

9 November 1998

JUN 10 9 29 AM '99

Mr. Frank Caselli  
29-44 216<sup>th</sup> Street  
Bayside, NY 11360

WASTE MANAGEMENT  
CORPORATION

1700 HEBBURN AVENUE  
DOLCHESTER, MA 01946  
1 802 455-0011  
1 800 520-6065  
FAX 1 802 455-6076

Re: Initial Site Investigation, Caselli Property, 21 the Green, Woodstock, VT

Dear Mr. Caselli:

112 CONSUMERS SQUARE  
SUITE 174  
PLATTSBURG, NY 12901  
1 518 566-8297  
1 800 520-6065

On 28 October 1998, Marin Environmental, Inc. (Marin) conducted field work for an initial site investigation at the above-referenced property, following the discovery of subsurface petroleum contamination at the property during removal of a 1,000-gallon heating-oil underground storage tank (UST) on 20 October 1998. The investigation was performed under the Vermont Department of Environmental Conservation (VT DEC) accelerated site-investigation program, commonly referred to as the "Expressway" program.

7 ISLAND DOCK ROAD  
HADDAM CT 06438  
1 860 345-4578  
1 800 524 9255  
FAX 1 860 345 3854

### Site Background

Evidence of a petroleum release at the site was discovered on 20 October 1998 during the removal of a 1,000-gallon fuel-oil underground storage tank (UST) located at the Caselli Residence.

600 CHARLTON STREET  
SOUTH BRIDGE MA 01550  
1 508 764 8755  
1 800 676-3707  
FAX 1 508 764 4054

The removed UST appeared to be in fair condition at the time of removal, with extensive rust and surface pitting, but no visible holes. Soils with petroleum odors were detected in soils beneath the UST bottom, however. Volatile petroleum compounds were detected in soil samples collected from beneath the UST using a portable photoionization detector (PID), at levels of up to 90.3 parts per million (ppm).

The extent of soil contamination could not be defined, so all excavated soils were backfilled in accordance with VT DEC guidance documents. Ground water was not encountered at the bottom of the excavation, at 9.5 feet below ground surface (bgs).

An initial site investigation was undertaken at the site in accordance with VT DEC guidance documents, which state that PID readings of more than 10 ppm for fuel-oil-contaminated soils are considered indicative of significant contamination that will require further investigation.

114 SOUTH STATE STREET  
PO BOX 1414  
CONCORD NH 03302  
1 603 224 8871  
1 800 636 6030

### Summary of Findings and Recommendations

The findings of this work suggest that the residual petroleum contamination has not migrated down to ground water, that no sensitive receptors (such as drinking-water supplies, surface-water bodies, building interior air or underground utilities) appear to be at risk, and that natural processes will prove sufficient at reducing the residual soil contamination to acceptable levels and preventing future impact to sensitive receptors.

INTERNET  
WWW.MARINENV.COM

On the basis of these findings, Marin recommends that no further investigation is needed regarding the former UST, and that the site be considered for Sites-Management Activity Completed (SMAC) status by the VT DEC.

### Scope of Work

The field work performed on 28 October 1998 included the following:

- Installation of two soil borings at the former UST location;
- Screening of soil samples collected from the borings with a photoionization detector (PID) to evaluate the vertical extent of soil contamination, and to evaluate whether the contamination had migrated downward to the water table;
- Collection of a soil sample from beneath the apparent limits of petroleum contamination, as defined by the PID screening;
- Laboratory analysis of the soil sample for volatile petroleum compounds by EPA Method 8021B and for Total Petroleum Hydrocarbons (TPH) by modified EPA Method 8100, to confirm the field-screening results; and
- Screening of indoor air in the basement of the on-site residence, to evaluate whether vapor-phase petroleum compounds in the soil are entering into the residence.

### Soil Boring Installation

On 28 October 1998, two soil borings (SB-1 and SB-2) were completed in the former UST location at the site to auger refusal, at depths ranging from 17.0 feet to 13.5 feet bgs respectively (Figure 1, Attachment A). In general, coarse to fine sands were present beneath the site up to a depth of 12 feet bgs. Below that depth, fluvial deposits consisting of weathered schist fragments and quartz cobbles were encountered. Soil boring SB-1, completed approximately five feet south of the residence, yielded elevated PID readings in the upper 12 feet of the soil column. Below this depth, PID levels remained non-detect down to the boring's terminus at 17 feet bgs. Soil boring SB-2, three feet west of SB-1, was advanced without sampling to a depth of 12.5 feet bgs. A PID reading of 2.4 ppm was observed in the sample collected from 12.5 to 13 feet bgs. The 13.0 to 13.5 foot depth sample had a reading of 0.0 ppm. Headspace screening results are provided in Table 1, and on the soil boring logs (Attachment B).

**TABLE 1**  
**PID Soil Screening Results**

Depth (feet bgs)	PID (ppm)	
	SB-1	SB-2
1-3	22.3	N/A
5-7	77.7	N/A
10-12	34.0	N/A
12.5-13.0	N/A	2.4
13.0-13.5	N/A	0.0
15-17	0.0	

Note: Shaded sample, which was collected at the bottom of the boring, was submitted to Endyne, Inc. for laboratory testing by EPA Methods 8021B and 8100-modified (TPH).

Ground water was not encountered at either of the boring locations, so a soil sample was collected from the 13.0 to 13.5 foot depth interval in SB-2.

Benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2, 4 trimethylbenzene, and 1,3,5 trimethylbenzene were not detected above their respective detection limits in the soil sample. Naphthalene was detected at a level of 23.6 parts per billion (ppb), which is above the corresponding Vermont Groundwater Enforcement Standard (VGES) of 20.0 ppb. Neither unidentified peaks (UIPs) nor Total Petroleum Hydrocarbons (TPH's) were detected. Analytical results are summarized in Table 2. Laboratory analytical reports are included in Attachment C.

**TABLE 2**  
**Soil Laboratory Analytical Results**

Sample ID	BTEX Compounds	Naphthalene	TPH
SB-2/12.5-13.5'	<10	23.6	ND
BTEX = benzene, toluene, ethylbenzene, and total xylenes. Tested via EPA Method 8021b. Naphthalene = Tested via EPA Method 8021B. TPH = Total Petroleum Hydrocarbons. Tested via EPA Method 8100-modified. All concentrations reported in micrograms per kilogram (ug/kg).			

The soil borings were installed by Tri-State Drilling and Boring of West Burke, Vermont, under the supervision of Marin personnel. Soil borings were advanced via hollow-stem augers, with split-spoon sampling at five-foot intervals. Split-spoon samples were descriptively logged and screened for the possible presence of VOCs with a Photovac Model 2020 PID equipped with a 10.6 eV lamp. The PID was calibrated on site prior to screening with a 100 ppm isobutylene span gas, referenced to benzene.

Soil samples were submitted to Endyne, Inc. (Williston, Vermont) for testing by EPA Methods 8021B and 8100-modified for VOCs and TPH, respectively.

#### **Sensitive Receptor Survey and Risk Assessment**

Marin conducted a survey to identify sensitive receptors in the vicinity of the Caselli Residence, and assessed the risks posed by the subsurface contamination to these receptors. The findings of the sensitive receptor survey are summarized as follows:

- The on-site residence, located approximately five feet north of the former tank location, has a basement
- The Ottauquechee River is located approximately 175 feet north of the former UST location, in the likely downgradient direction.
- The site and all surrounding buildings are served by a public water-supply system, whose source is a gravel supply well located over a half mile from the site.
- No preferential pathways for contaminant migration (such as curtain drains, drainage swales, storm drains or other underground utilities) were identified.

On 28 October 1998, Marin personnel screened indoor air in the basement of the on-site residence with a PID. No PID readings above background were detected in this basement.

Based on the distance from the former UST to the Ottauquechee River and the fact that soil contamination does not appear to extend down to the water table, the Ottauquechee River is not considered likely to be impacted.

### Findings

Our findings are as follows:

- The soil borings in the UST excavation encountered refusal in dense cobble-filled material at depths of 17 and 13.5 feet below ground surface (bgs), respectively. Neither boring encountered ground water, which is likely to be at least 20 to 25 feet bgs.
- The residual petroleum contamination beneath the former UST appears to be limited to an approximately seven-foot vertical zone beneath the former UST, and does not appear to have migrated to ground water. PID readings on soil samples collected from the borings decreased to 0.0 parts per million at about 13 feet bgs. The only petroleum compound detected in the laboratory analysis of the soil sample collected at 13-13.5 feet bgs from the boring was naphthalene, which was quantified at 23.6 parts per billion (ppb). Given that this is a total concentration in soil above the water table, it is unlikely that the Vermont Groundwater Enforcement Standard of 20 ppb would be exceeded in the underlying ground water.
- No sensitive receptors appear to be at risk from the residual petroleum soil contamination. As discussed above, ground water does not appear to have been impacted. No elevated PID readings were measured in the building basement. The site and all nearby properties are served by public water systems, and no preferential migration pathways (such as curtain drains, drainage swales, storm drains or other underground utilities) to the nearby Ottauquechee River have been identified.
- The natural processes of biodegradation, adsorption, dilution and dispersion are likely to be sufficient to reduce the residual soil contamination to acceptable levels and prevent any future impact to any identified sensitive receptors.

Marin has appreciated the opportunity to assist you on this issue. Please call me if you have any questions. Upon receiving your approval, I will forward a copy of this report to the VT DEC.

Sincerely,

Marin Environmental, Inc.



Ron Miller  
Senior Hydrogeologist and Regional Manager

cc. Thomas Hayes, Eaton & Hayes

Ref: 98102r02.doc

**ATTACHMENT A**



**Marin Environmental, Inc.**

7 Island Dock Road  
Haddam, CT 06438

PREPARED

BY  
JB

DATE

10/23/98

CHECKED

BY

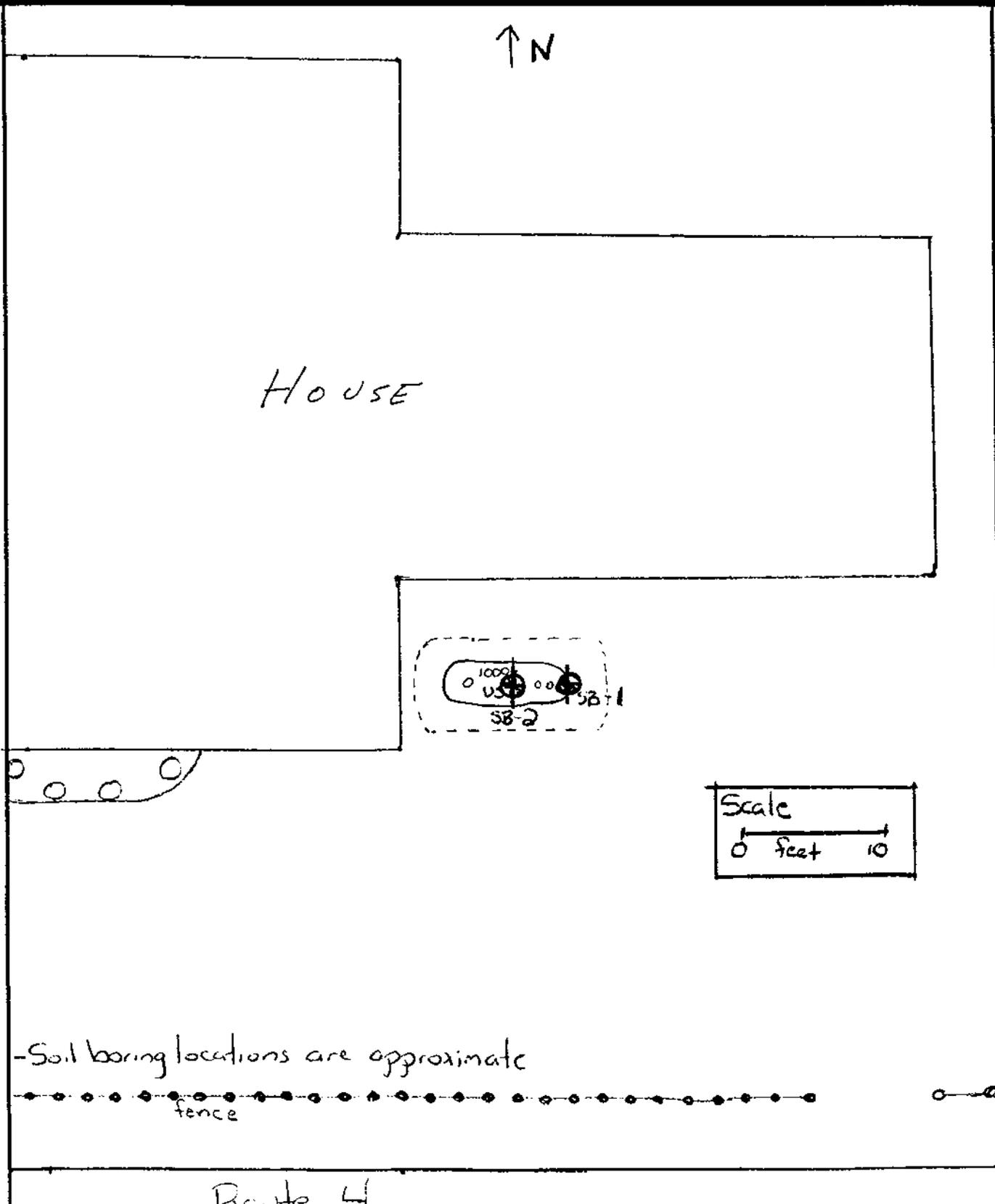
DATE

PROJECT

NO.

VT98-0091

SUBJECT: Caselli UST Site (Figure 1)



-Soil boring locations are approximate

Route 4

**ATTACHMENT B**

# Tri-State Drilling & Boring, Inc.

RR#2 Box 113, Gaskell Hill  
West Burke, Vermont 05871  
802-467-3123

BIT # FTG

BIT # FTG

SHEET	1
DATE	10/28/98
HOLE NO.	1
LINE & STA.	
OFFSET	

TO	Marin Environmental	Address	
PROJECT NAME		Location	21 "Woodstock
REPORT SENT TO		PROJECT #	
SAMPLES SENT TO		OUR JOB #	

GROUND WATER OBSERVATIONS	CASING	SAMPLER	CORE BAR	SURFACE ELEV.
AT _____ AFTER _____ HRS	TYPE	_____	_____	DATE STARTED 10/28/98
AT _____ AFTER _____ HRS	SIZE ID	_____	_____	DATE COMPLE. 10/28/98
	HAMMER WT.	_____	<u>BIT</u>	BORING FOREMAN Andy Hoak
	HAMMER FALL	_____	_____	INSPECTOR Eric & Jason
				SOILS ENGR.

## LOCATION OF BORING

DEPTH	CASING BLOWS	SAMPLE DEPTHS	TYPE OF	BLOWS PER 6' ON SAMPLER				MOISTURE	NO.	PEN.	REC.	SOIL IDENTIFICATION		
				FROM		TO							CONSIST.	REMARKS, INCLUDE COLOR, GRADATION, TYPE OF SOIL, ROCK-COLOR, TYPE, CONDITION, HARNESS, DRILLING TIME, SEAMS AND ETC.
				0-6	6-12	12-18	18-24							
1-3			S/S	1	1	1	2	Dry			8"	Brown fine sand		
5-7			S/S	1	1	1	2	Dry			6"	Brown fine sand		
10-12				11	11	18	13	Dry			14"	Medium gravel, medium to coarse sand, old fuel smell		
15-17				12	14	16	15	Dry			13"	Medium sandy grave, refusal at 17.5'		
												Moved back 3'		
												2nd attempt auger refusal at 12.5', spoon refusal at 13.5'		
12.5-13.5				120	50	ref		Dry			12"	Medium sand & gravel, cobbly, fuel smell, top 6" none Bottom 6"		

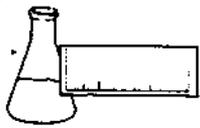
## WELL REPORT

GROUND SURFACE TO	USED	CASING: THEN	SUMMARY
SAMPLE TYPE	PROPORTIONS USED	140LB WT. X30' FALL ON 2" O.D. SAMPLER	EARTH BORING _____
D=DRY C=CORED W=WASHED	TRACE 0 TO 10%	COHESIONLESS DENSITY	ROCK CORING _____
UP=UNDISTURBED PISTON	LITTLE 10 TO 20%	0-10 LOOSE	SAMPLES _____
IP=TEST PIT A=AUGER V=VANE TEST	SOME 20 TO 35%	10-30 MED.DENSE	
UT=UNDISTURBED THINWALL	AND 35 TO 50%	30-50 DENSE	
		50+ VERY DENSE	

## MATERIALS USED

SCREEN _____	SAND _____	ROAD BOX _____
RISER _____	BENTONITE _____	WELL GUARDS _____
CAPS _____	HOLE PLUG _____	MIS: _____
L.PLUG _____	ENV GROUT _____	

**ATTACHMENT C**



**ENDYNE, INC.**

**Laboratory Services**

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

LABORATORY REPORT

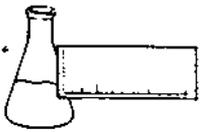
TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: October 29, 1998  
CLIENT: Marin Environmental  
PROJECT: Caselli ISI/VT98-0102  
PROJECT CODE: GWVT1499  
COLLECTED BY: Eric S.  
DATE SAMPLED: October 28, 1998  
DATE RECEIVED: October 28, 1998

Reference #	Sample ID	Concentration (mg/kg) <sup>1</sup>
130,086	SB-2 13.-13.5; 10:00	ND <sup>2</sup>

Notes:

- 1 Value quantitated based on the response of #2 Fuel Oil. Method detection limit is 5.0 mg/kg.
- 2 None Detected



EPA METHOD 8021B--PURGEABLE AROMATICS

CLIENT: Marin Environmental	DATE RECEIVED: October 28, 1998
PROJECT NAME: Caselli ISI	REPORT DATE: October 29, 1998
CLIENT PROJ. #: VT98-0102	PROJECT CODE: GWVT1500

Ref. #:	130,087				
Site:	SB-2 13.-13.5				
Date Sampled:	10/28/98				
Time Sampled:	10:00				
Sampler:	Eric S.				
Date Analyzed:	10/29/98				
UIP Count:	> 10				
Dil. Factor (%):	100				
Surr % Rec. (%):	93				
Parameter	Conc. (ug/kg)				
MTBE	<10				
Benzene	<10				
Toluene	<10				
Ethylbenzene	<10				
Xylenes	<10				
1,3,5 Trimethyl Benzene	<10				
1,2,4 Trimethyl Benzene	<10				
Naphthalene	23.6				

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

**CHAIN-OF-CUSTODY RECORD**



28043

VT98-0102

Project Name: <u>Caselli, ISI</u> Site Location: <u>Woodstock, VT</u>	Reporting Address: <u>1700 Hegerman Ave</u> <u>Colchester, VT 05446</u>	Billing Address: <u>Same</u>
Endyne Project Number: <u>6WVT/500</u>	Company: <u>M.A. Environmental</u> Contact Name/Phone #: <u>R. Miller 655-0011</u>	Sampler Name: <u>Eric S.</u> Phone #: <u>655-0011</u>

Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
	<u>SB-2 13-13.5</u>	<u>Soil</u>	<u>X</u>		<u>10/28</u>	<u>2</u>	<u>40ml Vial</u>	<u>-24 hr turnover</u>	<u>30A</u>	<u>SCE</u>	<u>X</u>
<u>130,087</u>	<u>SB-2 13-13.5</u>	<u>Soil</u>	<u>λ</u>		<u>1000</u>	<u>2</u>	<u>40ml Vial</u>	<u>-24 hr turnover</u>	<u>30B</u>	<u>MeOH</u>	<u>X</u>



Relinquished by: Signature <u>Eric J. Smith</u>	Received by: Signature <u>[Signature]</u>	Date/Time <u>10/28/98 1:29</u>
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	Coliforms (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 <sub>5</sub>	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TC1.P (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	A) Other: (Specify) <u>TPH by mod 8100</u> <u>(30B) 8021b</u>										