

## Heindel and Noyes

P.O. Box 64709 Burlington, Vermont 05406-4709

- Consulting Hydrogeologists
- Engineers
- Environmental Scientists

802-658-0820

Fax 802-860-1014

March 11, 1999

Mr. Richard Spiese  
Hazardous Materials Management Division  
Agency of Natural Resources  
103 South Main Street  
Waterbury, VT 05671-0404

Re: Rotary Mart  
103 Shelburne Road  
Burlington, Vermont  
SMS Site #98-2527

Dear Richard:

Please find enclosed our Site Investigation Report for the Rotary Mart in Burlington, Vermont.

Feel free to contact me should you have any questions or concerns.

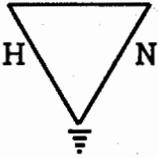
Sincerely,

Miles Waite, Ph.D.  
Senior Hydrogeologist

MW/jm

Enclosure

cc: William Simendinger, Esq.



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## ROTARY MART

103 Shelburne Road  
Burlington, Vermont

## SITE INVESTIGATION REPORT

SMS #98-2527

Prepared by:

Heindel and Noyes

Prepared for:

Wesco, Inc.  
P.O. Box 2287  
South Burlington, VT 05403-2287

March 11, 1999

# ROTARY MART

103 Shelburne Road  
Burlington, Vermont

## SITE INVESTIGATION REPORT

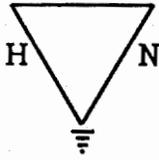
SMS #98-2527

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- Appendix 4 - Laboratory Results



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## **ROTARY MART**

**103 Shelburne Road  
Burlington, Vermont**

# **SITE INVESTIGATION REPORT**

**SMS #98-2527**

**March 11, 1999**

### **1.0 INTRODUCTION**

Heindel and Noyes (H&N) was retained by Wesco, Inc. in January 1999 to perform an environmental investigation at the Rotary Mart at 103 Shelburne Road in Burlington, Vermont. This investigation was requested to further define the degree and extent of soil contamination that was noted during some tank excavation work in late September 1998. Also requested was an assessment of the possibility of groundwater contamination.

There are currently three gasoline USTs owned and operated by Wesco, Inc. in the northwest portion of the Rotary Mart property (refer to site plan in Appendix 1, page 4). There is a 10,000 gallon tank (regular unleaded), an 8,000 gallon tank (super unleaded), and a 4,000 gallon (special unleaded) tank. Although the tanks are approximately 13 years old, new piping was installed in September 1998. During this installation, soil was excavated around the tanks and pump island and tested with a PID for the presence of volatile organic compounds. The soil headspace readings, presented to the Agency of Natural Resources in the tank closure report<sup>1</sup> ranged from 0 – 600 parts per million (ppm), with highest readings encountered immediately above (600 ppm) and below (320 ppm) the 8,000 gallon tank. High readings were also measured at the south end of the pump island (500 ppm). Headspace readings of the soil surrounding two other gasoline tanks were much less significant, ranging from 0 – 77 ppm. No signs of contamination were observed in the soil surrounding a 500-gallon heating oil tank that was discovered during the

excavation work. This tank was cleaned and removed according to Vermont's UST guidelines.

In response to the tank closure report, Wesco, Inc. was requested in a letter from Bob Butler of the Sites Management Section, dated January 1, 1999, to perform additional site characterization. The following document reports the results of this additional work. Included in this work was the installation of three additional monitoring wells (Section 3.0), an evaluation of the site geology and hydrogeology (Section 4.0), a characterization of the contaminant distribution based on laboratory data (Section 4.0), and conclusions and recommendations for future action (Section 5.0).

## 2.0 SITE DESCRIPTION

The property in question is located at 103 Shelburne Road in Burlington, Vermont (Appendix 1, page 1). The property is bounded on the east by Shelburne Road, on the north by Gove Court, and on the south and west by residential and commercial properties. The Rotary Mart convenience store is the only structure on the property. A site map (Appendix 1, page 4) shows the layout of the property including the approximate locations of the three gasoline USTs. The site is paved and relatively flat, but slopes steeply to the west along the western property boundary.

As indicated on the surficial geologic map of Vermont (Appendix 1, page 2-3), the site is located in a small pocket of marine beach gravel surrounded by pebbly marine sands. Shallow soil borings completed by H&N (Appendix 3) show that the upper portion of the stratigraphy is sand and fine gravel, very likely a combination of native material and fill from the three adjacent USTs. At lower depths, the native material is brown to gray clay, also likely associated with marine/lacustrine sedimentary processes. This clay was observed in all three borings starting at depths between 12-15 feet below ground surface (bgs). The bottom of the clay was not encountered. The locations of the three borings can be seen in the site plan included in Appendix 1, page 4. Note that two other wells, labeled MW-3G and MW-4G are also included on this map. These wells are from the Rotary Gulf site (SMS site # 89-0386) across Shelburne Road. Research into the well logs from these wells<sup>2</sup> show that the stratigraphy is composed primarily of sand and gravel with a high silt content. Because neither of these wells was drilled deeper than 11 feet bgs, no clay was encountered.

---

1 UST Permanent Closure Form, presented by Aquaterra, October 21, 1998.

2 Site Investigation Report, presented by Aquaterra, July 31, 1998.

### **3.0 WORK COMPLETED**

#### **3.1 *Monitoring Well Installation***

A total of three soil borings were drilled at the property on February 16, 1999. All borings were performed using a hollow-stem auger, and were subsequently configured with monitoring wells to evaluate hydrogeologic conditions and soil and groundwater quality. Specialty Drilling & Investigation (SDI) of Burlington, Vermont performed the drilling, while H&N personnel supervised all work. SDI's drilling logs are included in Appendix 3. Note that three existing onsite monitoring wells that were referenced in the tank pull report could not be located during the investigation. It is very likely that these wells were destroyed during the excavation work in the fall of 1998.

Monitoring wells were constructed of two-inch (i.d.) PVC casing with flush-threaded joints and ten-foot, factory-slotted screened sections (0.020 inch slotted) covered with filter sock. Upon the installation of each well, the borehole was backfilled with sand pack around the screened section followed by a two-foot bentonite seal. Native material from the drill cuttings was used to backfill the remainder of each well. Material that was not utilized for backfilling was stockpiled along the west side of the Rotary Mart. Note that none of the cuttings showed any signs of contamination (refer to Section 3.2), meaning this soil can be disposed of as pleased. The total volume of soil currently stockpiled is approximately 12-15 ft<sup>3</sup> (~½ yd<sup>3</sup>).

Well construction details are included in Table 1 (Appendix 2, page 1). All three monitoring wells, labeled MW-1 through MW-3 (see site map), were developed and sampled on February 23, 1999.

#### **3.2 *Soil Screening and Sampling***

During the soil boring program, discrete interval (split-spoon) soil samples were collected and screened with an HNu Systems, Inc. Model PI 101 photoionization detector (PID) equipped with a 10.2 eV lamp. The PID was calibrated throughout each day with a 56 ppm isobutylene span gas. Soil samples were placed in zip-lock plastic bags and permitted to equilibrate for a minimum of fifteen minutes prior to headspace screening. Headspace screening results are included on soil boring logs (Appendix 3). These data show only

trace levels of volatile organic chemicals in the soil that was sampled, usually an indication that the material is not contaminated by petroleum hydrocarbons.

### **3.3 Groundwater Sampling**

Groundwater samples were collected from wells MW-1, MW-2 and MW-3 on February 23, 1999. Prior to sampling, wells were purged until dry. Samples were then collected with dedicated bailers. Water samples were observed to be clear with no petroleum sheen or odor. All samples were preserved with hydrochloric acid and ice, and submitted to Endyne, Inc.

### **3.4 Site Survey and Water Table Elevations**

Monitoring well locations and top-of-casing (TOC) elevations were surveyed by H&N on January 17, 1999. By using the TOC elevations of MW-3G and MW-4G across the street, the elevations of the newly installed wells could be tied into the existing wells, allowing for a more detailed picture of the local hydrogeology. All elevations can be seen in Table 1. Locations of all monitoring wells can be seen on the site map.

Water levels were initially checked during the site survey on February 17, 1999, one day after the wells were installed. Although groundwater was observed at depths ranging from 5-6 bgs in the two pre-existing wells that are immediately offsite (MW-3G and MW-4G on site plan), the three new wells were all dry. This was due to the fact that the aquifer in this area is made up of tight clays with a very low permeability. Six days after the drilling, given adequate time for the flux of groundwater through the hydrologic system, groundwater was observed in all three wells.

Groundwater elevations were calculated by subtracting the measured water levels from the surveyed TOC elevations. The monitoring well elevation data are presented in Table 2 (Appendix 2, page 2). A discussion of the groundwater elevation data is presented in Section 4.1.

## 4.0 INVESTIGATION RESULTS

### 4.1 Hydrogeology

Using the groundwater elevation data, a water table elevation contour map was constructed (Appendix 1, page 5). This water table contour map indicates that apparent shallow groundwater flow across the majority of site is from northeast to southwest with a very steep lateral hydraulic gradient 0.161 feet/foot (MW-4G to MW-1). The direction and magnitude of the hydraulic gradient are likely due to the steep topography immediately east of the site (refer to USGS map, Appendix 1, page 1). Note that direction of flow can also be confirmed using the most recent data from monitoring wells across the street at the Rotary Gulf site (#89-0386).<sup>3</sup>

### 4.2 Contaminant Distribution

#### 4.2.1 Soil

Split-spoon samples were collected from select depths below ground surface and screened in the field for volatile organic compounds via headspace analyses with a PID. Headspace screening results are included on soil boring logs in Appendix 3. Headspace PID readings from each of the three soil borings indicated no signs of petroleum contamination. In the 13 samples collected, ranging in depths between from 5-27 feet bgs, the highest PID reading was 0.4 ppm. No other visual or olfactory signs of contamination were noted in any of the samples or drill cuttings.

#### 4.2.2 Groundwater

Groundwater samples collected on February 23, 1999 were analyzed at Endyne, Inc. Trace levels of Petroleum hydrocarbons were identified in all three monitoring wells that were sampled (MW-1, MW-2, and MW-3) using EPA Method 8021b (purgeable aromatics). Analytical results can be seen in Table 3 (Appendix 2, page 3) and laboratory reports are presented in Appendix 4.

The gasoline components that were detected above the detection limits in the three wells were Toluene, Xylenes and Methyl-tert-butyl Ether (MTBE). Of these three chemicals, only the concentrations of MTBE in wells MW-1 and MW-2 surpass the

<sup>3</sup> Refer to letter to ANR from Aquaterra regarding site sampling, February 17, 1999.

Vermont Groundwater Enforcement Standards (VGES). From the distribution of MTBE in the three wells, also shown in Appendix 1, page 5, it appears as if the highest contamination levels exist in the very northwest corner of the site.

#### **4.2.3 Sensitive Receptor Analysis**

Based on the soil screening results, there is no evidence to suggest that petroleum vapors are moving northward or westward away from the contaminated soil that was observed during the UST work. With the data collected from MW-1 and MW-2, it is very unlikely that the airspace in the residence immediately west of the site (refer to site plan) has been impacted by the formerly identified contamination. As well, the screening results from MW-3 make it very unlikely that there has been vapor movement northward toward the residences on the other side of Gove Court. With this evidence in hand, it was not deemed necessary to undertake a detailed PID survey in the site adjacent buildings. Note that the Rotary Mart building does not have a basement.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

During tank pull investigation at the Rotary Mart in September 1998, PID screening indicated the presence of volatile organic compounds in some of the soils adjacent to the three existing USTs. To further evaluate the degree and extent of soil and groundwater contamination, H&N installed three groundwater monitoring wells.

Both field screening of soil samples and analytical testing of groundwater samples collected from these wells now suggest that only minimal contamination is present immediately downgradient of the USTs. Only MTBE was detected at levels above the VGES, in groundwater collected from wells MW-1 and MW-2. It was also determined that there is no current threat of soil gas vapors to sensitive receptors in the immediate vicinity of the Rotary Mart.

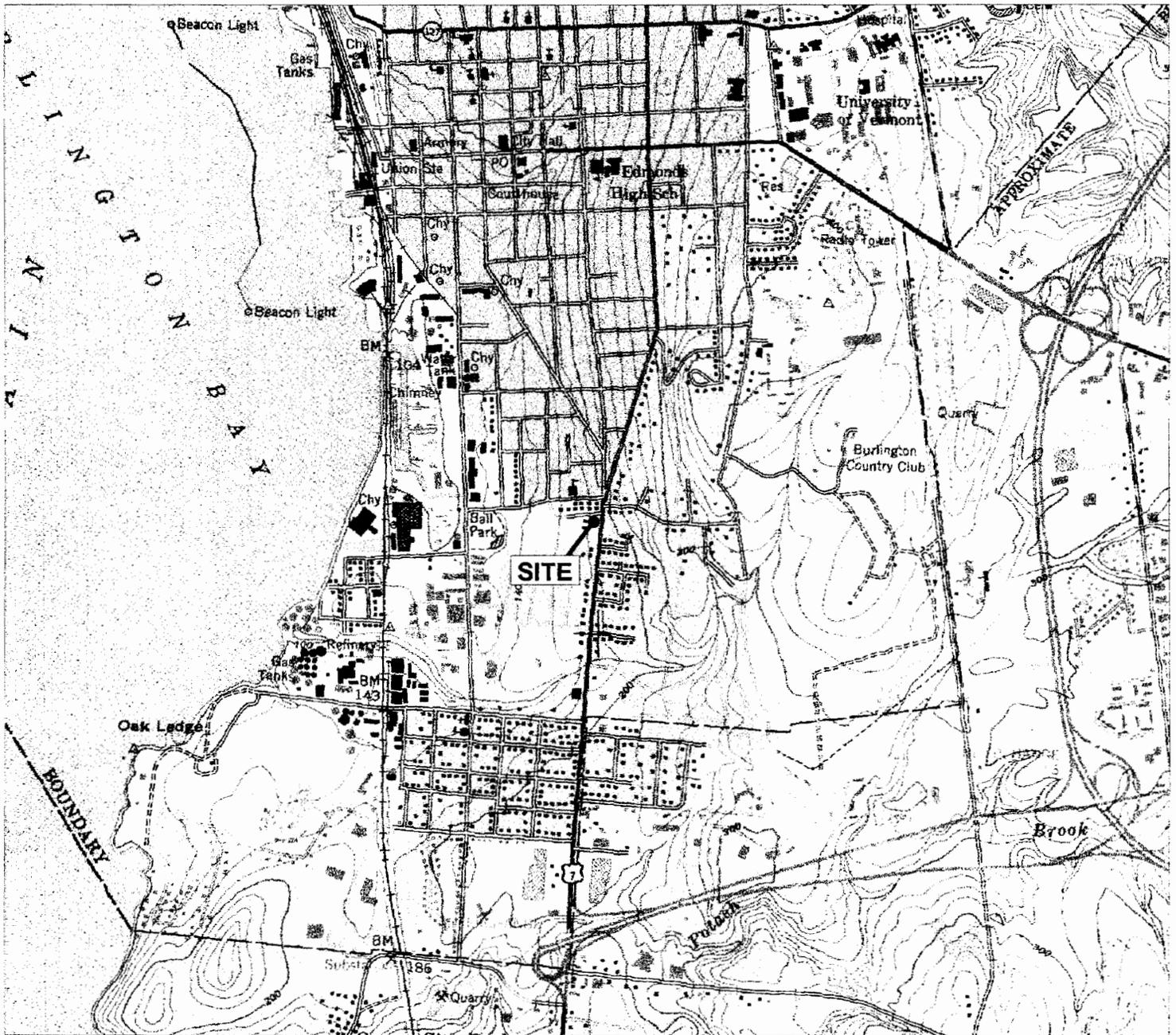
From evaluation of the soil screening data collected in the tank pull, and the fact that only minimal groundwater contamination was detected, it appears as if the source of the contamination was a surface spill/overflow of one or more of the USTs at one point in time. Because of the current presence of MTBE in the very northwest corner of the site, adjacent to the city right of way and one residence, H&N recommends that the site

continue to be monitored throughout the year. Monitoring should continue until it is confirmed that the MTBE and BTEX concentrations are not increasing in the three wells. If a stable or declining trend is noted after this monitoring, we would petition the Department for closure.

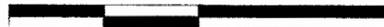
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## Appendix 1

# USGS Topography Map of Rotary Mart, SMS # 98-2527 - Burlington, Vermont



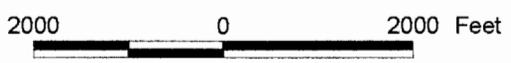
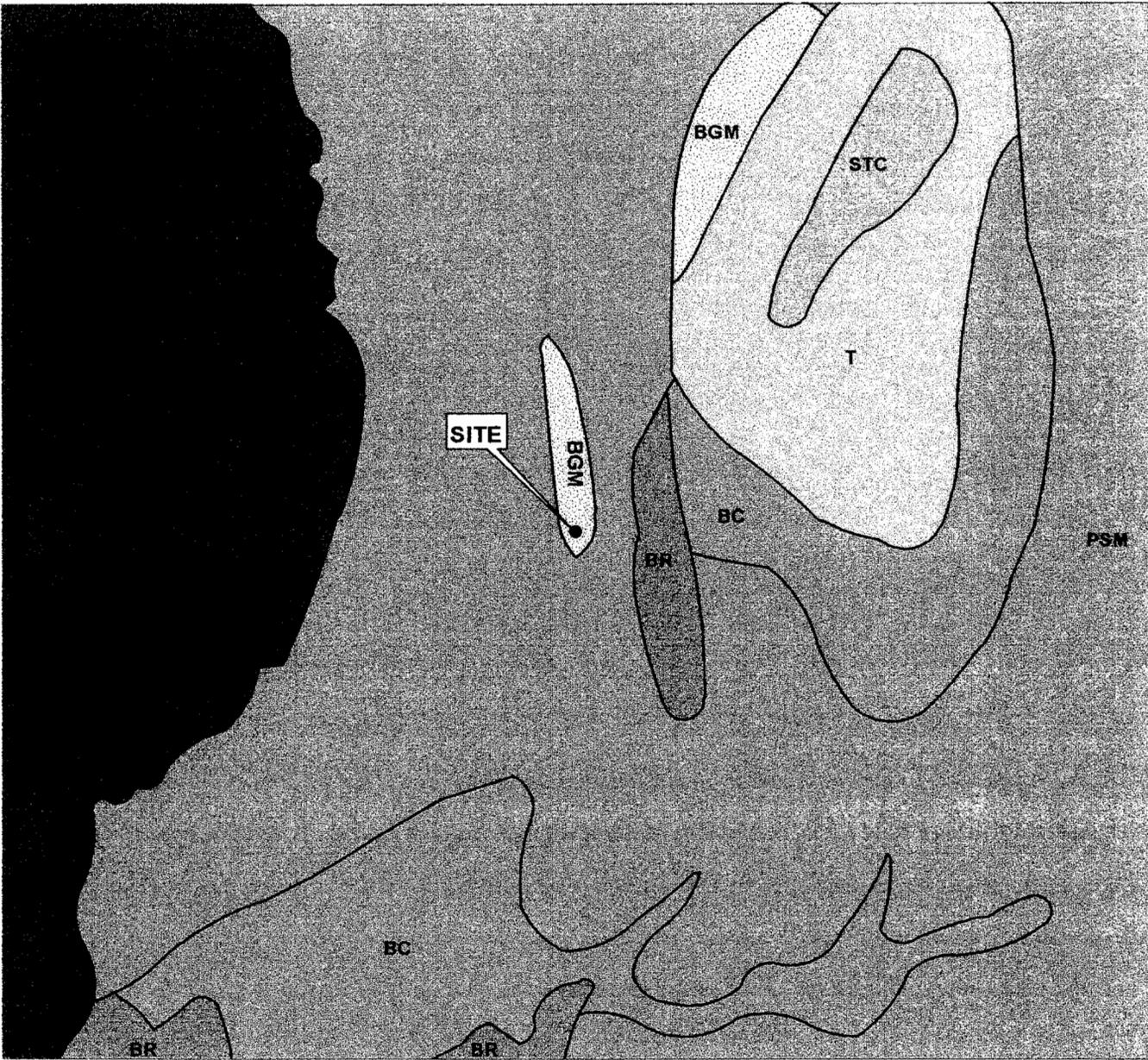
2000 0 2000 Feet



P.O. Box 64709 - Burlington, Vermont - 05406-4709 - Tel: (802) 865-0437 - Fax: (802) 865-1014

# Surficial Geology Map

## Rotary Mart, SMS #98-2527 - Burlington, Vermont



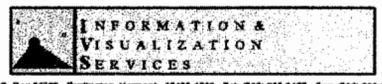
SURFICIAL LEGEND ON FOLLOWING PAGE

**Heindel and Noyes**



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CONSULTING SCIENTISTS AND ENGINEERS



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# SURFICIAL GEOLOGY LEGEND

## GLACIOLACUSTRINE



**LITTORAL SEDIMENT  
PREDOMINANTLY GRAVEL**  
 LG- horizontally bedded gravel deposited in a shoaling lake or topset beds of deltaic gravel where no foreset bedding is exposed.  
 BG- beach gravel.  
 DG- delta gravel showing foreset bedding.  
 D- small deltas composed of sand and gravel.

## GLACIAL



**TILL**  
 Till mantling the bedrock and reflecting the topography of the underlying bedrock surface. Thicker in the valleys and thinner on the uplands. On many exposed uplands, postglacial erosion has left only rubble and scattered boulders on the bedrock.



## MORaine

Ice marginal till accumulations with morainic topography.  
 M- frontal moraine assumed to be recessional.  
 TM- terminal moraine.



## KAME GRAVEL

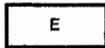
Ice contact outwash gravel.  
 K- isolated kame.  
 KT- kame terrace.

KM- kame moraine, kame complex with morainic topography.



## OUTWASH

Horizontally bedded glaciofluvial gravel. Spillway or valley train gravel in stream valleys. May or may not have a thin veneer of postglacial alluvium.



## ESKER

A sinuous ridge of constructional form, consisting of stratified accumulations of glacial sand and gravel.

## EOLIAN



## EOLIAN SAND AND DUNES

Deposits of sand arranged by the wind.



**LITTORAL SEDIMENT  
PREDOMINANTLY SAND**  
 LS-well sorted sand, no pebbles or boulders.  
 PS- pebbly sand.  
 BS- sand containing ice rafted boulders.  
 DS- delta sand.



## LAKE BOTTOM SEDIMENTS

STC- silt, silty clay, and clay.  
 VC- varved clay.  
 BC- silt, silty clay, and/or clay containing ice rafted boulders.



## WAVE-WASHED TILL

Till from the top of which the finer materials have been removed by wave action, leaving boulder concentrations on the surface.



## BEACH RIDGE

A linear accumulation of beach material, behind the beach which was created from waves or other action.

## POSTGLACIAL FLUVIAL



## FLUVIAL GRAVEL

Gravel laid down by a river or a stream.



## FLUVIAL SAND

Sand laid down by a river or a stream.



## RECENT ALLUVIUM

Accumulations of detrital materials, which have been eroded, transported, and deposited by streams.

## CHAMPLAIN SEA



## MARINE BEACH GRAVEL



## MARINE SAND

MS- marine sand without pebbles or boulders.  
 PSM- pebbly marine sand.



## MARINE CLAY



## GRAVEL BAR

A natural mound or exposed face of gravel.

## PLUVIAL



## SWAMP, PEAT and/or MUCK



## BEDROCK EXPOSURES

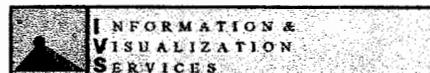
Locations with a solid filled bedrock symbol was taken directly from the state source maps.

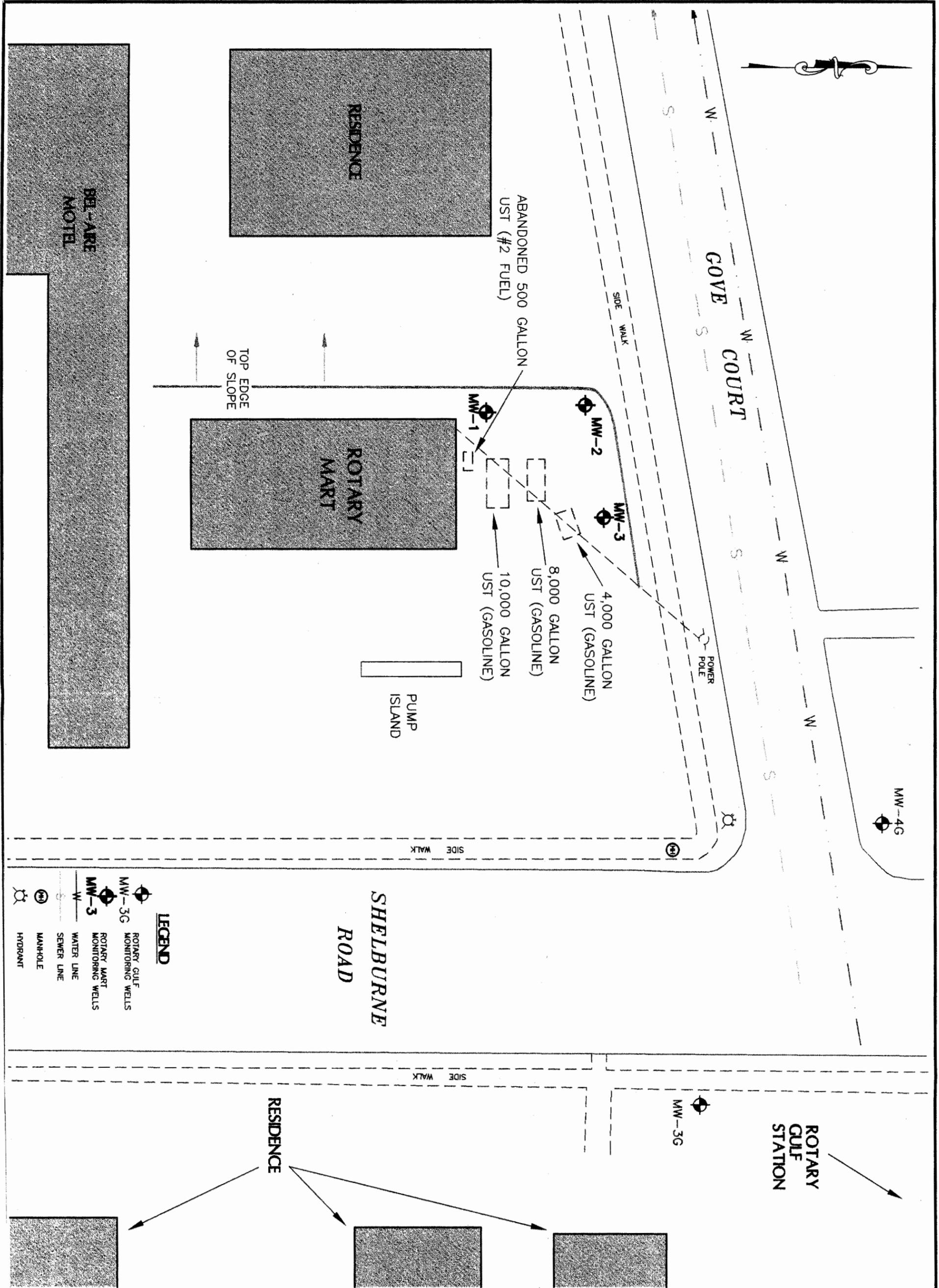
Locations with a hatch filled bedrock symbol represents generalized centerlines of state source map bedrock symbols with a 25m buffer.

### SOURCE NOTES:

Surficial Geology was digitized and scanned by Wagner, Heindel, and Noyes, into a PC ARC/INFO database from 1:62500 original State of Vermont surficial geology base maps (1956-1966). These base maps were created under the supervision of David P. Stewart (1956-1966), Paul MacClintock (1963-1966), William F. Cannon (1964), G. Gordon Connolly (1965), Parker E. Calkin (1965), Robert E. Behring (1966), and William W. Shiits (1966). Surficial data for most of the state is available, in 15 minute quads, from IVS at WHN, Inc. (802) 658-0820. Generalized Bedrock Outcrops were digitized from 1:62500 state surficial geology maps as linear features, which were buffered to 25m. Data available from IVS at WHN, Inc. with surficial geology coverages. Road Centerlines were generated from pre-1990 1:5000 orthophotos (or better). Road data (RDSn) is available from the Vermont Center for Geographic Information, VCGI (802) 656-4277. Linear Surface Waters are Digital Line Graph Data, generated from 1:24,000 USGS topographic maps. This data is available from VGIS. Town Boundaries were digitized from pre-1990 1:24000 USGS topographic maps. This coverage was created by the EPA and is available through VGIS.

Legend derived from 1:250,000 Surficial Geologic Map of Vermont (1970).

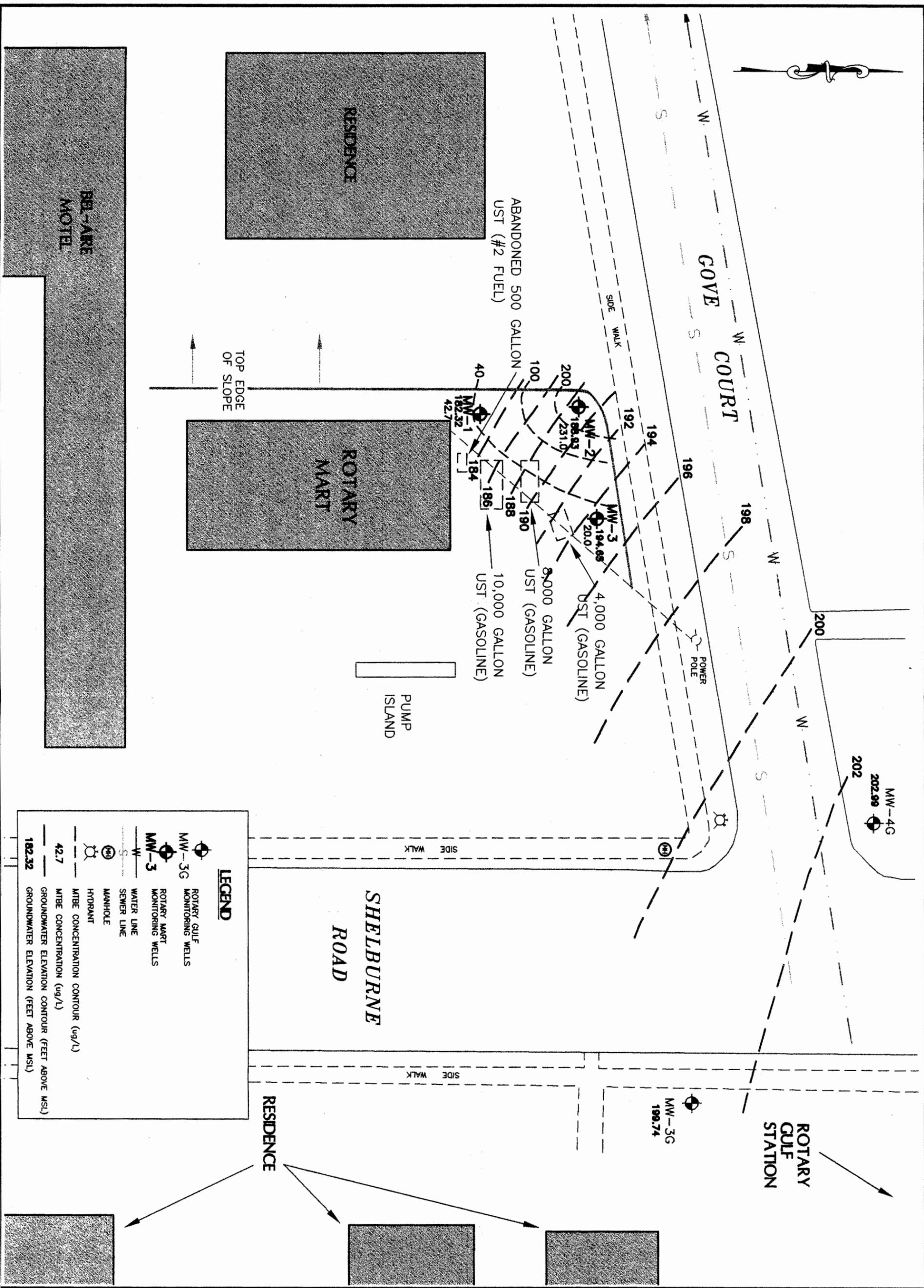




**ROTARY MART**  
 BURLINGTON, VERMONT  
 SITE PLAN  
 SCALE: 1" = 20'  
 FILE: C:\ROTARY\SITEPLAN

DATE: MARCH 5, 1999  
 PROJECT NO. 99007  
 DRAWN BY: S. Smith  
 PROJ. MGR: M. Waite  
 APPROVED: J. Noyes  
 DRAFT     FINAL

**Heindel and Noyes**  
 • Hydrogeology • Ecology •  
 • Environmental Engineering •  
 CONSULTING SCIENTISTS AND ENGINEERS  
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 BURLINGTON, VERMONT 05406-4709  
 Prepared By:  
 Information & Visualization Services



**LEGEND**

- ROTARY GULF MONITORING WELLS
- ROTARY MART MONITORING WELLS
- WATER LINE
- SEWER LINE
- MANHOLE
- HYDRANT
- MTBE CONCENTRATION CONTOUR (ug/L)
- GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MSL)

42.7  
MTBE CONCENTRATION (ug/L)

182.32  
GROUNDWATER ELEVATION (FEET ABOVE MSL)

**ROTARY MART**

BURLINGTON, VERMONT

GROUNDWATER ELEVATION & MTBE CONTOUR MAP - 2/23/99

SCALE: 1" = 20'

FILE: C:\ROTARY\SITEPLAN

DATE: MARCH 10, 1999

PROJECT NO. 99007

DRAWN BY: S. Smith

PROJ. MGR: M. Waite

APPROVED: J. Noyes

DRAFT       FINAL

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 • Environmental Engineering •  
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Prepared By:  
Information & Visualization Services

**Appendix 2**

**TABLE 1**  
**WELL CONSTRUCTION DETAILS**  
**Rotary Mart**  
**Burlington, Vermont**

Monitoring Well	Total Depth (ft bgs)	Screened Interval (ft bgs)	Previous Elevation Data* (ft)	2/17 Survey Elevation Data (ft)	TOC Elevation (ft)
MW-1	27	27-17		5.31	207.38
MW-2	20	20-10		5.43	207.26
MW-3	20	20-10		5.58	207.11
MW-3G	8	8-3	207.43	5.31	207.38
MW-4G	11.5	11.5-1.5	206.01	6.68	206.01

\* elevation data (ft above MSL) from Rotary Gulf site (#89-0386) via Roland Luxenberg, Aquaterra .

**TABLE 2**  
**GROUNDWATER ELEVATION (FT)**  
**Rotary Mart**  
**Burlington, Vermont**

Monitoring Well	Top of Casing Elevation	2/17/99	2/23/99		
MW-1	207.38		182.32		
MW-2	207.26		188.93		
MW-3	207.11		194.65		
MW-3G	207.38	202.93	202.99		
MW-4G	206.01	199.82	199.74		

note: wells MW-3G and MW-4G are from the Rotary Gulf site (#89-0386)

**TABLE 3**  
**GROUNDWATER SAMPLING RESULTS**  
**Rotary Mart**  
**Burlington, Vermont**

Location	Parameter	Units	2/23/99
MW-01	Benzene	ppb	< 1.0
	Toluene	ppb	8.0
	Ethylbenzene	ppb	< 1.0
	Xylenes	ppb	1.0
	Total BTEX	ppb	< 11.0
	MTBE	ppb	42.7
	Unidentified Peaks	#	> 10
MW-02	Benzene	ppb	< 2.0
	Toluene	ppb	4.2
	Ethylbenzene	ppb	< 2.0
	Xylenes	ppb	2.8
	Total BTEX	ppb	< 11.0
	MTBE	ppb	231.0
	Unidentified Peaks	#	> 10
MW-03	Benzene	ppb	< 1.0
	Toluene	ppb	1.6
	Ethylbenzene	ppb	< 1.0
	Xylenes	ppb	1.7
	Total BTEX	ppb	< 5.3
	MTBE	ppb	20.0
	Unidentified Peaks	#	> 10

ND = None detected  
 TBQ = Trace below quantitation

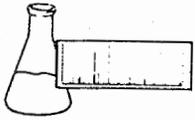


# SOIL BORING LOG

				P.O. Box 64709, Burlington, Vermont 05406-4709 Tel: 802-658-0820 Fax: 802-860-1014				Project Name: Rotary Mart Project Location: Burlington, Vermont Boring Number: 2 Sheet 1 of 1 SDI Project Number: 99901							
Boring Location: MW-2 Foreman: Chris Aldrich H&N Staff: Chris Aldrich and Miles Waite				Date Started: 2/16/99 Date Completed: 2/16/99				Rig Hours Meter Start: 367.5 Time: 1:00 P.M. Rig Hours Meter End: 369.3 Time: 12:45 P.M.							
Casing Size: _____ Type: <u>Split Spoon</u> Other: _____ Hammer: 140 Pounds Hammer: _____ Fall: 30 Inches Fall: _____				Sampler _____				Groundwater Readings Date _____ Depth _____ Casing _____ Stabil. _____ Time _____							
Sample				Sample Description				Strata Change & General Description		Field Testing PID		Equipment or Well Installed			
No.	Recovery	Depth	Blows												
1	2'	5'-7'	2,3,3,7	Fill material - sand and fine gravel					0.0 ppm	Set 2" diameter PVC well to 20';					
2	16"	10-12'	4,5,5,5	As above					0.2 ppm	10' .020 screen with sock and sand					
3	18"	15-17'	8,14,17,18	Brown-gray native clay, dense, no odor				Native @ 12'	0.2 ppm	Sand 20-9'					
4	24"	20-22'	4,4,7,8	As above				Wet	0.4 ppm	Bentonite chips 9'-8'					
										Native fill to ground surface					
										Flushmount					
<b>Proportions Used</b> Trace: 0 to 10% Little: 10 to 20% Some: 20 to 35% And: 35 to 50%				<b>Penetration Resistance</b> 140 lb. wt falling 30" on 2" O.D. Sampler <b>Cohesive</b> Density 0-4 Very Loose 5-9 Loose 10-29 Med. Dense 30-49 Dense 50+ Very Dense				<b>Cohesive Consistency</b> 0-2 Very Soft 3-4 Soft 5-8 M/Stiff 9-15 Stiff 16-30 Very Stiff 31+ Hard				<b>Well Construction Details</b> 2" PVC Screen (.020): one 10' Sand: 6 bags 2" PVC Riser: two 5' Concrete: 1/2 bag Plug/Cap: 1 each Bentonite chips: 1/2 bag Filter Sock: 12' Well Guard: 1 flushmount			



**Appendix 4**



**ENDYNE, INC.**

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Heindel & Noyes

ORDER ID: 1421

PROJECT NAME: Simen./Rotary Gulf/#99007

REF.#: 134,956 - 134,958

REPORT DATE: February 25, 1999

DATE SAMPLED: February 23, 1999

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.

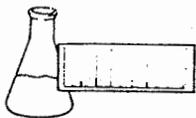
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

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

enclosures



ENDYNE, INC.

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EPA METHOD 8021B--PURGEABLE AROMATICS

CLIENT: Heindel & Noyes

DATE RECEIVED: February 23, 1999

PROJECT NAME: Simen./Rotary Gulf/#99007

REPORT DATE: February 25, 1999

CLIENT PROJ. #: 99007

ORDER ID: 1421

Ref. #:	134,956	134,957	134,958		
Site:	MW 1	MW 2	MW 3		
Date Sampled:	2/23/99	2/23/99	2/23/99		
Time Sampled:	9:30	9:35	9:40		
Sampler:	C.A.	C.A.	C.A.		
Date Analyzed:	2/24/99	2/25/99	2/25/99		
UIP Count:	>10	>10	>10		
Dil. Factor (%):	100	50	100		
Surr % Rec. (%):	98	103	99		
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)		
MTBE	42.7	231.	20.0		
Benzene	<1	<2	<1		
Toluene	8.0	4.2	1.6		
Ethylbenzene	<1	<2	<1		
Xylenes	1.0	2.8	1.7		
1,3,5 Trimethyl Benzene	TBQ <1	TBQ <2	TBQ <1		
1,2,4 Trimethyl Benzene	TBQ <1	TBQ <2	<1		
Naphthalene	TBQ <1	<2	<1		

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

