

MAR 13 1996

ATC ENVIRONMENTAL INC.

March 13, 1996

Mr. Thomas Glavin
Town Manager
Town of Dorset
PO Box 66
Dorset, Vermont 05253

RE: Subsurface Investigation Report
Dorset Town Garage
Dorset, Vermont
ATC Project #12884-0001
DEC Site #95-1895

Dear Tom:

Please find enclosed ATC Environmental Inc.'s (ATC) Subsurface Investigation report for the field work conducted on January 25, 1996 at the above referenced site.

Thank you for selecting ATC for your environmental management needs. If you have any questions concerning this correspondence, please feel free to contact us at 434-2113.

Sincerely,

ATC ENVIRONMENTAL, INC.



Thomas J. Broido
Branch Manager

jcr/12884-0001

enclosure

cc: Mr. Micheal W. Young, VT DEC, HMMD

Solutions For Environmental Concerns



ATC ENVIRONMENTAL INC.

Prepared for:

**Mr. Thomas Glavin
Town of Dorset
PO Box 66
Dorset, Vermont**

Subsurface Investigation Report

**Town of Dorset
Town Garage
Village Street
Dorset, Vermont**

Prepared by:

**ATC Environmental Inc.
Brown's Trace Building
Richmond, Vermont**

ATC Project #12884-0001

March 9, 1996



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1.0 INTRODUCTION

This report details the subsurface environmental assessment performed by ATC Environmental Inc. (ATC) under contract with the Town of Dorset, at the Town's Public Works Facility located on Village Street in East Dorset, Vermont (Figures 1 and 2). This work was performed pursuant to the January 15, 1996 ATC work plan for the site, which was approved by the Vermont Department of Environmental Conservation (VT DEC) via a letter from Micheal Young dated January 24, 1996.

1.1 Site Description

The site is located on the west side of Village Street in East Dorset Vermont and consists of a rectangular plot oriented north to south measuring approximately 1100 feet long by 130 feet wide. Located on the site is a salt shed and two garages which house the town's roadway maintenance vehicles and provide general storage of maintenance equipment. On site there also exists one 2000 gallon above ground storage tank (AST) which is compartmentalized to store diesel fuel and unleaded gasoline, and a 1000 gallon underground storage tank (UST) for storage of heating oil (#2 fuel oil). The sites' surface area consists primarily of gravel with some asphalt surface immediately adjacent the two garages.

The site is bordered directly to the west by two lines of the Vermont Railroad which abut a marshy area associated with the Batten Kill River located approximately 100 feet west of the railroad tracks. To the east on the opposite side of Village Street there are many residences, while to the south the site is abutted by a wooded and undeveloped area. The site is bordered to the north by the town's fire station and lot. The site is crossed by a branch of Mad Tom's Brook which runs behind the Old Town Garage flowing west toward the Batten Kill River.

According to the Surficial Geology Map of Vermont (Vermont Geological Survey, 1970) the site lies on a kame gravel deposit of glacial fluvial origin and is comprised of coarse to fine sands and river basin gravel. Post glacial erosion by the modern Batten Kill River has since deposited finer sands and silts of varying thickness to the underlying bedrock. According to "The Geology of the Equinox Quadrangle and Vicinity, Vermont" (Vermont Geological Survey, Bulletin No. 18, 1961) the bedrock geology beneath the site consists of the Dunham Formation of the Lower Cambrian Era which is a highly variable formation of interbedded stratigraphy consisting of Mallet and Dunham dolomite and quartzite. This bedrock formation in the Equinox area is estimated to be between 800 and 900 feet thick.

The site specific soils encountered during this investigation are presented in Appendix B and are not necessarily all native in origin. According to Mr. Joe King, Road Foreman at the Town's Garage facility, the plot was originally purchased from the Rutland Railroad back in the 1930s and existed as swampy/marsh area which required fill for stabilization. Mr. King stated that clean fill was brought in from a nearby quarry which included marble chips remnant from quarrying operations.

1.2 Previous Site Investigations

On October 10 and 11, 1995 a 1,000 gallon gasoline UST, and two diesel USTs (2,000 and 4,000 gallon) were closed by removal. According to Mr. Marc Coleman of the VT DEC, who had overseen these tank removals, all USTs were said to be heavily rusted or pitted and free product was seen atop groundwater which was encountered during this excavation at an approximate depth of 5 feet below ground surface (bgs). Contaminated soil associated with these USTs was approximated to total 150 cubic yards in volume and excavated soils were returned to the pit upon completion of closure activities. PID readings during the excavation averaged 100 PPM with a peak reading of 200 PPM.

Responding to the November 17, 1995 request of the VT DEC, Hazardous Materials Management Division (HMMD), the Town of Dorset retained ATC to develop and perform a subsurface assessment to determine the degree and extent of groundwater contamination associated with the former USTs. ATC's proposal dated January 15, 1996 included three borings with associated split spoon sampling, and the conversion of all three borings into monitoring wells, with groundwater measurement and sampling. ATC amended this proposal on January 25, 1996 to include one additional monitoring well with groundwater sampling as per the request of Mr. Micheal Young, VT DEC in his letter to the Town of Dorset dated January 8, 1996. The results of this investigation which was conducted on January 25, 1996 are included in this report.

2.0 MATERIALS AND METHODS

2.1 Monitoring Well Installation

Groundwater monitoring wells MW-1 through MW-4, were installed at the site on January 25, 1996 to better define groundwater flow and direction as well as to determine any dissolved and/or liquid phase petroleum impact to the groundwater. Borings and well installations were conducted by Tri-State Drilling and Boring, Inc. (Tri-State) using a hollow stem auger drilling rig. The wells were constructed using two inch flush threaded PVC casing and ten foot sections of .020 slot sized screen. The wells were constructed so that the water table would

intersect the well screen, taking into account seasonal water table variations. The annulus of the borehole was filled with sand pack to a minimum of 1/2 foot above the well screen to provide sufficient filtering of silt laden waters which would otherwise inhibit groundwater entry to the well. A bentonite seal was placed above the sand pack to prevent surface runoff from entering the well. The monitoring wells were secured with locking gripper caps and padlocks within a limited access flush mount road box set in a concrete apron. Monitoring well schematics are presented in Appendix B. Monitoring well data and groundwater elevations can be found in Table 1.

Monitoring well locations were placed to provide two ground water sampling points downgradient of the tank pit (MW-2 and 3), one ground water sampling point upgradient of the tank pit (MW-1) and a ground water sampling point at the tank pit (MW-4). Due to the close proximity of the tank pit to the western boundary of the property and the Vermont Railroad tracks, location of a monitoring point further downgradient was not feasible during this phase of investigation.

2.2 Soil Screening

During borehole advancement split spoon soil samples were collected for subsurface lithology notation and then screened by headspace analysis for volatile organic compounds (VOCs) utilizing an HNU Model PI 101 (Serial #601430) Photoionization Detector (PID) which was calibrated on site prior to the commencement of activities with isobutylene. Refer to Appendix B for a summary of borehole lithology and PID screening results of split spoon samples obtained from borings completed and logged by ATC on January 25, 1996.

2.3 Collection of Groundwater Samples

One round of groundwater samples were collected by ATC on January 25, 1996 from monitoring wells MW-1, MW-2, MW-3, and MW-4. Approximately three well volumes were removed from each well (or bailed until dry) prior to sample collection. Ground water samples were analyzed by EPA Method 8020 for volatile organic compounds (VOCs) and by modified EPA Method 8015 for total petroleum hydrocarbons (TPH). Samples intended for analysis for VOCs were collected in 40 ml glass vials equipped with a Teflon septum and preserved with a HCL solution. Samples intended for TPH analysis were collected in brown amber glass bottles. All water samples were kept chilled until analyzed at the State of Vermont Department of Environmental Conservation Environmental Laboratory. Water quality results are discussed in Section 3.2 of this report.

2.4 Site Survey and Groundwater Elevations

The monitoring well top of casing (TOC) elevations for the wells were determined by performing a site survey with a transit and rod. TOC was measured from the top of the PVC casing with the locking well cap removed. A benchmark was established on site with an assumed elevation of 100.00 feet and was utilized to determine relative top of casing elevations. The southeast corner of the entry pad (step) to the Old Town Garage (see Figure 3) was established as the benchmark. ATC conducted this survey on January 25, 1996. On this same date ATC also determined approximate spatial relationships at the site for the development of the site plan enclosed with this report as Figure 3.

Water level measurements and TOC elevations were obtained from the four monitoring wells on the site. Water level measurements were determined using a water level indicator, which is accurate to within one-hundredth of a foot. Groundwater elevations were calculated by subtracting the measured water levels from the top of the inner PVC casing elevations.

3.0 RESULTS AND CONCLUSIONS

3.1 Soils

Lithology

A total of eight split spoons were obtained by ATC during the borings for MW-1 through MW-4. These split spoons revealed primarily sand and gravel associated with both native and manmade fill material, and to a lesser degree the spoons also revealed fines or silt. Gravel included marble chips (fill) which were encountered as deep as ten feet bgs. No clay lenses were encountered during these borings, however there occurred frequent interceptions of very dark gray to black loam and loamy sand probably existent from the original stagnant marsh rich in organic medium. Borings were concluded at between 10 and 12 feet bgs.

Soil Quality

PID screening results of the 5.0-7.0 foot split spoon soil sample obtained during the boring for MW-2 (down gradient of the tank pit) indicated VOC contamination of 138 PPM by PID. The boring and well installation of MW-4 was completed into the former pit of the USTs removed on October 10 and 11, 1995. The corresponding split spoon soil samples for this boring revealed 48 PPM for the 5.0 - 7.0 foot spoon and 65 PPM for the 9.0 - 11.0 foot spoon. All other split spoon soil screenings were below detection by PID. Although moderate to strong

petroleum odors were associated with soil from borings for MW-2 and MW-4 there was no evidence of free product.

3.2 Groundwater

Hydrogeology

Table 1 shows depth to groundwater in monitoring wells at the site as measured by ATC on January 25, 1996. Groundwater depths below the site range from 97.91 to 98.51 feet above Mean Sea Level (MSL) (assumed datum) and 0.48 to 1.26 feet bgs. Groundwater flow direction as determined by ATC on January 25, 1996 is in a west southwesterly direction, with an approximate gradient of 1% across the study area in the direction of groundwater flow. Figure 3 is included to depict groundwater flow conditions as measured by ATC on January 25, 1996.

Groundwater Quality

Monitoring wells MW-1 through MW-4, were sampled and analyzed for VOCs by EPA Method 8020 (BTEX & MTBE) and for total petroleum hydrocarbons by EPA Method 8015. The upgradient well MW-1 was shown to contain 6.0 ug/l toluene only. MW-1 was non-detect regarding TPH. Laboratory analytical results showed MW-2 to contain 126 ug/l total BTEX and <0.1 mg/l TPH. MW-2 water analysis shows ground water obtained from this well to be above Vermont Ground Water Enforcement Standards for Benzene with results at 19 ug/l. The sample from MW-3 contained 17 ug/l total BTEX and 0.1 mg/l TPH. Ground water from MW-4, located at the tank pit, was shown to contain 5,050 ug/l total BTEX and 11.0 mg/l TPH. Ground water from MW-4 exceeds Vermont's enforcement standards for benzene (135 ug/l), ethylbenzene (950 ug/l) and total xylenes (3,050 ug/l) MTBE was detected in samples from MW-2 at 112 ug/l; MW-3 at 7.0 ug/l, and in MW-4 at 60 ug/l. MW-1 was non-detect with regard to MTBE. All detected TPH was analyzed to be in the boiling range of gasoline related hydrocarbons. Liquid phase petroleum was not encountered during development or sampling of these monitoring wells. All groundwater analyses are located in Appendix A. Table 2 in Section 6 of this report summarizes these analytical results. Figure 4 depicts the estimated contaminant plume based on laboratory results (BTEX) for all wells sampled and summarizes BTEX and TPH concentrations for each well.

4.0 FINDINGS AND DISCUSSION

A receptor assessment was not conducted by ATC as it was not included in the VT DEC approved scope of work for this investigation. However, a site walk over conducted on January 25, 1996 identified a branch of Mad Tom Brook, located approximately 90 feet north of the tank pit as a potential receptor of dissolved hydrocarbon contamination identified in this investigation. According to Mr. Tom Glavin, Town Manager of Dorset, this stream flows throughout the year, although it contains significantly less base flow in the summer months. Although this current investigation suggests this stream is cross gradient or parallel to groundwater flow, seasonal variation in groundwater flow conditions and close proximity of these surface waters may place the stream at risk. A greater potential risk exists to the Batten Kill River which flows south and is located approximately 125 feet west, perpendicular and downgradient of ground water which passes the source area. Sampling of either of these water bodies was not included with this investigation, however a visual inspection of the Batten Kill and Mad Tom did not reveal any evidence of contamination on January 25, 1996.

The likelihood of dissolved hydrocarbons reaching the Batten Kill is determined by multiple factors, two of which are groundwater conductivity and age and/or volume of source release. Based upon findings in this investigation lithology beneath the site exists as permeable coarse sands with little evidence of less permeable fines or clay. The investigation has also shown this site is built upon a formerly marshy area with varying degree of porous fills but lends no information as to what may exist immediately west of the site beneath a narrow stripe of "marsh" buffeting the Batten Kill River. Typically, marshy areas are equated with finer lithology, but these areas also exhibit episodes of standing water which may potentially flow to the Batten Kill carrying with it impacted waters. This area is probably also rich in nutrients which may act to convert contaminant laden waters into biologically non-toxic compounds acceptable to the micro ecosystem. Observations made on January 25, 1996 in this area did not reveal evidence of stressed vegetation which may be indicative of near sterile or impacted subsurface conditions, however plant dormancy due to seasonal conditions can also mask this stress.

The USTs removed in October of 1995 consisted of three tanks: One 1,000 gallon tank formally storing gasoline which was approximately ten years old, one 2,000 gallon tank formally containing diesel fuel which was approximately eight years old; and one 4,000 gallon tank formally containing diesel fuel up until approximately eight years ago when it was taken out of service. This 4000 gallon tank was in service approximately twelve years previous to being taken out of service. According to Mr. King the later tank was filled with water upon

discontinuance of service approximately eight years ago. According to the tank removal assessment conducted by the VT DEC there is strong evidence that one or more of these tanks may have released petroleum into the environment based upon the poor condition of the tanks as well as the existence of free petroleum floating atop groundwater which entered the pit upon excavation procedures. Analytical results from this investigation suggest the petroleum hydrocarbons impacting the subsurface to be most closely associated with gasoline. Based on the hydrologic data of this investigation which confirmed a very shallow (<2.0 feet bgs) ground water table, it is likely that these USTs were partially if not wholly submerged in water through out their service. This evidence does not confirm a time frame or duration of release for one or any of these tanks. According to Mr. King he is unaware of any tank records which may substantiate or disqualify the integrity of these tanks.

Located off the northwest corner of the new town garage there exists a potable well which services the garage's bathroom and hose bib. This well was installed by back hoe approximately 20 years ago according to Mr. King. This well is reported to have been installed to approximately 20 feet bgs and is suspected to yield water from the surficial aquifer. For this reason this well is also considered to be a potential receptor. Mr. King stated this well is currently in service but is not utilized for drinking purposes. The potential for risk to this well from contaminants identified in this investigation is relatively high if this potable well is in fact associated with the surficial aquifer. The possibility that less conductive soils exist on the western side of the Vermont Railroad tracks present the feasibility that impacted waters could disperse in a southern direction along preferential and more conductive pathways existent in the subsurface as a result of gravely fill which makes up a majority of the plot.

This investigation has shown no evidence of a free phase plume in the vicinity of the tank pit. Laboratory analyses of groundwater obtained from down gradient monitoring wells MW-2 and MW-3 has not shown the extent of dissolved petroleum hydrocarbon contamination which likely extends beyond the western property boundary of the site. Additional investigation is warranted to evaluate subsurface conditions regarding both physical make up and contaminant fate and transport beyond this western boundary.

5.0 RECOMMENDATIONS

Based upon the results of this study, the following recommendations are presented:

- Based on the results of the groundwater sampling and potential risk to sensitive receptors identified in this first investigation, ATC recommends further subsurface investigation. Placement of up to five additional hand augured monitoring points on the western side of the Vermont Railroad tracks is recommended. Three of these wells should be oriented more or less north-south and sufficiently spaced to adequately delineate the southern expanse and extent of the contamination. PID monitoring of soil cuttings during hand borings will provide valuable field data in evaluating the need or placement of additional points as may be necessary to define a western and/or southwestern plume boundary. Sampling of these additional wells, concurrent with a second round of samples from MW-1 through MW-4 for analysis by EPA 8020 is also recommended. For new monitoring points, analysis of groundwater samples for TPH is also advised.
- As the on site potable well is located approximately 90 feet south of the tank pit, ATC recommends sampling the well to evaluate it's water quality. Subsequent sampling may be warranted dependent upon the findings of additional monitoring well installation and sampling described above. ATC also advises that signs be placed in the appropriate locations advising the water is not to be consumed.

6.0 Tables

Table 1: Monitoring Well Elevation Data & Groundwater Elevations

Monitoring Well	TOC Elevation*	Depth to Ground Water 1/25/96	Ground Water Elevation 1/25/96
MW-1	98.99	0.48	98.51
MW-2	99.17	1.26	97.91
MW-3	98.70	0.65	98.05
MW-4	99.09	0.74	98.35

* Top of Casing Measurements based upon a survey conducted by ATC Environmental on January 25, 1996. All measurements relative to a common 100 foot common datum (benchmark).

Table 2: Summary of Groundwater Analytical Results

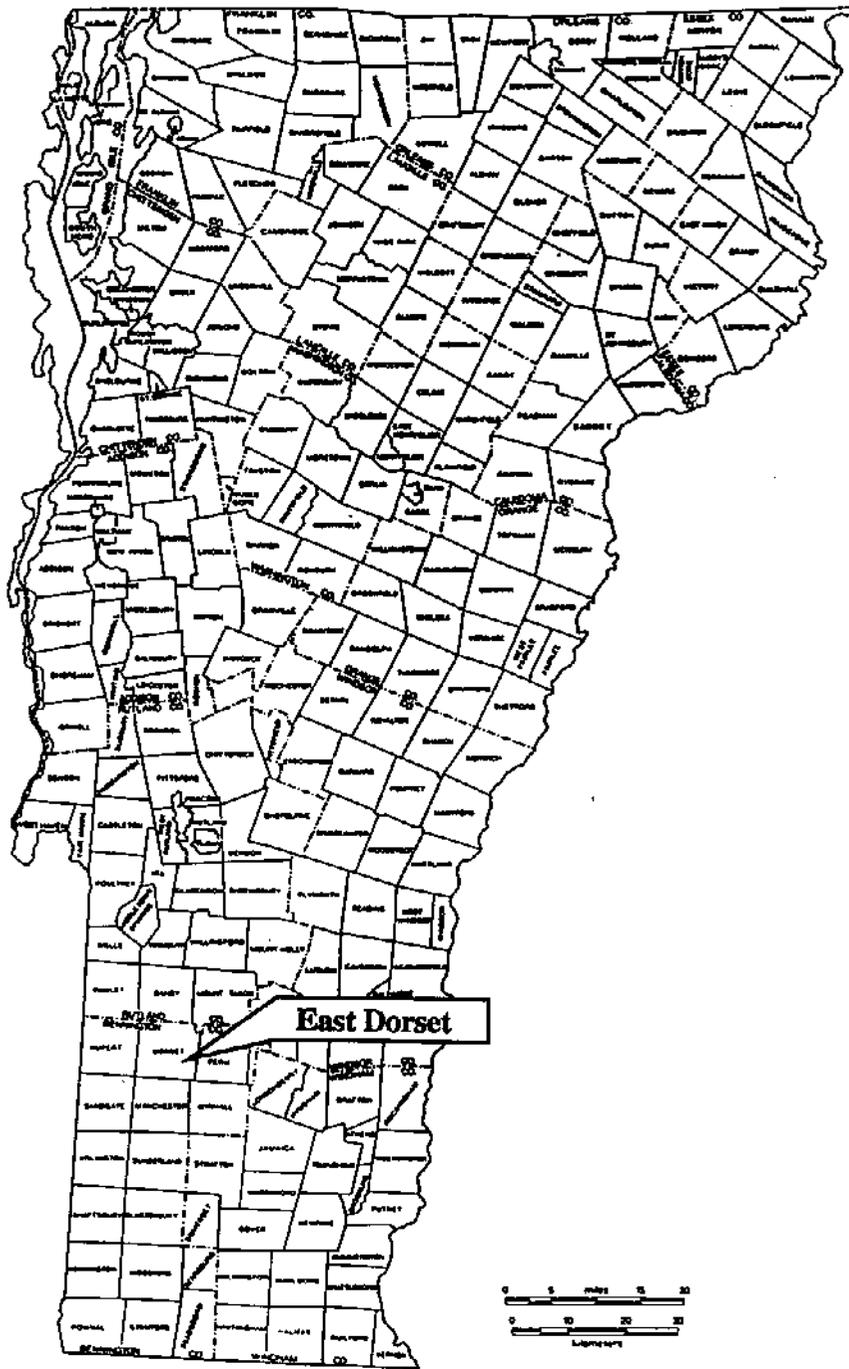
Sample Location	Benzene (ug/l)	Toluene (ug/l)	Ethyl-benzene (ug/l)	Total Xylenes (ug/l)	Total BTEX (ug/l)	TPH (mg/l)	MTBE (ug/l)	Total Volatiles (ug/l)
MW-1	ND	6.0	ND	ND	6.0	ND	ND	ND
MW-2	19	14	32	61	126	<0.1	112	331
MW-3	3.0	ND	12	2.0	17	0.1	7.0	ND
MW-4	139	1,200	950	2,090	5,335	11	60	5,050
Enforcement Standard*	5	2,420	680	400	N/A	N/A	N/A	N/A
Preventative Action Limit*	0.5	1,210	340	200	N/A	N/A	N/A	N/A
Laboratory Detection Limit	1.0	1.0	1.0	1.0	N/A	0.1	1.0	100

Notes:*From the Vermont Department of Environmental Conservation's, "Chapter 12 Groundwater Protection Rule and Strategy, Effective Date September 29, 1988" Shade d areas indicate enforcement standard exceedances.

ND - Not Detected N/A - Not Applicable

Figure 1

**Site Locus
Dorset Town Garage
East Dorset, Vermont**



project manager
John C. Roman

project number
12884-0001

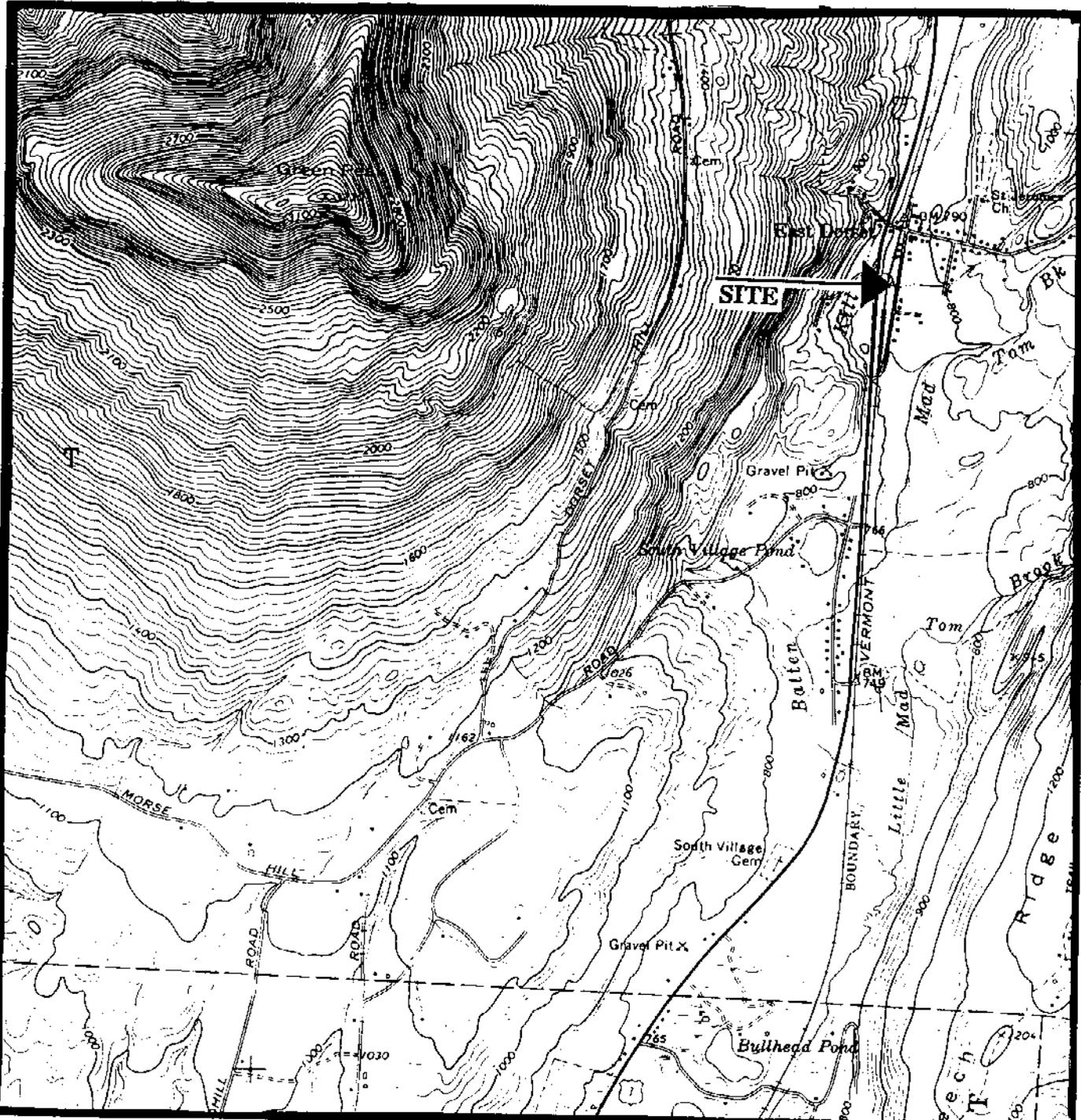
Figure 1
Site Locus Map
East Dorset, Vermont

ATC Environmental Inc.
P.O. Box 3, Richmond, VT 05477



Figure 2

**Site Vicinity Map
Dorset Town Garage
East Dorset, Vermont**



Reference: USGS 7.5 Minute Series, Manchester Vermont Quadrangle; Photorevised, 1987

Scale: 1 inch = 24,000 feet

Figure 2
Site Vicinity Map
 Town of Dorset Garage
 Subsurface Assessment
 Village Street
 East Dorset, VT

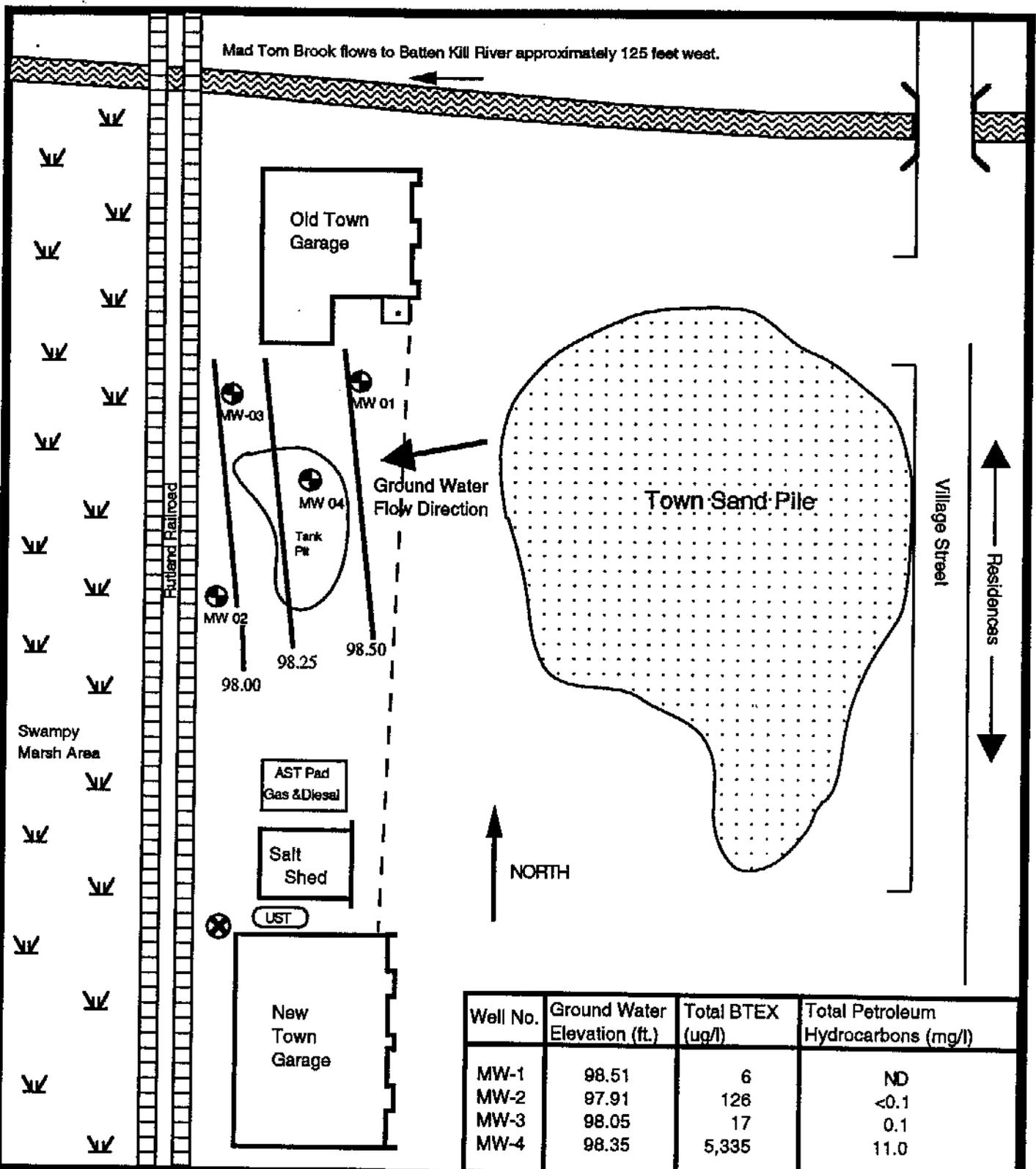
ATC Environmental Inc.
 P.O. Box 3, Richmond, VT

January, 1996

Project Number
 12884-0001

Figure 3

**Groundwater Contour Map
Dorset Town Garage
East Dorset, Vermont
January 25, 1996**



LEGEND

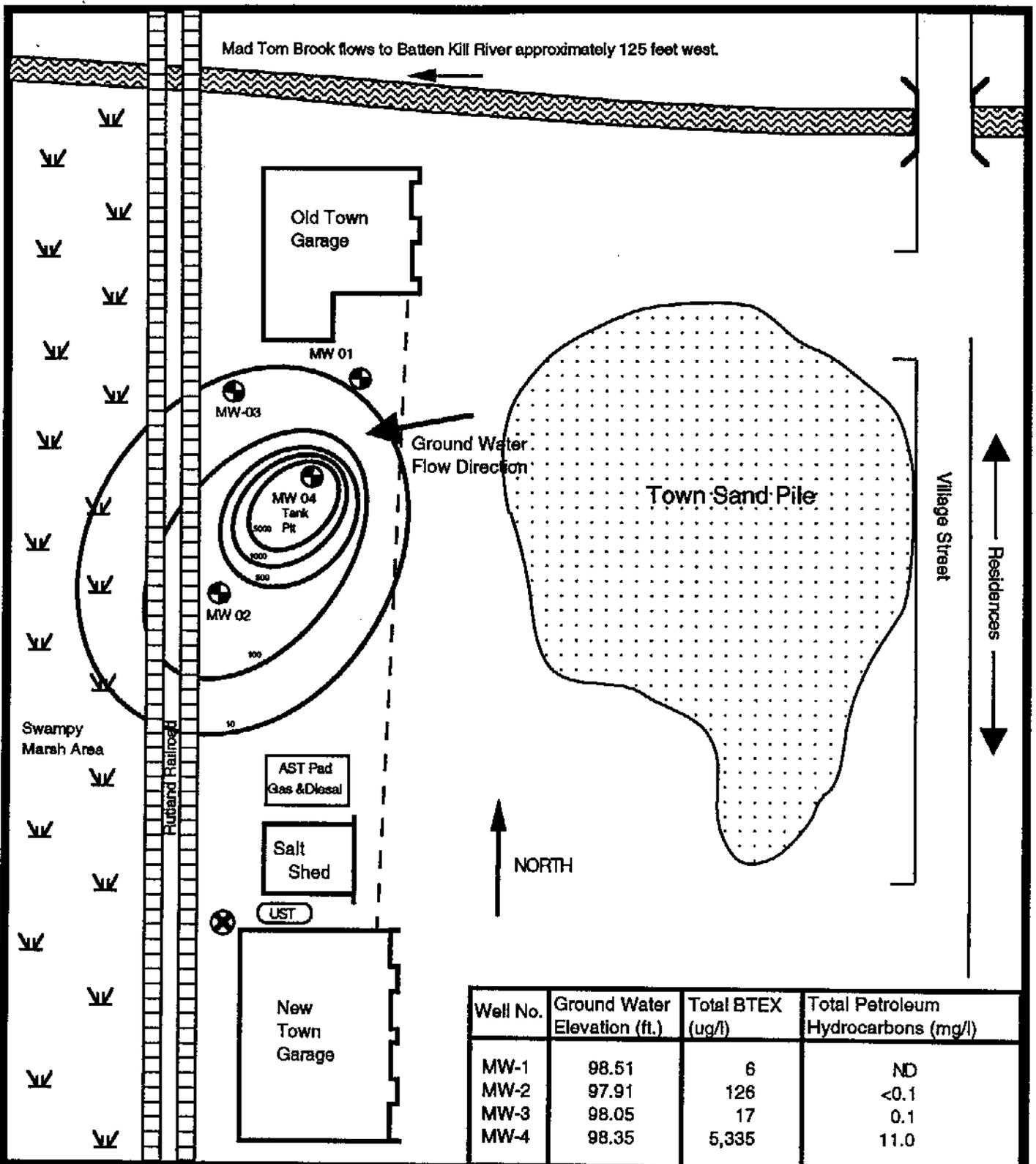
- 98.00 Groundwater Contour (in feet)
- - - Underground Electrical Line
- UST 1000 gallon Heating Oil UST
- ⊗ Existing Potable Well -20' BGS
- Benchmark (100 ft. Datum) on entry slab to Old Town Garage

Figure 3
Ground Water Contour Map with BTEX & TPH Concentrations
 Town of Dorset Garage
 Subsurface Assessment
 Village Street
 Dorset, VT
 Approximate Scale: 1" = 40'

ATC Environmental Inc.
 P.O. Box 3, Richmond, VT
 January 1996
 Project Number
 12884-0001
 Drawing by
 John Roman

Figure 4

**BTEX Plume Isoconcentration Map
Dorset Town Garage
East Dorset, Vermont
January 25, 1996**



LEGEND

- 100 BTEX IsoCon (in ug/l)
- - - Underground Electrical Line
- UST 1000 gallon Heating Oil UST
- ⊗ Existing Potable Well -20' BGS

Figure 4
BTEX Iso Concentration Map with
MTBE & TPH Concentrations
 Town of Dorset Garage
 Subsurface Assessment
 Village Street
 Dorset, VT
 Approximate Scale: 1" = 40'

ATC Environmental Inc.
 P.O. Box 3, Richmond, VT

January 1996
 Project Number
 12884-0001
 Drawing by
 John Roman

Appendix A
Groundwater Laboratory Analytical Results

2/14/96

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 19435 Report To: ATC Environmental Phone: 434-2160 Date Collected: 1/25/96
Location: Dorset Town Garage Trip Blank Program: 41 1895 Chain of Custody? Yes

Notes: Send Copy to Mike Young

Date Analyzed: 2/01/96 Over hold? No Dilution: 1

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Methyl-t-butylether	1	N.D.				
Benzene	1	N.D.				
Toluene	1	N.D.				
Ethylbenzene	1	N.D.				
Total Xylenes	1	N.D.				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

4-Bromofluorobenzene . 116% α,α,α -Trifluorotoluene 100%

Notes: No second column confirmation used.

2/14/96

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 19434 Report To: ATC Environmental
Location: Dorset Town Garage WS-09, FBLK

Phone: 434-2160 Date Collected: 1/25/96
Program: 41 1895 Chain of Custody? Yes

Notes: Send Copy to Mike Young

Date Analyzed: 2/01/96 Over hold? No Dilution: 1

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Methyl-t-butylether	1	N.D.				
Benzene	1	N.D.				
Toluene	1	N.D.				
Ethylbenzene	1	N.D.				
Total Xylenes	1	N.D.				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

4-Bromofluorobenzene . 115% α,α,α -Trifluorotoluene 99%

Notes: No second column confirmation used.

2/14/96

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 19433 Report To: ATC Environmental Phone: 434-2160 Date Collected: 1/25/96
Location: Dorset Town Garage WS-07, MW-4 Program: 41 1895 Chain of Custody? Yes

Notes: Send Copy to Mike Young

Date Analyzed: 2/01/96 Over hold? No Dilution: 25

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Methyl-t-butylether	25	60				
Benzene	25	135				
Toluene	25	1200				
Ethylbenzene	25	950				
Total Xylenes	25	3050				
Total Volatile Hydrocarbons	2500	5050	E			

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

4-Bromofluorobenzene . 106% α,α,α -Trifluorotoluene 76% S

Notes: No second column confirmation used. Total xylenes quantified from 1 to 50 dilution run.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

2/14/96

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 19432 Report To: ATC Environmental Phone: 434-2160 Date Collected: 1/25/96
Location: Dorset Town Garage WS-05, MW-3 Program: 41 1895 Chain of Custody? Yes

Notes: Send Copy to Mike Young

Date Analyzed: 2/01/96 Over hold? No Dilution: 1.

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Methyl-t-butylether	1	7				
Benzene	1	3				
Toluene	1	N.D.				
Ethylbenzene	1	12				
Total Xylenes	1	2				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

4-Bromofluorobenzene . 116% α,α,α -Trifluorotoluene 98%

Notes: No second column confirmation used.

2/14/96

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 19431 Report To: ATC Environmental Phone: 434-2160 Date Collected: 1/25/96
Location: Dorset Town Garage WS-03, MW-2 Program: 41 1895 Chain of Custody? Yes

Notes: Send Copy to Mike Young

Date Analyzed: 2/01/96 Over hold? No Dilution: 1

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Methyl-t-butylether	1	112				
Benzene	1	19				
Toluene	1	14				
Ethylbenzene	1	32				
Total Xylenes	1	61				
Total Volatile Hydrocarbons	100	331	E			

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

4-Bromofluorobenzene . 116% α,α,α -Trifluorotoluene 89%

Notes: No second column confirmation used. MTBE quantified from 1 to 2 dilution run.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

2/14/96

Department of Environmental Conservation Laboratory
Method 8020 - BTEX and MTBE in Water

GJD

Lab Id: 19430 Report To: ATC Environmental Phone: 434-2160 Date Collected: 1/25/96
Location: Dorset Town Garage WS-01, MW-1 Program: 41 1895 Chain of Custody? Yes

Notes: Send Copy to Mike Young

Date Analyzed: 2/01/96 Over hold? No Dilution: 1

Parameter	Units are ug/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQL	Result				
Methyl-t-butylether	1	N.D.				
Benzene	1	N.D.				
Toluene	1	6				
Ethylbenzene	1	N.D.				
Total Xylenes	1	N.D.				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

4-Bromofluorobenzene . 119% α,α,α -Trifluorotoluene 101%

Notes: No second column confirmation used.

3/07/96

Department of Environmental Conservation Laboratory
 Method 8015 - Total Petroleum Hydrocarbons: Water

GJD

Lab Id: 19436 Report To: ATC Environmental Phone: 434-2160 Date Collected: 1/25/96
 Location: Dorset Town Garage, WS-02, MW1 Program: 41 1895 Chain of Custody? Yes

Notes: Send copy of report to Mike Young.

Date Analyzed: 3/06/96 Over hold? No Dilution: 1 Date extracted: 2/01/96

Parameter	Units are mg/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PCL	Result				
Total Petroleum Hydrocarbons	.1	N.D.				

Notes: Sample extracted in duplicate.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

3/07/96

Department of Environmental Conservation Laboratory
Method 8015 - Total Petroleum Hydrocarbons: Water

GJD

Lab Id: 19437 Report To: ATC Environmental
Location: Dorset Town Garage, WS-04, MW2

Phone: 434-2160 Date Collected: 1/25/96
Program: 41 1895 Chain of Custody? Yes

Notes: Send copy of report to Mike Young.

Date Analyzed: 3/06/96 Over hold? No Dilution: 1 Date extracted: 2/01/96

Parameter	Units are mg/l		Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
	PQE	Result				
Total Petroleum Hydrocarbons	.1	<.1				

Notes: Detected traces of TPHs in both duplicate extractions below .10ug/l. These are in the boiling range of gasoline related hydrocarbons.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

3/07/96

Department of Environmental Conservation Laboratory
 Method 8015 - Total Petroleum Hydrocarbons: Water

GJD

Lab Id: 19438 Report To: ATC Environmental Phone: 434-2160 Date Collected: 1/25/96
 Location: Dorset Town Garage, WS-06, MW3 Program: 41 1895 Chain of Custody? Yes

Notes: Send copy of report to Mike Young.

Date Analyzed: 3/06/96 Over hold? No Dilution: 1 Date extracted: 2/01/96

Parameter	Units are mg/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Total Petroleum Hydrocarbons	.1	.1		13	Y	

Notes: TPH detected are in the boiling range of gasoline related hydrocarbons.

Remarks: K=Estimated Value J=Value may be in Error O=Value outside Standard Curve

3/07/96

Department of Environmental Conservation Laboratory
 Method 8015 - Total Petroleum Hydrocarbons: Water

GJD

Lab Id: 19439 Report To: ATC Environmental
 Location: Dorset Town Garage, WS-08, MW4

Phone: 434-2160 Date Collected: 1/25/96
 Program: 41 1895 Chain of Custody? Yes

Notes: Send copy of report to Mike Young.

Date Analyzed: 3/06/96 Over hold? No Dilution: 1 Date extracted: 2/01/96

Parameter	Units are mg/l		Remark Code	Rel % Diff.	Spiked Dupe ?	Percent Recovery
	PQL	Result				
Total Petroleum Hydrocarbons	.1	11		13		66

Notes: TPHs detected are in the boiling range of gasoline related hydrocarbons.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

CHAIN OF CUSTODY RECORD

Project Name/Number: TOWN GARAGE: URSET, VT 95-1875 Sample(s) Signature: John P. Roman Laboratory: _____

Samples sealed at collection:		Seals broken and remade for addition of preservation:			DESCRIPTION AND NUMBER OF CONTAINERS										Samples sealed on receipt by Laboratory:		
Y or N Initial: <u>JPR</u>		Y or N Initial: <u>JPR</u>													Y or N Initial: <u>JPR</u>		
Sample Location	Collection		Comp/Grab	ENA 2020	LUMTBE	EPA 2015	TPH									TOTAL	REMARKS
	Date	Time															
WS-C1	MW-1	1/25	1400	GRAB	2												
WS-C2	MW-1	1/25	1415	GRAB		2											
WS-C3	MW-2	1/25	1445	GRAB	2												
WS-C4	MW-2	1/25	1500	GRAB		2											
WS-C5	MW-3	1/25	1530	GRAB	2												
WS-C6	MW-3	1/25	1545	GRAB		2											
WS-C7	MW-4	1/25	1615	GRAB	2												
WS-C8	MW-4	1/25	1630	GRAB		2											
WS-C9	FIELD BLNK	1/25	1645	BLANK	2												

Relinquished by: <u>John P. Roman</u> (Signature) <u>1/29/96 7:40</u> (date/time)	Relinquished by: _____ (Signature) _____ (date/time)	Relinquished by: _____ (Signature) _____ (date/time)
Received by: <u>Donald J. Vincenzo</u> (Signature) <u>1/29/96</u> (date/time)	Received by: _____ (Signature) _____ (date/time)	Received at Laboratory by: <u>Donald J. Vincenzo</u> (Signature) <u>1/29/96 9:00</u> (date/time)
Remarks:	Remarks:	Remarks: <u>Locked in Refrigerator</u>

SEND OR FAX RESULTS TO: ATC ENVIRONMENTAL INC. POB 3 BROWN TRACE BLDG. RICHMOND VT 05477
 PHONE: 802-434-2113 FAX 802-434-2160 ATTN: JOHN ROMAN OR TOM BRIND

1027:

Submitted by: John Romain Phone: 434-2160 Date Collected: 1/25/96
Lab Report to: ATC Environmental Custody: Y Date Submitted: 1/29/96
Program #: 41 Activity code: 1895 Date Required: 2/26/96

Notes: Send Copy to Mike Young

**** Tests Requested ****

WS020

Lab Id	Location	Lab Id	Location
19430	Dorset Town Garage WS-01, MW-1	19431	Dorset Town Garage WS-03, MW-2
19432	Dorset Town Garage WS-05, MW-3	19433	Dorset Town Garage WS-07, MW-4
19434	Dorset Town Garage WS-09, FBLK	19435	Dorset Town Garage Trip Blank

027:

Submitted by: John Romain Phone: 434-2160 Date Collected: 1/25/96
Lab Report to: ATC Environmental Custody: Y Date Submitted: 1/29/96
Program #: 41 Activity code: 2895 Date Required: 2/26/96

Notes: Send copy of report to Mike Young.

**** Tests Requested ****

W8015

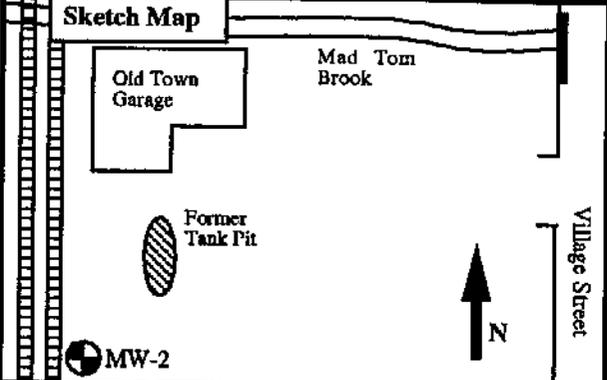
Lab Id	Location	Lab Id	Location
19436	Dorset Town Garage, WS-02, MW1	19437	Dorset Town Garage, WS-04, MW2
19438	Dorset Town Garage, WS-06, MW3	19439	Dorset Town Garage, WS-08, MW4

Appendix B
Monitoring Well Schematics

ATC Environmental Inc. Monitoring Well Log

WELL NUMBER MW-2

PROJECT NAME Town of Dorset Town Garage
 PROJECT # 12884-0001
 LOCATION Village Street Dorset Vermont
 DATE DRILLED 01/25/96 BORING DEPTH 11.0'
 DIAMETER 2"
 SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.20"
 CASING DIA. 2" LENGTH 1.0' TYPE PVC
 DRILLING CO. Tri-State D & B DRILLING METHOD HSA
 DRILLER Neil Faulkner LOG BY L. Roman

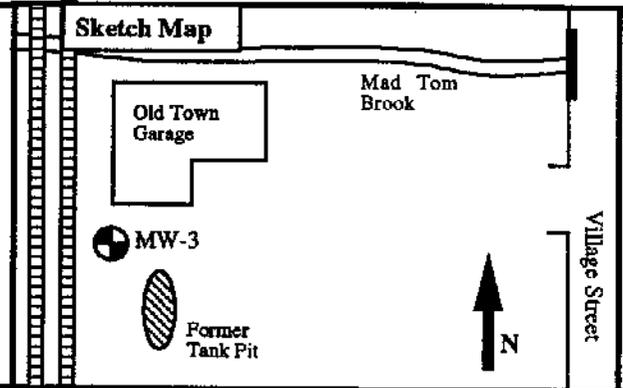


DEPTH IN FEET	WELL CONSTRUCTION	NOTES	PID/OVM READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
GRADE 5 10 15 20	<p style="text-align: center;">TOP CAP</p> <p style="text-align: center;">ROAD BOX & SAKRETE BENTONITE</p> <p style="text-align: center;">SCREEN (0.20)</p> <p style="text-align: center;">SANDPACK #1 Silica Sand</p> <p style="text-align: center;">BOTTOM CAP</p>		138 PPM Non Detect	<p>0.0 - 3.0' (Grab) Tan coarse and medium SAND and very dark grey to black SAND LOAM (peat) with fine and medium GRAVEL. Very Moist throughout.</p> <p>3.0 to 5.0' (Grab) Fine to Medium subangular GRAVEL (marble chips) with coarse to medium dark grey SAND with LOAM (peat). Wet with petroleum odor, no sheen.</p> <p>5.0-7.0' (1-1-5-9) 12"R Very dark brown coarse SAND and SAND with fine GRAVEL for 4" over dark brown LOAM (peat) to 9" over olive coarse to fine sand with fine subangular GRAVEL, trace silt. Very moist to wet and slightly sticky throughout. Petroleum odor.</p> <p>9.0 -11.0' (1-6-9-25) 10"R Brown SAND and course SAND with fine rounded GRAVEL, trace SILT. Wet and loose. No petroleum odor.</p> <p>WELL CONSTRUCTION: Screen 10.5' to 1.0' Riser 1.0' to 0.2' Sand 10.5' to 0.8' Plug 0.8' to 0.5'</p>

**ATC Environmental Inc.
Monitoring Well Log**

WELL NUMBER MW-3

PROJECT NAME Town of Dorset Town Garage
 PROJECT # 12884-0001
 LOCATION Village Street, Dorset, Vermont
 DATE DRILLED 01/25/96 BORING DEPTH 11.0'
 DIAMETER 2"
 SCREEN DIA. 2" LENGTH 8.0' SLOT SIZE 0.20
 CASING DIA. 2" LENGTH 2.0' TYPE PVC
 DRILLING CO. Tri-State D & B DRILLING METHOD HSA
 DRILLER Neil Faulkner LOG BY L.Roman

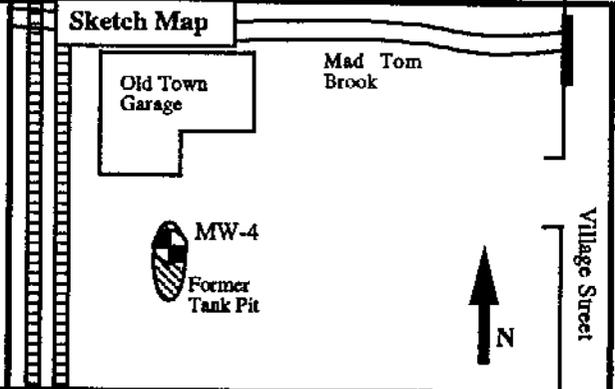


DEPTH IN FEET	WELL CONSTRUCTION	NOTES	PID/OVM READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
GRADE	TOP CAP			
	ROAD BOX & SAKRETE			
	BENTONITE			
0.0-3.0'			Non detect	(Grab) GRAVEL and coarse SAND. Very Moist to wet. Slight petroleum odor.
3.0-5.0'				(3-1-2-4) 2"R Brown coarse and medium SAND with fine and medium GRAVEL. Wet.
5	SCREEN (0.20)			
	SANDPACK #1 Silica Sand		Non detect	(6-8-8-10)6"R Brown and tan coarse and to fine SAND and fine to medium subangular GRAVEL fill (some Marble Chips) and some organic LOAM. Wet and loose. No odor.
10	BOTTOM CAP			
15				
20				
				WELL CONSTRUCTION: Screen 10.0' to 2.0' Riser 2.0' to 1.5' Sand 10.0' to 1.5' Plug 1.5' to 1.0'

ATC Environmental Inc. Monitoring Well Log

WELL NUMBER MW-4

PROJECT NAME Town of Dorset Town Garage
 PROJECT # 12884-0001
 LOCATION Village Street, Dorset, Vermont
 DATE DRILLED 01/25/96 BORING DEPTH 12.0'
 DIAMETER 2"
 SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.20
 CASING DIA. 2" LENGTH 2.0' TYPE PVC
 DRILLING CO. Tri-State D.&B DRILLING METHOD HSA
 DRILLER Neil Faulkner LOG BY J. Roman



DEPTH IN FEET	WELL CONSTRUCTION	NOTES	PID/OVM READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)
GRADE 5 10 15 20		ROAD BOX & SAKRETE GRAVEL BENTONITE SCREEN (0.20) SANDPACK #1 Silica Sand BOTTOM CAP	48 PPM 65 PPM	0.0 - 3.0' (Grab) GRAVEL over Tan coarse and medium SAND with fine and medium GRAVEL (fill). Very Moist throughout. 3.0 to 5.0' (Grab) Brown coarse SAND and medium SAND with fine subangular GRAVEL, trace fine SAND. Wet with petroleum odor, no sheen. 5.0-7.0' (2-3-3-3) 2"R Olive coarse and medium SAND with fine GRAVEL and some fine SAND and SILT. Wet and slightly sticky throughout. Petroleum odor. 9.0 -11.0' (8-9-12-20) 12"R Olive coarse SAND and fine subangular GRAVEL with some fine SAND and SILT for 8' over dark grey SAND, trace SILT. Wet and loose. Strong petroleum odor. WELL CONSTRUCTION: Screen 12.0' to 2.0' Riser 2.0' to 0.5' Sand 12.0' to 1.5' Plug 1.5' to 1.0'

SOIL PROBE LOG

TRI STATE
 DRILLING & BORING, INC.
 RR 2, Box 70, West Burke, VT 05871
 (802) 467-3123

PA #5
 Dorset Town Garage
 East Dorset, VT

		SAMPLER	SOIL
		Continuous	Saturated
TYPE	_____	_____	Wet
SIZE	_____	_____	Moist
HAMMER	_____	_____	Damp
FALL	_____	_____	Slightly Damp

DATE STARTED: 01/25/95

DATE COMPLETED: 01/25/95

FOOTAGE

DEPTH BLOW COUNTS REC

DRILLER'S NOTES & COMMENTS

6 12 18 24

..3-5'...|...3|..1|..2|..4|..2"| Wet

Course sand & gravel.

.....|...|...|...|...|...|

..7-9'...|..NO record..|...|

Same as above.

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Project: Dorset Garage
 Job Location: East Dorset, VT
 Engineer: ATC Environmental, Inc.
 Richmond, VT
 Inspector: John Ronnan

Driller: Neal Faulkner
 Helper: Alan Colburn
 Materials: 8' (20 slot) screen,
 1.5' riser, 1 cap, 1 locking plug,
 2 bags (#1) sand, .5 bags bentonite,
 1 road box.

