB 10 1997

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EPA METHOD 8020 COMPOUNDS BY GC/MS

CLIENT: GroundWater of Vermont
PROJECT NAME: Norris Trucking
CLIENT PROJ. #: Not Indicated

DATE RECEIVED: December 29,1997
REPORT DATE: February 5,1997
PROJECT CODE: GWVT1749

Ref. #:	99,320	99,321	99,322	99,323	99,324
Site:	Trip Blank	MW 5	MW 2	MW 3	MW 1
Date Sampled:	1/27/97	1/27/97	1/27/97	1/27/97	1/27/97
Time Sampled:	7:00	14:30	15:00	15:30	15:43
Sampler:	Kara Sweeney	Kara Sweeney	Kara Sweeney	Kara Sweeney	Kara Sweeney
Date Analyzed:	2/3/97	2/3/97	2/3/97	2/3/97	2/3/97
UIP Count:	0	0	>10	>10	>10
Dil. Factor (%):	100	100	100	100	100
%Dibromofluoromethane Rec.	108	104	110	112	108
%Toluene-d8 Rec.	101	102	106	97	96
%4-Bromofluorobenzene Rec.	104	111	110	117	101
Parameter					
Benzene	<1	<1	TBQ<1	<1	<1
Chlorobenzene	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	5.0	11.1	<1
Toluene	<1	<1	<1	<1	<1
Xylenes	<1	<1	5.0	4.2	<1
MTBE	<1	<1	<1	<1	<1

Ref. #:	99,325
Site:	Duplicate
Date Sampled:	1/27/97
Time Sampled:	not indicated
Sampler:	Kara Sweeney
Date Analyzed:	2/3/97
UIP Count:	>10
Dil. Factor (%):	100
%Dibromofluoromethane Rec.	101
%Toluene-d8 Rec.	95
%4-Bromofluorobenzene Rec.	108
Parameter	
Benzene	<1
Chlorobenzene	<1
1,2-Dichlorobenzene	<1
1,3-Dichlorobenzene	<1
1,4-Dichlorobenzene	<1
Ethylbenzene	<1
Toluene	<1
Xylenes	<1
MTBE	<1

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation

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GWVT 1152

20887

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CHAIN-OF-CUSTODY RECORD

99,320 — 99,331

Project Name: NORRIS TRUCKING Site Location: BURKE, VT	Reporting Address: GWV	Billing Address: GWV
Endyne Project Number: GWVT1749	Company: GWV Contact Name/Phone #: RON MILLER 860-6065	Sampler Name: KARA SWEENEY Phone #: 860-6065

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
99,320	TRIP BLANK	W	X		4/27/97 0700	2	40 mL VOA		27* + 30	I + HCl	
99,321	MW5				1430						
99,322	MW2				1500						
99,323	MW3				1530						
99,324	MW1				1543						
99,325	DUPLICATE										

Relinquished by: Signature	Received by: Signature Tara M. Andrews	Date/Time 4/29/97 0945
Relinquished by: Signature	Received by: Signature	Date/Time

New York State Project: Yes ____ No ____

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27*	EPA 8010/8020 + MTBE
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify): TPH by 8100 (modified)										

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REPORT OF LABORATORY ANALYSIS

CLIENT: Marin Environmental
PROJECT NAME: Norris Trucking
DATE REPORTED: May 9, 1997
DATE SAMPLED: May 3, 1997

PROJECT CODE: GWVT1025
REF. #: 103,197 - 103,198

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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LABORATORY REPORT

TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: May 9, 1997
CLIENT: Marin Environmental
PROJECT: Norris Trucking
PROJECT CODE: GWVT1025
COLLECTED BY: Jay Gonyaw
DATE SAMPLED: May 3, 1997
DATE RECEIVED: May 7, 1997

Reference #	Sample ID	Concentration (mg/L)[1]
103,197	MW-6; 1014	ND[2]
103,198	MW-7; 1025	ND

Notes:

1 Method detection limit is 0.8 mg/L.
2 None Detected

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V96098

CHAIN-OF-CUSTODY RECORD

RUSH!

Project Name: Norris Trucking Site Location:	Reporting Address: 1700 Hegeman Ave Colchester, VT 05446	Billing Address:
Endyne Project Number: GWVT1025	Company: Marin Environmental Contact Name/Phone #: 802-655-0011	Sampler Name: Jay Gonyaw Phone #:

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
	Trip Blank	H_2O	X		5/5/97 0816	2	40cc		30	HCl	(Fri
	MW-6				1016				30		
103197	MW-6				1014				TPH		
	MW-7				1023				30		
103198	MW-7				1025				TPH		↓

Relinquished by: Signature	Received by: Signature Ray Brainard R.C.A.	Date/Time 5/6/97
Relinquished by: Signature	Received by: Signature	Date/Time 5/7/97 12:00

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
(30)	Other (Specify): 8020 + MTBE										

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REPORT OF LABORATORY ANALYSIS

CLIENT: Marin Env.
PROJECT NAME: Norris Trucking
REPORT DATE: May 9, 1997
DATE SAMPLED: May 3, 1997

PROJECT CODE: GWVT1024
REF.#: 103,194 - 103,196

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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Laboratory Services

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EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Marin Env.
PROJECT NAME: Norris Trucking
CLIENT PROJ. #: V96098

DATE RECEIVED: May 7, 1997
REPORT DATE: May 9, 1997
PROJECT CODE: GWVT1024

Ref. #:	103,194	103,195	103,196		
Site:	Trip Blank	MW6	MW7		
Date Sampled:	5/3/97	5/3/97	5/3/97		
Time Sampled:	8:16	10:16	10:23		
Sampler:	Jay Gonyaw	Jay Gonyaw	Jay Gonyaw		
Date Analyzed:	5/8/97	5/8/97	5/8/97		
UIP Count:	0	0	0		
Dil. Factor (%):	100	100	100		
Surr % Rec. (%):	97	96	97		
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)		
Benzene	<1	<1	<1		
Chlorobenzene	<1	<1	<1		
1,2-Dichlorobenzene	<1	<1	<1		
1,3-Dichlorobenzene	<1	<1	<1		
1,4-Dichlorobenzene	<1	<1	<1		
Ethylbenzene	<1	<1	<1		
Toluene	<1	<1	<1		
Xylenes	<1	<1	<1		
MTBE	<1	<1	<1		

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated

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32 James Brown Drive
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V96098

GWVT 1025

09977

CHAIN-OF-CUSTODY RECORD

Project Name: Norris Trucking Site Location:	Reporting Address: 1700 Hogeman Ave Colchester, VT 05446	Billing Address:
Endyne Project Number: 7-GWVT 1024	Company: Marin Environmental Contact Name/Phone #: 802-655-0011	Sampler Name: Jay Gonyaw Phone #:

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
103194	Trip Blank	H_2O	X		5/5/97 0816	2	40cc		30	HCl	
103195	MW-6				1016				30		
	MW-6				1014				TPH		
103196	MW-7				1023				30		
	MW-7				1025				TPH		

Relinquished by: Signature	Received by: Signature Ray Brassard R. Eng.	Date/Time 5/6/97
Relinquished by: Signature	Received by: Signature	Date/Time 5/7/97 12:00

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify): 8020+MTBE										