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NOV 18 1996

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November 16, 1996

Andrew Shively, Environmental Technician
Sites Management Section
VT DEC - Waste Management Division
103 South Main Street/West Office
Waterbury, VT 05671-0404

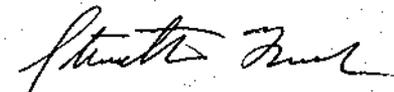
Re: Site Investigation Report
Hayes Ford, Newport, Vermont
SMS Site #96-2026

Dear Mr. Shively:

On behalf of S.B. Collins, Inc., we are pleased to submit the enclosed Site Investigation Report detailing the work completed in October at Hayes Ford in Newport, Vermont.

Please call us with any questions you may have.

Sincerely,
HOFFER & ASSOCIATES


Stratton French
Senior Hydrologist

enc.

cc: Carl Ruprecht, S.B. Collins, Inc.

GROUNDWATER & ENVIRONMENTAL SERVICES

SITE INVESTIGATION REPORT

**HAYES FORD
NEWPORT, VERMONT**

NOVEMBER 1996

SITE INVESTIGATION REPORT

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NEWPORT, VERMONT**

SMS SITE #96-2026

NOVEMBER 1996

Prepared for:

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EXECUTIVE SUMMARY

Hoffer & Associates completed a site investigation at the Hayes Ford property in Newport, Vermont, during October, 1996. Limited soil contamination had been documented at the site during the closure of two underground storage tanks (USTs) in June, 1996.

Two additional monitoring wells were installed on the property for a total of three site wells surrounding the former UST location. During installation of these wells no evidence of soil contamination was noted. Groundwater sampling of the wells revealed only a minor impact to groundwater. No BTEX compounds were detected in any of the wells and relatively low concentrations of MTBE were found in only two of three monitoring wells. The concentration of MTBE in one of the wells (MW-101 - 108 ug/L) exceeds the Vermont Health Advisory level. Dissolved contamination does not appear to extend to off-site areas. Groundwater flow direction is north-northwesterly at a gradient of 0.026. Based on this flow path, an unnamed stream to the north is the likely discharge zone for groundwater beneath this site. The unnamed stream is approximately 500 feet downgradient from the suspected source area.

Indoor air quality surveys of two nearby buildings revealed no elevated readings above ambient background levels. No known drinking water supplies or nearby buildings appear to be at risk from the contamination documented at this site.

Based on the findings of this site investigation it is recommended that the three site monitoring wells be sampled on a quarterly basis for a period of one year.

1.0 INTRODUCTION

This report presents the procedures and results of a site investigation completed in October, 1996 at Hayes Ford, an auto dealership and garage located in Newport, Vermont. During closure of two USTs in June of 1996, petroleum contaminated soil was detected adjacent to the former tanks. All USTs, piping and pumping equipment at this site was owned by S.B. Collins, Inc. (SBC) of St. Albans, Vermont.

At the request of SBC, Hoffer & Associates (H&A) initiated a site investigation to evaluate the degree and extent of petroleum contamination at the Hayes Ford property. Site investigation activities centered on the installation of two additional monitoring wells in the downgradient direction from the source area, sampling of these two new wells and the one existing site well, and photoionization detector (PID) surveys in the basements of adjacent buildings. Additional objectives of this site investigation included: identification of potential receptors, an evaluation of the potential effects of petroleum contamination on any receptors, and recommendations concerning the need for further investigation or remedial efforts at the site.

2.0 SITE DESCRIPTION

2.1 Site Location and History

Hayes Ford is located on the north side of East Main Street (Vermont Route 5) in the northeast section of Newport, Vermont. A site location map is presented as Figure 1. This site has been used for a number of years as an automobile dealership and associated garage. The property is positioned on the eastern edge of the town of Newport which is characterized by light to moderate commercial businesses along the main thoroughfares, with residential properties along side streets. A site basemap is included as Figure 2.

SBC had owned the gasoline storage and dispensing equipment at this site since the early 1970s when the auto dealership was established. The USTs were already in place at that time and therefore were at least 25 years old upon closure. On June 3, 1996, the two 3,000 gallon USTs were permanently closed (the pumps and system piping had been removed previously). Despite their age the tanks appeared in relatively good condition with no staining or holes observed, and limited soil contamination around and beneath them. Contamination was not visually evident in the tank excavation, however, it was detected with a photoionization detector (PID). The highest levels of soil contamination were observed at the south end of the excavation near the former pump island (see Figure 2). No replacement tanks were installed.

A previous investigation of this site was performed by H&A in August, 1993. These efforts were motivated by high readings in one of the vapor monitoring wells positioned near the former pump island. A single groundwater monitoring well (MW-1) was installed at that time directly adjacent to the former pump island, and sampled on two occasions. No evidence of soil or groundwater contamination was detected during the installation or sampling of this monitoring well.

Existing information on this site generated to date by H&A can be found in the following documents:

Letter/Report to Carl Ruprecht, *Site Investigation, Hayes Ford, Newport, VT*, September 10, 1993, Jefferson P. Hoffer, Consulting Hydrogeologist, Waterbury, Vermont.

Letter/Report to Carl Ruprecht, *UST Site Assessment, Hayes Ford, Newport, VT, UST Facility ID # 673*, June 4, 1996, Hoffer & Associates, Consulting Hydrogeologists, Montpelier, Vermont.

Letter to Carl Ruprecht, *Workplan/Cost Estimate for Site Investigation, Hayes Ford, Newport, VT, (SMS Site #96-2026)*, September 25, 1996, Hoffer & Associates, Consulting Hydrogeologists, Montpelier, Vermont.

2.2 Environmental Setting

The Hayes Ford site is positioned at the top of hill (lake terrace) on fairly level terrain approximately 3000 feet east (and 80 feet above) Lake Memphremagog, at an approximate elevation of 760 feet above sea level. The Clyde River, which flows westward, passes the site at its closest approximately 1000 feet to the south of the property. A westward flowing unnamed stream positioned approximately 350 feet north of the former UST area is the closest surface water feature (see Figure 1). Given its position at the top of a hill, the site is likely situated over or near a groundwater divide. Although a steep bluff falls away to the south towards the Clyde River, the ground surface at the site slopes gently to the north toward the unnamed stream.

According to the Surficial Geologic Map of Vermont (Doll, 1970), three unconsolidated deposits are mapped in the vicinity. The floodplain of the Clyde River is mapped as recent alluvium. The terrace on which the site is positioned is mapped as lacustrine well-sorted sand. Lacustrine silts and clays are exposed at elevations between the Clyde River valley and the sands associated with the terrace. These descriptions are consistent with observations during the initial site investigation and UST closure activities.

Bedrock at the site has been mapped by Doll (1961) as the Ayers Cliff member of the Waitsfield Formation, consisting of gray to blue-gray siliceous crystalline limestone of Silurian

or upper Ordovician age. Bedrock has not been observed at the site and depth to bedrock has not been determined.

2.3 Potential Receptors

Potential sensitive receptors include water supply wells located within close proximity to the site, indoor air quality of neighboring buildings, and surface water downgradient from the suspected source area.

A review of the Vermont Water Supply Division's water well database indicated there are five wells within a half mile radius of the site. The locations of these wells are included on Figure 1.

Various commercial buildings are located within close proximity to the site. Some of these buildings have basements into which petroleum vapors could penetrate and accumulate.

The Clyde River passes the site within approximately 1000 feet of the Hayes Ford property at its closest point. The unnamed stream to the north is the closest surface water to this site. Since the site likely sits near a groundwater divide, either of these surface water features (or possibly both) may receive groundwater from beneath the Hayes Ford property.

3.0 FIELD INVESTIGATION PROCEDURES AND RESULTS

3.1 Soil Boring/Monitoring Well Installation

Two monitoring wells were installed at Hayes Ford on October 24, 1996. These wells were positioned north of the former UST and pump island area under the assumption that groundwater flow is northward. The new wells (MW-100 series) were added to the existing well for a current total of three groundwater monitoring points at this site (see Figure 2). Tri-State Drilling & Boring of West Burke, Vermont, installed these monitoring wells under the direction of H&A personnel.

Soil borings were advanced to below the water table using 4.25-inch inside diameter hollow-stem augers. Soil samples were obtained at five foot intervals using a 24-inch split-spoon sampler driven by a 140 pound hammer. Blow counts were recorded. Samples were characterized for texture (USDA/SCS), color, moisture, and were screened with a PID to evaluate the relative levels of soil contamination. Samples were placed in plastic ziplock bags for headspace readings.

Upon reaching the target depth of approximately five feet below the water table, monitoring wells were constructed within the augers. Well construction consisted of ten feet of factory-slotted (0.010-inch), 2.0-inch diameter PVC well screen and PVC riser pipe to the ground surface. The well screen was positioned to intercept the water table, resulting in approximately five feet of screen both above and below the phreatic surface. This enables monitoring of potential floating free product and allows for seasonal water table fluctuations. A sandpack was placed in the annular space from the base of the well to approximately one foot above the top of the screen where a hydraulic seal consisting of two feet of granular bentonite was placed. The remaining annular space was backfilled with cuttings generated during drilling. All wells were finished with steel manways that were cemented in place flush with the ground surface. Well development was accomplished by bailing the wells of approximately five well volumes. The existing well, MW-1, was redeveloped by bailing for a period of one hour, during which time approximately 12 gallons of groundwater were

evacuated from this well. Monitoring well construction details for the newly installed wells are included on the soil boring/monitoring well logs, which are provided in Appendix A.

Horizontal and vertical control of site monitoring wells were obtained by surveying these points on October 24, 1996. Elevations were measured at the top of the PVC lip and at the ground surface at each well and were surveyed relative to an arbitrary on-site datum of 100.00 feet. The site basemap was generated from this data.

3.1.1 Soil Samples

The soil boring/monitoring well logs include descriptions and interpretations of soil samples collected during the soil boring efforts. The general profile of soil materials encountered at the Hayes Ford site was similar at both locations investigated (MW-101 and MW-102), and reasonably similar to the soil boring completed at this site in 1993. In general the soil profile consists of poorly-sorted fine to coarse sand and gravel (fill materials) down to 6.5. Below this is a 20 to 25 foot sequence of alternating layers of well-sorted silty very fine sand with silt lenses, and poorly-sorted coarse sand and gravel. At a depth of 25 to 30 feet below ground surface (BGS) this sequence is underlain by blue-gray lacustrine silt/clay. The water table was encountered approximately 25 feet BGS, just above the lacustrine silt/clay.

3.1.2 PID Screening of Soil Samples

PID screening results for soil samples collected during the soil boring program are included on the soil boring/monitoring well logs. Elevated PID readings indicative of petroleum contamination were not detected at either boring location. No readings were recorded above 0.4 part per million (ppm) at MW-101. At MW-102, all samples were entirely clean (0.0 ppm) except one; a reading of 0.8 ppm was recorded at a depth of 31 feet at this location.

3.2 Water Level Monitoring

Site water levels were measured a week following monitoring well installation. This round of measurements was associated with groundwater sampling activities on October 31, 1996. Measurements were obtained from the three site wells using an electric water level probe.

Depths to water were recorded relative to the top of the PVC risers and have been converted to groundwater elevations. This data is presented on Table 1.

Groundwater elevations range from 73.95 feet at MW-1 to 72.21 feet at MW-102, a vertical distance of 1.74 feet. A water table contour map for the October 31, 1996 measurements is provided as Figure 3. Groundwater flow direction across this site follows a north-northwesterly route away from East Main street and toward the back lot of the Hayes Ford property. This flow direction suggests the unnamed stream to the north is the probable discharge zone for groundwater flowing beneath this site. An average hydraulic gradient across the site has been measured at 0.026.

3.3 Groundwater Sampling and Analysis

All site monitoring wells were sampled on October 31, 1996. Immediately after opening the wells a well headspace measurement was recorded with the PID. Depths to water were then measured and the water levels and total well depths were used to calculate the volume of standing water present in each well. Prior to sampling, all wells were purged of three well volumes by bailing. Purging and sampling of the monitoring wells were accomplished with dedicated polyethylene bailers. Groundwater samples were transferred from the bailers directly into 40 mL sample vials. Two vials were filled at each sampling location and were labeled with the date, time, site name, sample location and sampler's initials. The sample vials contained hydrochloric acid for sample preservation and were placed into a cooler with ice for storage and transport to the laboratory.

Quality assurance/quality control (QA/QC) samples included a trip blank, a field blank, and a blind duplicate. The trip blank consisted of two vials provided by the laboratory. These vials were transported to the site and handled in the same fashion as other samples. A field blank was collected at the site after sampling the last well, and was prepared by pouring deionized water provided by the laboratory into two sampling vials. The duplicate sample was collected from MW-102 and given a fictitious sample location (MW-A) and time. A laboratory chain-

of-custody form and groundwater sampling data sheet were used to document the sampling event.

Groundwater samples were submitted to Scitest Laboratory Services, in Randolph, Vermont, and were analyzed for BTEX and MTBE using EPA Method 8020. Copies of the laboratory report, chain-of-custody and sampling data sheet are provided in Appendix B.

The analytical results of groundwater sampling completed on October 31 are indicated on Table 2, as are the regulatory thresholds for the BTEX and MTBE compounds. Little dissolved contamination was detected at this site. All BTEX compounds were below the detection limit of 1 microgram per liter (ug/L) in all monitoring wells, and MTBE was detected in only two of the three wells. MW-101 exhibited 108 ug/L of MTBE, which is above the Vermont Health Advisory level of 40 ug/L. The 11 ug/L of MTBE found in MW-102 is well below this threshold, while MW-1 was free of this compound altogether.

Both QA/QC blank samples (field and trip blanks) were below detection limits for all compounds analyzed. The results of the blind duplicate sample filled at MW-102 were the same as those obtained directly from this well for all compounds analyzed.

3.4 Indoor Air Quality Surveys

On October 23, 1996, the basements of Rose's Restaurant and the Newport City Motel (See Figure 2) were surveyed with a PID to evaluate the indoor air quality. The basement of Rose's Restaurant is located less than 25 feet east of the former USTs and had been surveyed once before during UST closure activities. The northeast end of the Newport City Motel is positioned south of East Main street approximately 90 feet south of the former USTs. The PID surveys centered on the basement floors and walls where they meet the floor, and any breaches in the walls or floors (such as floor drains, foundation cracks, etc.). No elevated readings above ambient background levels were detected in either building during the surveys.

3.5 PID Measurements

During monitoring well installation and sampling, and indoor air quality screening, a Photovac MicroTIP HL-2000 photoionization detector, equipped with a 10.6 eV lamp, was used to evaluate organic vapor concentrations. Before each day's activities, the PID was calibrated and set to respond to isobutylene. Readings are reported as parts per million (ppm), and represent ppm equivalents relative to isobutylene.

4.0 DISCUSSION OF RESULTS

4.1 Site Hydrogeology

The Hayes Ford site is positioned on a relatively flat hilltop between an unnamed stream to the north and the Clyde River to the south. Given the site's position topographically and in relation to these two surface water features, a groundwater divide between these drainages is likely nearby. Groundwater flow direction beneath the site is north-northwest which would put the suspected source area (former USTs and pump island) to the north of the divide, and indicate the stream to the north is the discharge zone for the site. An average horizontal hydraulic gradient beneath the source area has been measured at 0.026.

Groundwater was encountered approximately 25 feet BGS. This puts the water table in the sequence of alternating layers of well-sorted silty very fine sand with silt lenses, and poorly-sorted coarse sand and gravel. Some minor perched zones were observed above the silt layers in this sequence during the soil boring program. Groundwater flow rates through these materials are likely to be spatially variable given the degree of heterogeneity. This heterogeneous sequence is underlain by a blue-gray dense lacustrine silt/clay which probably inhibits any further vertical migration of dissolved contaminants. Horizontal flow likely predominates despite the sites proximity to a suspected groundwater divide.

4.2 Extent of Contamination

Observation of soils during UST closure activities indicated gasoline has been released at this site. Soil contamination appeared to be confined to the area at the southern end of the tank excavation and beneath the former pump island, and was relatively limited in extent. The vapor monitoring well at this location was the only one of the five vapor wells surrounding the USTs which had detected hydrocarbon vapors prior to the UST closure. This suggests the source of release may have been associated with the pumps (spills or leakage) or possibly the transmission lines (leakage) between the pumps and tanks.

contamination. MTBE was found in MW-101 and MW-102, positioned downgradient from the pump island/UST area, although at relatively low levels. No BTEX constituents were found in either of these wells. As such the extent of dissolved contamination at this site appears relatively limited, and is likely confined to the areas near the former UST system. No free product was detected during the UST closure, boring program, or groundwater sampling.

4.3 Potential Receptors

A review of the Vermont Water Supply Division's water well database for Newport identified five water supply wells within a one-half mile radius of the site (see Figure 1). The closest known well to the Hayes Ford property is located southwest of the site approximately 1000 feet, and is positioned directly adjacent to the Clyde River. Since recent data indicates groundwater beneath the site is flowing north-northwest, this well does not appear to be at risk. Although there is a well to the northwest of the site, it is located more than 1800 feet away on the opposite side of the unnamed stream, which presumably serves as a hydraulic barrier. All residences and business in the vicinity of the site are serviced by the municipal water system in Newport.

Given the distances to the nearest surface water features (Clyde River and unnamed stream) as well as the limited extent of contamination identified at this site, there is little chance that site contamination poses a risk to these streams.

Although both the Newport City Motel and Rose's Restaurant were screened with PID, no elevated readings were detected. The Miss Newport Diner is positioned just west of the site (see Figure 2) and does not have a basement. Given the levels of contamination documented thus far at this site, it does not appear likely that petroleum vapors will threaten adjacent buildings.

5.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Summary and Conclusions

A site investigation was completed at the Hayes Ford Property in Newport, Vermont, to determine the degree and extent of soil and groundwater contamination. Releases of petroleum products have resulted in minor contamination to both soil and groundwater at this site. Inspection of soils during the UST closure and analytical results of groundwater sampling indicate the former pump island area directly south of the former USTs is the most likely source of this contamination. The levels of dissolved contamination are relatively low, however, one well contains MTBE in excess of the Vermont Health Advisory threshold. The extent of contamination appears to be relatively limited and confined to the Hayes Ford property.

Based on one round of water level measurement, groundwater flow direction was determined to be north-northwesterly at a hydraulic gradient of 0.026. No known drinking water supplies or nearby buildings appear to be at risk at this time.

5.2 Recommendations

It is recommended that the three site monitoring wells be sampled on a quarterly basis for a period of one year. Sampling should be performed for BTEX/MTBE analysis using EPA Method 8020. Water-level measurements should also be included in the quarterly monitoring. This quarterly monitoring program will provide data on the seasonal fluctuation of water levels, flow direction and contaminant levels. At the end of this period an assessment will be made on the need for additional monitoring. The costs associated with quarterly monitoring and reporting are given on Table 3.

REFERENCES

- Doll, Charles G. (Ed.), 1961, Centennial Geologic Map of Vermont, Vermont Geological Survey, State of Vermont
- Doll, Charles G. (Ed.), 1970, Surficial Geologic Map of Vermont, Vermont Geological Survey, State of Vermont

TABLE 1
 Depth to water measurements and groundwater elevations,
 Hayes Ford, Newport, Vermont, SMS #96-2026.

DEPTH TO WATER (feet below TOC)

<i>WELL ID</i>	<i>Elev. of TOC</i>	<i>Elev. of Ground</i>	<i>10/31/96</i>
MW-1	98.77	99.09	24.82
MW-101	95.44	95.69	23.16
MW-102	99.54	99.82	27.33

GROUNDWATER ELEVATIONS (feet)

<i>WELL ID</i>	<i>Elev. of TOC</i>	<i>Elev. of Ground</i>	<i>10/31/96</i>
MW-1	98.77	99.09	73.95
MW-101	95.44	95.69	72.28
MW-102	99.54	99.82	72.21

Notes:

TOC = top of casing (PVC)

11.40 (11.38) = depth to water (depth to free product)

TABLE 2

Analytical results for groundwater sampling performed on October 31, 1996,
Hayes Ford, Newport, Vermont, SMS #96-2026.

October 31, 1996
(results in ug/L)

WELL ID	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-1	<1	<1	<1	<1	<1
MW-101	<1	<1	<1	<1	108
MW-102	<1 / <1	<1 / <1	<1 / <1	<1 / <1	11 / 11
Field Blank	<1	<1	<1	<1	<1
Trip Blank	<1	<1	<1	<1	<1

Notes:

< 1 = below a detection level of 1

FP - free product in well, not sampled

< 1 / < 1 = sample result / field duplicate result

REGULATORY THRESHOLDS

(ug/L)

Standard	Benzene	Toluene	Ethylbenzene	Xylenes	MBTE
VT GES	5	2420	680	400	-
VT PAL	0.5	1210	340	200	-
VHA	1	-	-	-	40
MCL	5	1000	700	10000	-

VT GES = Vermont Groundwater Enforcement Standard

VT PAL = Vermont Preventative Action Limit

VHA = Vermont Health Advisory

MCL = Maximum Contaminant Level

TABLE 3
 Cost Estimate for Quarterly Groundwater Monitoring and Reporting
 Hayes Ford, Newport, Vermont, SMS Site #96-2026.

LABOR

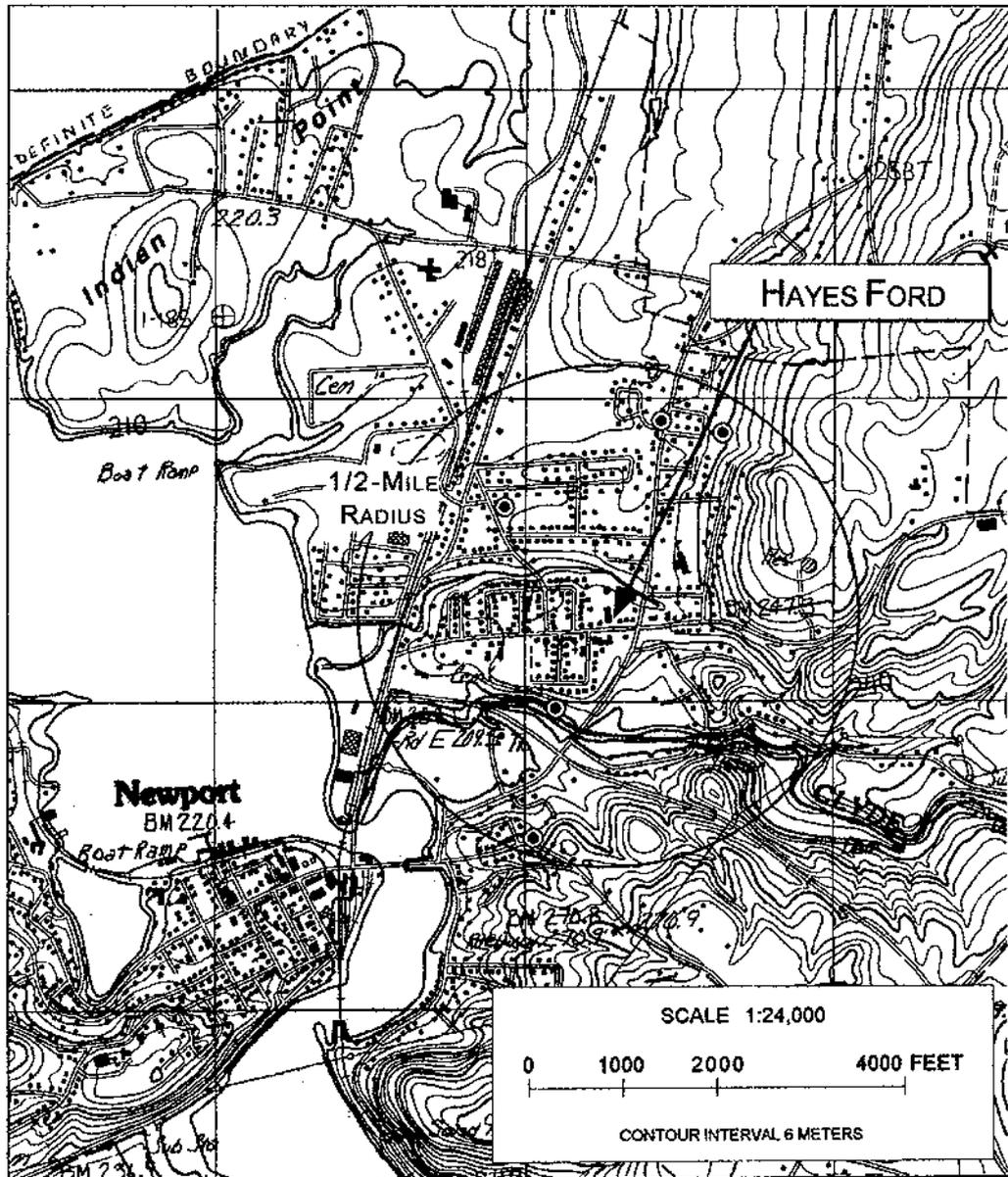
TASK	Staff	Hours	Rate	Amount
Groundwater Sampling	SCF	7.00	\$40.00	\$280.00
Data Entry, Figures, Tables	SCF	4.00	\$40.00	\$160.00
Quarterly Report Preparation	SCF	12.00	\$40.00	\$480.00
Quarterly Report Review	JPH	2.00	\$45.00	\$90.00
<i>SUB-TOTAL LABOR</i>				\$1,010.00

EXPENSES

ITEM	Quantity	Rate	Mark Up	Amount
Mileage - groundwater sampling	140	\$0.28	\$0.00	\$39.20
<u>SCITEST LABORATORY SERVICES</u>				
8020 analyses for BTEX/MTBE (3 wells, 3 QA/QC)	6	\$40.00	\$0.00	\$240.00
<i>SUB-TOTAL EXPENSES</i>				\$279.20

TOTAL ESTIMATED COST PER QUARTER **\$1,289.20**

ANNUAL COSTS **\$5,156.80**



Base from U.S. Geological Survey, 1:24,000,
Newport, Vermont, Provisional Edition, 1986

- WATER WELL LOCATION FROM VERMONT
- WATER SUPPLY DIVISION DATABASE FOR NEWPORT

FIGURE 1
SITE LOCATION MAP, HAYES FORD, NEWPORT, VERMONT
SMS SITE #96-2026.

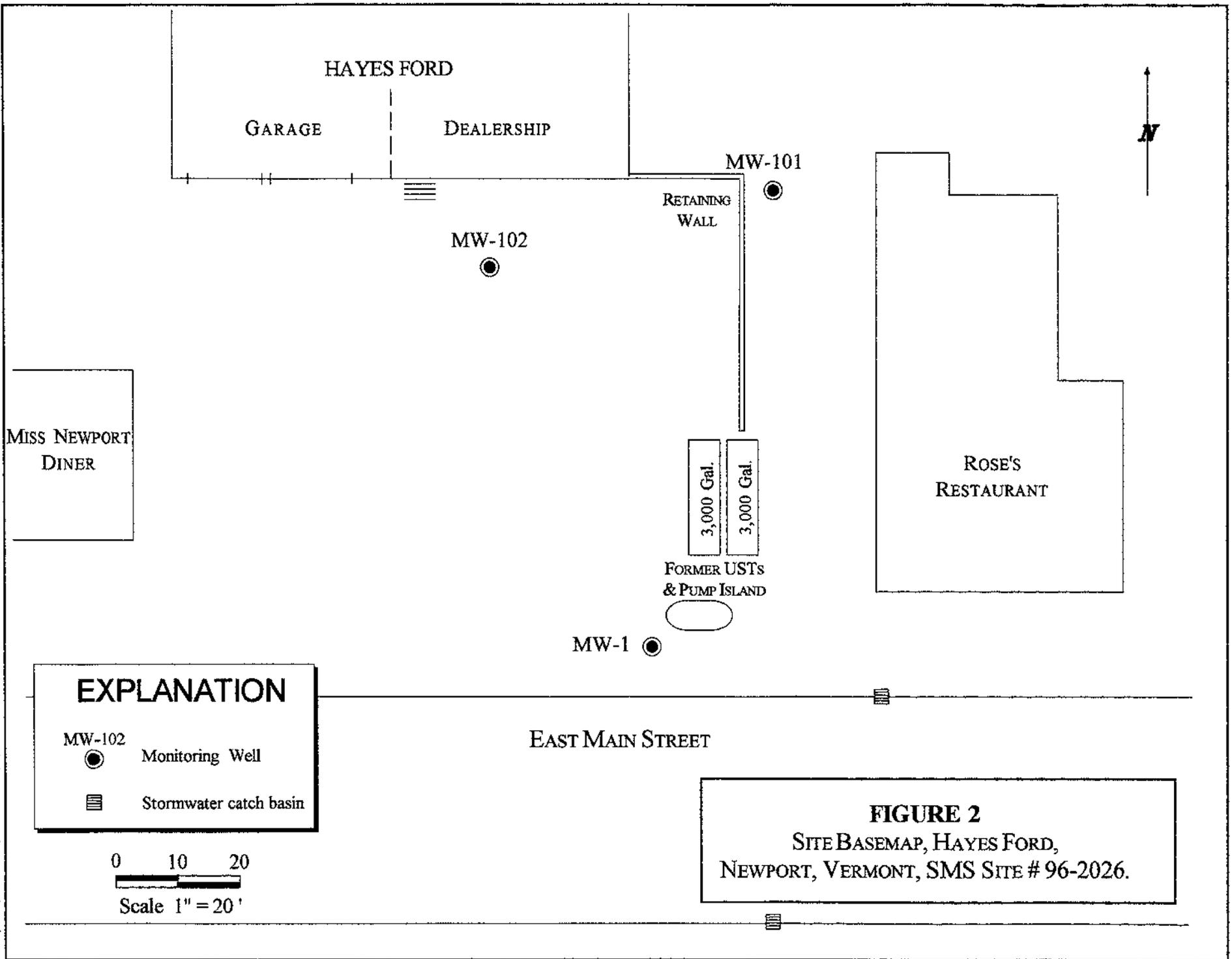
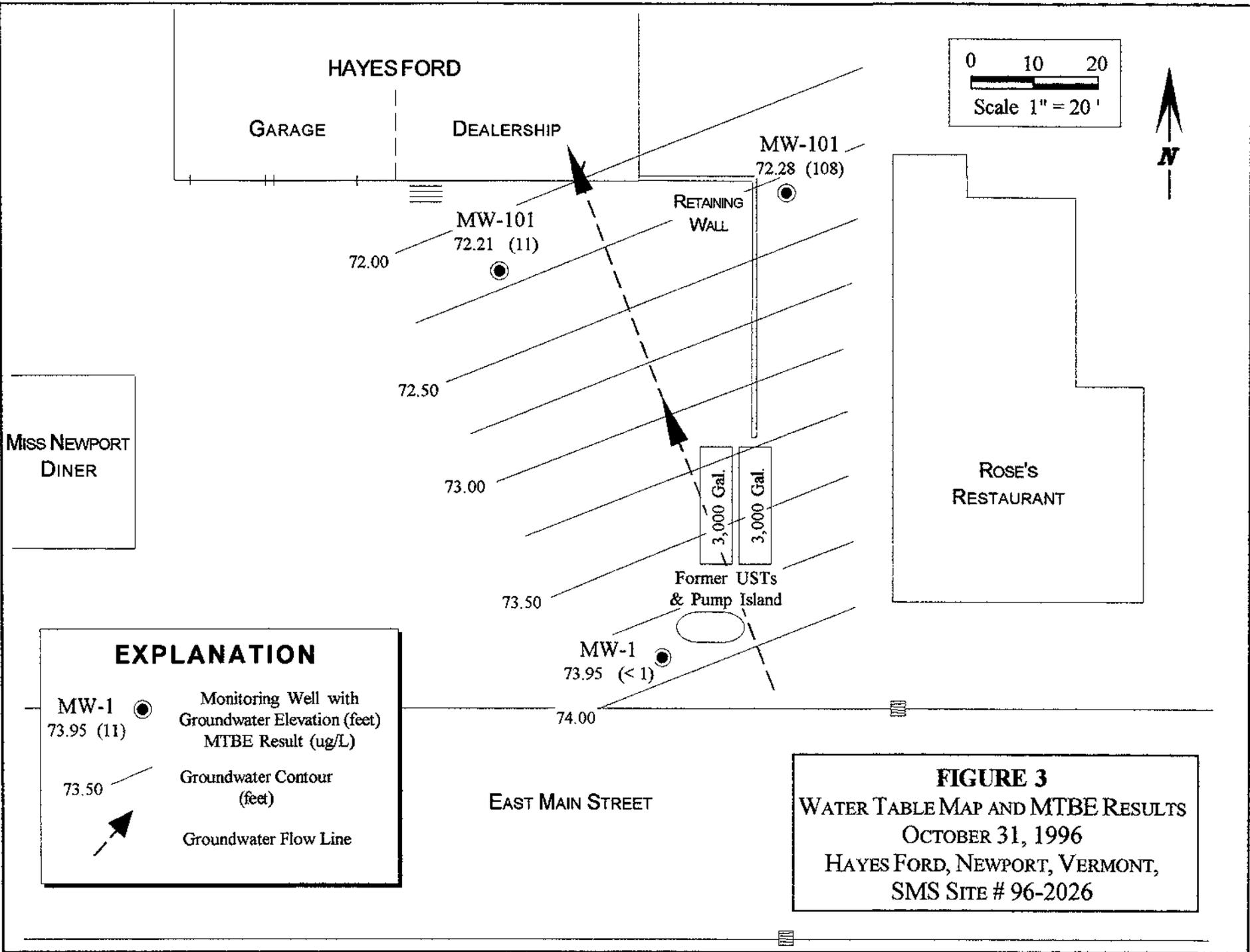


FIGURE 2
SITE BASEMAP, HAYES FORD,
NEWPORT, VERMONT, SMS SITE # 96-2026.



EXPLANATION

- MW-1 ● 73.95 (11) Monitoring Well with Groundwater Elevation (feet) MTBE Result (ug/L)
- 73.50 — Groundwater Contour (feet)
- Groundwater Flow Line

FIGURE 3
WATER TABLE MAP AND MTBE RESULTS
OCTOBER 31, 1996
HAYES FORD, NEWPORT, VERMONT,
SMS SITE # 96-2026

SOIL BORING / MONITORING WELL CONSTRUCTION LOG

WELL BORING ID: MW-101

Client / Site:	S. B. Collins, Inc. / Hayes Ford
Location:	East Main Street, Newport, Vermont
Project Number:	04-29
Driller:	Neil Faulkner - Tri State Drilling & Boring
Drilling Method:	4.25" ID Hollow Stem Augers (8" OD)
Geologist:	S. French
Sampling Method:	24" Split-spoon driven w/140 # hammer
Date:	10/24/96
Weather:	Overcast, wet, 50s
Boring Location:	In alley between Rose's Rest. and Hayes Ford

Well Construction Information	
Total Depth Drilled:	Drilled to 30.0' BGS, sampled to 32.0 BGS
Screen Type/Interval:	2", sch. 40, 10-slot PVC / 28.0' - 18.0' BGS
Riser Type/Interval:	2", sch. 40 PVC / 18.0' - 0.25' BGS
Sandpack Type/Interval:	#1 sand / 30.0' - 16.0' BGS
Seal Type/Interval:	Powdered Bentonite / 16.0' - 14.5' BGS
Water Level/Date-Time:	72.28 / 10/31/96
Elevation Ground:	95.69
Elevation TOC:	95.44
Other:	Developed by bailing

Sample Interval (feet BGS)	Total Driven / Recovery (feet) (blow counts)	Recovered Interval (feet)	Approximate Interval (feet BGS)	Sample Description	USDA / SCS Soil Classification	PID Reading* (ppm)
5.0 - 7.0	2.0 / 1.3 (3-2-2-5)	0.0 - 0.6	5.0 - 5.6	yellow-brown, dry med-cs sand w/a few pebbles to 1 cm	sandy loam	0.0
		0.6 - 1.3	5.6 - 6.3	Dark, dry poorly-sorted, silty fn-cs sand w/pebbles to 3 cm	sandy loam	0.1
10.0 - 12.0	2.0 / 1.6 (8-9-9-10)	0.0 - 1.6	10.0 - 11.6	Light brown, dry, well-sorted silty (5-10%) fine sand	loamy sand	0.1
15.0 - 17.0	2.0 / 1.4 (9-8-8-10)	0.0 - 0.7	15.0 - 15.7	As above	loamy sand	0.0
		0.7 - 1.3	15.7 - 16.3	Yellow-brn, dry silty med-cs sand w/a few pebbles to 1 cm and a pod of gritty gray silt-clay, poorly-sorted	sandy loam	0.1
		1.3 - 1.4	16.3 - 16.4	Light brown, dry, well-sorted silty (5-10%) fine sand	loamy sand	ns
20.0 - 22.0	2.0 / 1.7 (4-8-9-10)	0.0 - 0.9	20.0 - 21.0	As above but w/silt layers, wet at bottom (perched water)	loamy sand	0.2
		0.9 - 1.3	21.0 - 21.5	gritty, gray silt, moist, containing pebbles to 2 cm	silt loam	0.3
		1.3 - 1.7	21.5 - 22.0	yellow, dry, fine to medium sand, trace silt	loamy sand	0.4
25.0 - 27.0	2.0 / 2.0 (3-3-4-3)	0.0 - 2.0	25.0 - 27.0	Entire sample short (1") layers of blue-gray, greasy silt/clay w/very fine sand separating the seasonal "pods", moist	silt	0.2
30.0 - 32.0	2.0 / 2.0 (1-1-1-2)	0.0 - 2.0	30.0 - 32.0	Entire sample is moist, blue-gray, greasy silt/clay w/some minor grit and a few pebbles to 1 cm (no layering)	silt	0.2

Generalized Geologic Log and Other Observations:

0.0' - 6.5': Pavement and poorly sorted silty fine - coarse sand, possible fill materials

6.5' - 25.0': Well sorted silty very fine sand with a few coarser zones and silt lenses

25.0 - 32.0: Blue-gray lacustrine silt/clay with some narrow very finesand layers at top of sequence

Notes:

Hollow stem auger rig had no trouble at this location - easy penetration throughout the boring

* = Peak Headspace Reading, Photovac MicroTIP HL-2000, calibrated to isobutylene

BGS = Below Ground Surface, NR = No Recovery, NS = not sampled

SOIL BORING / MONITORING WELL CONSTRUCTION LOG

WELL BORING ID: MW-102

Client / Site:	S. B. Collins, Inc. / Hayes Ford
Location:	East Main Street, Newport, Vermont
Project Number:	04-29
Driller:	Neil Faulkner - Tri State Drilling & Boring
Drilling Method:	4.25" ID Hollow Stem Augers (8" OD)
Geologist:	S. French
Sampling Method:	24" Split-spoon driven w/140# hammer
Date:	10/24/96
Weather:	Partly cloudy
Boring Location:	Just east (6') in front of steps

Well Construction Information	
Total Depth Drilled:	Drilled to 30.0' BGS, sampled to 32.0 BGS
Screen Type/Interval:	2", sch. 40, 10-slot PVC / 30.0' - 20.0' BGS
Riser Type/Interval:	2", sch. 40 PVC / 20.0' - 0.3' BGS
Sandpack Type/Interval:	#1 sand / 30.0' - 18.0' BGS
Seal Type/Interval:	Powdered Bentonite / 18.0' - 16.0' BGS
Water Level/Date-Time:	72.21 / 10/31/96
Elevation Ground:	99.82
Elevation TOC:	99.54
Other:	Developed by bailing

Sample Interval (feet BGS)	Total Driven / Recovery (feet) (blow counts)	Recovered Interval (feet)	Approximate Interval (feet BGS)	Sample Description	USDA / SCS Soil Classification	PID Reading* (ppm)
5.0 - 7.0	2.0 / 1.5 (2-2-3-4)	0.0 - 1.5	5.0 - 6.5	Reddish-brown, dry, silty fine to medium sand with rocks (angular) and pebbles to 5 cm	fill, etc.	0.0
10.0 - 12.0	2.0/1.5 (4-5-7-10)	0.0 - 0.9	10.0 - 11.0	Multicolored unsorted, silty fn to cs sand and gravel, loose	grav. sandy loam	0.0
		0.9 - 1.3	11.0 - 11.3	Layers of red & yellow fn-med sand w/pebbles to 3 cm, dry	sandy loam	0.0
		1.3 - 1.5	11.3 - 11.5	Multicolored unsorted, silty fn to cs sand and gravel, loose	grav. sandy loam	0.0
15.0 - 17.0	2.0 / 1.5 (4-5-6-6)	0.0 - 1.5	15.0 - 16.5	Yellowish light brown, dry, silty very fine sand (5-10% silt)	sandy loam	0.0
20.0 - 22.0	2.0 / 1.3 (7-7-7-7)	0.0 - 1.1	20.0 - 21.0	As above, some layering apparent by tonal variations	sandy loam	0.0
		1.1 - 1.3	21.0 - 21.3	Gravelly layer with pods of dry silt & fine-coarse sand	grav. sandy loam	0.0
25.0 - 27.0	2.0 / 1.3 (4-5-7-9)	0.0 - 1.3	25.0 - 26.5	very poorly sorted silty fine to coarse sand & gravel, pebbles to 2 cm, pods of hard, dry, gritty blue-gray silt/clay. Sequence becomes moister with depth	grav. sandy loam	0.0
30.0 - 32.0	2.0/2.0 (2-2-2-3)	0.0 - 2.0	30.0 - 32.0	Entire sequence is olive grn-blue gray, moist silt/clay with angular pebbles to 1 cm, containing thin layers of very fine sand	silt	0.8

Generalized Geologic Log and Other Observations:

0.0' - 6.5': Pavement/concrete and fill materials

6.5' - 30.0': Alternating layers of poorly sorted silty sand and gravel, and well sorted silty very fine sand

30.0 - 32.0: Blue-gray lacustrine silt/clay

Notes:

Hollow stem auger rig had no trouble at this location - easy penetration throughout the boring

* = Peak Headspace Reading, Photovac MicroTIP HL-2000, calibrated to isobutylene

BGS = Below Ground Surface, NR = No Recovery, NS = not sampled



ANALYTICAL REPORT

P.O. Box 339
 Randolph, Vermont 05060-0339
 (802) 728-6313

SB Collins, Inc.
 PO Box 671
 54 Lower Welden Street
 St. Albans, VT 05478
 Carl Ruprecht

Work Order No.: 9610-03585

Project Name: Hayes Ford
 Customer Nos.: 090048

Date Received: 10/31/96
 Date Reported: 11/05/96

Sample Desc.: MW-A	Method	Results	Units	Analyst	Analysis Date
Sample Nos: 1					
Test Performed					
Aromatic Volatile Organics	EPA 8020			JPM	11/01/96
Methyl Tertiary Butyl Ether	EPA 8020	11	ug/L	JPM	11/01/96
Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Toluene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	11/01/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Surrogate: 8020				JPM	11/01/96
***Bromofluorobenzene-8020		98	% Recovery	JPM	11/01/96

Sample Desc.: MW-101	Method	Results	Units	Analyst	Analysis Date
Sample Nos: 2					
Test Performed					
Aromatic Volatile Organics	EPA 8020			JPM	11/04/96
Methyl Tertiary Butyl Ether	EPA 8020	108	ug/L	JPM	11/04/96
Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Toluene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	11/01/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Surrogate: 8020				JPM	11/01/96
***Bromofluorobenzene-8020		98	% Recovery	JPM	11/01/96

ANALYTICAL REPORT

Project Name: Hayes Ford
Project No.: 090048

Work Order No.: 9610-03585

Sample Desc.: MW-102				Sample Date: 10/31/96	
Sample Nos: 3				Collection Time: 14:30	
Test Performed	Method	Results	Units	Analyst	Analysis Date
Aromatic Volatile Organics	EPA 8020			JPM	11/01/96
Methyl Tertiary Butyl Ether	EPA 8020	11	ug/L	JPM	11/01/96
Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Toluene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	11/01/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Surrogate: 8020				JPM	11/01/96
***Bromofluorobenzene-8020		97	% Recovery	JPM	11/01/96

Sample Desc.: MW-1				Sample Date: 10/31/96	
Sample Nos: 4				Collection Time: 14:55	
Test Performed	Method	Results	Units	Analyst	Analysis Date
Aromatic Volatile Organics	EPA 8020			JPM	11/01/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	11/01/96
Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Toluene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Ethyl Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Total Xylenes	EPA 8020	BPQL	ug/L	JPM	11/01/96
Chlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L	JPM	11/01/96
Surrogate: 8020				JPM	11/01/96
***Bromofluorobenzene-8020		99	% Recovery	JPM	11/01/96

Sample Desc.: Field Blank				Sample Date: 10/31/96	
Sample Nos: 5				Collection Time: 13:00	
Test Performed	Method	Results	Units	Analyst	Analysis Date
Aromatic Volatile Organics	EPA 8020			JPM	11/01/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L	JPM	11/01/96
Benzene	EPA 8020	BPQL	ug/L	JPM	11/01/96

ANALYTICAL REPORT

Project Name: Hayes Ford
Project No.: 090048

Work Order No.: 9610-03585

Sample Desc.: Field Blank	Method	Results	Units	Sample Date: 10/31/96	Analyst	Analysis Date
Sample Nos: 5				Collection Time: 13:00		
Test Performed						
Toluene	EPA 8020	BPQL	ug/L		JPM	11/01/96
Ethyl Benzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
Total Xylenes	EPA 8020	BPQL	ug/L		JPM	11/01/96
Chlorobenzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
Surrogate: 8020					JPM	11/01/96
***Bromofluorobenzene-8020		96	% Recovery		JPM	11/01/96

Sample Desc.: Trip Blank	Method	Results	Units	Sample Date: 10/31/96	Analyst	Analysis Date
Sample Nos: 6				Collection Time: 13:00		
Test Performed						
Aromatic Volatile Organics	EPA 8020				JPM	11/01/96
Methyl Tertiary Butyl Ether	EPA 8020	BPQL	ug/L		JPM	11/01/96
Benzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
Toluene	EPA 8020	BPQL	ug/L		JPM	11/01/96
Ethyl Benzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
Total Xylenes	EPA 8020	BPQL	ug/L		JPM	11/01/96
Chlorobenzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
1,2-Dichlorobenzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
1,3-Dichlorobenzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
1,4-Dichlorobenzene	EPA 8020	BPQL	ug/L		JPM	11/01/96
Surrogate: 8020					JPM	11/01/96
***Bromofluorobenzene-8020		97	% Recovery		JPM	11/01/96

BPQL = Below Practical Quantitation Limit; 1 ug/L

Authorized by: Rosario Lamothe



test, Inc.
 Box 339
 66 Professional Center, Randolph, VT 05060
 Phone: (802)728-6313 Fax: (802)728-6044
 Contact: Jefferson P. Hoffer & Associates
 P.O. Box RR 4 Box 2286, Comstock Road
 Montpelier, VT 05602

Hayes Ford

Sample Logged in By: _____
 Anomaly Sheet: Y ___ N ___
 Preservative Check: _____
 Temperature Check: _____
 Contact: Jeff Hoffer
 Customer Nos: 90048
 Project: Hoffer
 Job Template: _____
 Date requested: 10/29/96
 Date shipped: 10/29 w/Rod
 Date scheduled: _____

CHAIN OF CUSTODY

Sampled by: * STRATTON FRENCH	Date	Time	Print Name Here: * STRATTON FRENCH	Date	Time
Acquiesced by: <i>[Signature]</i>	10/31/96	ALL DAY	Accepted by:		
Acquiesced by: <i>[Signature]</i>			Received by Scitest: <i>[Signature]</i>	10/31/96	4:54 pm

Client ID or Description	Sample		Matrix	Preservative	Container Material	Container Volume	Containers per Sample	Parameters
	Date	Time						
MW-A	10/31/96	13:00	GW	HCl	Glass	40 mL	2	EPA 8020
MW-101		13:55	GW	HCl	Glass	40 mL	2	EPA 8020
MW-102		14:30	GW	HCl	Glass	40 mL	2	EPA 8020
MW-1 Duplicate		14:55	GW	HCl	Glass	40 mL	2	EPA 8020
Field Blank - FB-01		15:05	GW	HCl	Glass	40 mL	2	EPA 8020
Trip Blank - TB-01		13:35	GW	HCl	Glass	40 mL	2	EPA 8020
Extra Set			GW	HCl	Glass	40 mL	2	

SAMPLES MUST REACH THE LAB within _____
 sampling time to meet all holding times.

Parameters are correct as listed Client Initial: _____
 Please fill in ALL areas marked with an asterisk (*). Thank you.
 Additional instruction if applicable are attached.

Scitest Work Order: _____

