

Phase	Type
<input checked="" type="checkbox"/> Initial Site Investigation <input type="checkbox"/> Corrective Action Feasibility Investigation <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Corrective Action Summary Report <input type="checkbox"/> Operations and Monitoring Report	<input type="checkbox"/> Work Scope <input checked="" type="checkbox"/> Technical Report <input type="checkbox"/> PCF Reimbursement Request <input type="checkbox"/> General Correspondence

10/27/99
 9:45 AM '99
 C.S.

Site Investigation Report

Fleming Texaco
 Main Street (Route 5)
 Windsor, Vermont
 SMS Site #98-2407

Prepared for:

Fleming Oil Company
 1 Putney Road
 Brattleboro, Vermont 05301
 Contact: Rick Fleming Jr.
 Phone: (802) 254-6095

Prepared by:

Environmental Compliance Services, Inc.
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 Brattleboro, VT 05301
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Project No.: 40096

March 23, 1999

**Site Investigation Report
Fleming Texaco, Windsor
Site #98-2407**

TABLE OF CONTENTS

1.0 Introduction	1
2.0 Site Description.....	1
3.0 Work Performed	1
3.1 <i>Soil Borings and Monitoring Wells</i>	<i>1</i>
3.2 <i>Field Screening of Soil Samples</i>	<i>3</i>
3.3 <i>Groundwater Gauging and Sampling.....</i>	<i>3</i>
3.4 <i>Stockpiled Soil Screening</i>	<i>3</i>
4.0 Groundwater Monitoring Results.....	3
4.1 <i>Groundwater Potentiometric Data</i>	<i>3</i>
4.2 <i>Laboratory Analysis of Groundwater Samples</i>	<i>3</i>
5.0 Risk Evaluation.....	4
5.1 <i>Potential Sources.....</i>	<i>4</i>
5.2 <i>Potential Receptors</i>	<i>4</i>
6.0 Conclusions and Recommendations	4
6.1 <i>Conclusions.....</i>	<i>4</i>
6.2 <i>Recommendations</i>	<i>4</i>
 Appendices	
Appendix A	Site Locus Map
Appendix B	Site Plan
Appendix C	Soil Boring/Monitoring Well Construction Logs
Appendix D	Soil Pile Status Report
Appendix E	Laboratory Data Sheets and Chain of Custody Record

1.0 Introduction

In June, 1998 a piping upgrade was performed for the three 10,000 gallon gasoline underground storage tanks (USTs) at Fleming Texaco on Main Street (Route 5) in Windsor ("the site;" see locus map, Appendix A). Environmental Compliance Services, Inc. (ECS) field screened soils from the piping excavation with a photoionization detector (PID) for the presence of Volatile Organic Compound (VOC) concentrations. VOC levels ranged from 8 to 906 parts per million (ppm) in soil samples from the area of the pump island.

With DEC approval, approximately 110 cubic yards of contaminated soils were excavated and stockpiled at the Miller Construction gravel pit in Windsor, VT. A piping upgrade report was submitted to the VT DEC, and resulted in the request for subsurface investigations to assess the extent and degree of petroleum contamination in soil and/or groundwater at the site.

ECS submitted a work plan for these additional investigations to the VT DEC on behalf of Fleming Oil Company. The work plan included soil boring advancement, groundwater monitoring well installation, groundwater sampling and analysis, and a sensitive receptor survey. It was approved by the Sites Management Section (SMS) on November 5, 1998. This report documents the work performed by ECS at the site and presents results, conclusions and recommendations.

2.0 Site Description

The subject property exists at an elevation of approximately 102 meters (334 feet) above mean sea level. It includes gasoline pumps and canopy, a convenience store building, and a car wash. A site plan is provided in Appendix B.

The site is abutted by commercial properties. To the north is a church building in use as a thrift shop. To the south is the United States Post Office. Across Main Street, to the west, are commercial properties including a grocery store, a bank, and a historic house. Behind the site, to the east, is a steep embankment at the base of which are a garage building, railroad tracks and the Connecticut River. The site is served by the municipal drinking water and sewer systems.

Observations made during excavation and drilling at the site indicate that site soils are predominantly sandy, consisting of dark brown coarse sand and cobbles, and light brown, fine-to medium-grained sand.

3.0 Work Performed

3.1 Soil Borings and Monitoring Wells

Using a hollow stem auger drill rig on December 8, 1998, ECS installed three monitoring wells, designated ECS-1, ECS-2, and ECS-3. Based on site conditions and daylight constraints, the decision was made not to install a fourth well. The wells are 19, 25, and 30 feet deep, respectively, and constructed of schedule 40 PVC slotted screen (size 10) with flush mounted road boxes. Soil boring/monitoring well construction logs are presented in Appendix C.

Monitoring well locations are shown on the site plan in Appendix B. ECS-1 was installed as near as was possible to the suspected source area, given subsurface and overhead constraints. ECS-2 and ECS-3 are located downgradient of the pumps and canopy. ECS-2 was installed to the south of the convenience store building, and ECS-3 was installed behind the northeast corner of the site building, to the north of the car wash.

Elevated VOC levels were detected in the boring for ECS-1 from 8-18 feet below ground surface (bgs). After 18 feet bgs, the VOC levels dropped off sharply, and the presence of wet clay indicated a confining layer. Accordingly, drilling was halted at that depth, and a monitoring well was installed to 19 feet bgs.

3.2 Field Screening of Soil Samples

During drilling, split-spoon soil samples were obtained from each of the boreholes. The samples were field screened for VOCs with a Photovac Model 2020 PID (field calibrated to an isobutylene span gas and referenced to benzene), using bag headspace protocol. VOC levels detected in the borings are summarized in Table 1.

Table 1. VOCs (ppm) in split spoon soil samples.

Depth (ft. bgs)	ECS-1	ECS-2	ECS-3
0-2	0.2	3.0	1.2
2-4	0.3		
4-6	0.3	4.1	1.1
6-8	35		
8-10	231		
10-12	346	10	1.2
12-14	386		
14-16	392	5.6	1.6
16-18	177		
18-20	6		
20-22		20.1	1.5
25-27		8.2	1.4
30-32			1.3

3.3 Groundwater Gauging and Sampling

Groundwater gauging and sampling was performed by ECS personnel on December 16, 1998. Depth to groundwater in each well was measured with a Slope electronic water level indicator from the top of the PVC well casings. The instrument is accurate to 0.01 foot.

Groundwater samples were obtained from ECS-2 and -3 with disposable plastic bailers after three borehole volumes of groundwater were evacuated from each well. No groundwater was available for sampling in ECS-1 on December 16, 1998. A duplicate groundwater sample from ECS-2 was obtained for quality control purposes. All samples, and a trip blank, were stored on ice immediately upon collection and refrigerated until delivery was made to Spectrum Analytical, Inc. in Agawam, Massachusetts for analysis of BTEX compounds, MTBE, Trimethylbenzenes and Naphthalene by EPA Method 8021B.

3.4 Stockpiled Soil Screening

The contaminated soil stockpiled at Miller Construction in Windsor was sampled on December 1, 1998. Ten samples were obtained from a depth of 0-1 foot into the soil pile, and ten were obtained from depths of 1-2 feet. Six samples were obtained from depths of up to 3 feet into the soil pile. All samples were field screened for VOCs with a PID. Readings ranged from 1.4 to 197 ppm. New plastic sheeting was put over the pile. Sample locations and PID readings of individual samples are listed on the soil pile status form in Appendix D.

4.0 Groundwater Monitoring Results

4.1 Groundwater Potentiometric Data

On December 16, 1998, monitoring well ECS-1 was dry. Depth to groundwater was 23.5 feet in ECS-2 and 28.2 feet in ECS-3.

Based on regional topography and limited groundwater table elevation data, groundwater flow is estimated to be in a southeasterly direction, toward the Connecticut River.

4.2 Laboratory Analysis of Groundwater Samples

The groundwater samples obtained on December 16, 1998 were analyzed by EPA Method 8021B. Results are presented in Table 2, which includes Vermont Primary Groundwater Quality Standards (PGQS) for reference. The complete laboratory data sheets and chain of custody record are presented in Appendix E.

Table 2. Results of laboratory analysis of groundwater samples.

Date	Compound	PGQS	ECS-1	ECS-2	ECS-3
12/16/98	Benzene	5.0		ND	ND
	Toluene	1000		ND	ND
	Ethylbenzene	7000		ND	ND
	Xylenes	10,000		3.5	2.1
	Total BTEX			3.5	2.1
	Naphthalene	20		ND	ND
	1,2,4-Trimethylbenzene	5.0		7.0	6.4
	1,3,5-Trimethylbenzene	4.0		2.5	4.4
	MTBE	40		ND	ND
	Results reported in ug/L (ppb). Shaded areas indicate the well was not sampled on that date. ND = Not detected. Split cells indicate duplicate analyses. Boldface type signifies values greater than PGQS.				

5.0 Risk Evaluation

5.1 Potential Sources

Based on PID readings of soil samples, and past excavation of approximately 110 cubic yards of contaminated soil, it is reasonably clear that the source of the contamination was near the pump island at the site. The precise source is unknown. The piping removed in June 1998 was observed to be in good condition, as stated on the report submitted to the SMS.

5.2 Potential Receptors

The potential sensitive receptors of most immediate concern are site workers and customers. There is no basement in the convenience store building. Air in the building was screened for VOCs with a PID, and none were detected. Indoor air in the basement of the church building to the north of the site was also screened for VOCs with a PID, and none were detected.

There are no water supplies known to be located within a ½ mile radius of the site. The Connecticut River, located approximately 1000 feet downgradient and to the east, is the nearest potential sensitive environmental receptor.

6.0 Conclusions and Recommendations

6.1 Conclusions

- Groundwater flow direction at the site can be interpreted to be to the southeast, toward the Connecticut River. Depth to groundwater at the site was greater than 23 feet in December 1998.
- Elevated VOC levels were detected in split spoon soil samples from 8-18 feet bgs in a soil boring advanced as close as possible to the pump island. A wet clay layer was encountered at 18-20 feet bgs in this boring. A monitoring well installed to the depth of the confining layer was dry on the sampling date.
- Trimethylbenzenes were detected at concentrations greater than PGQS in groundwater from monitoring well ECS-2, installed downgradient of the suspected source area.
- No VOCs were detected in the indoor air of the site building, the nearest structure to the USTs and pump island. The site is served by municipal drinking water and sewer systems.

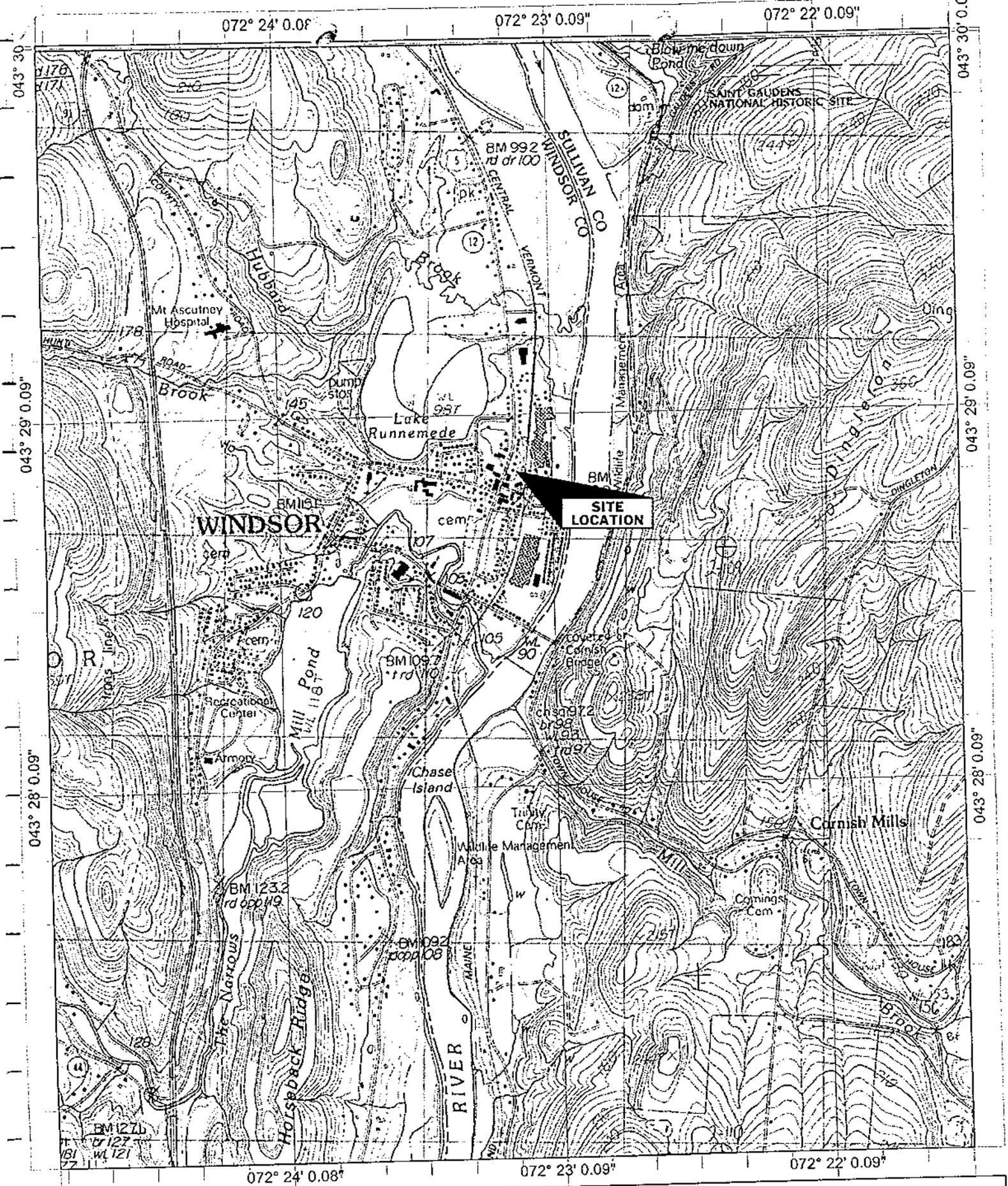
6.2 Recommendations

ECS recommends that the monitoring wells at this site be sampled again in the springtime, when groundwater elevations are highest. If groundwater is present in ECS-1, then the degree of groundwater contamination at the site can be properly assessed, and groundwater flow direction can be more accurately determined.

ECS proposes that the contaminated soils stockpiled at Miller Construction in Windsor be field screened for VOCs again in the springtime, after they have completely thawed. Plastic sheeting should be replaced if necessary at that screening event. Based on field screening results, subsequent screening and events should occur on a semi-annual basis until no VOCs are detected with the PID. At that time, four discrete samples will be collected for laboratory analysis for BTEX compounds, MTBE, Trimethylbenzenes and Naphthalene by EPA Method 8021B. Based on results of laboratory analysis, recommendation would be made to thin-spread the soils.

Pending DEC approval of these recommendations, ECS will schedule a groundwater sampling and soil screening event for April, 1999.

Appendix A
Site Locus Map

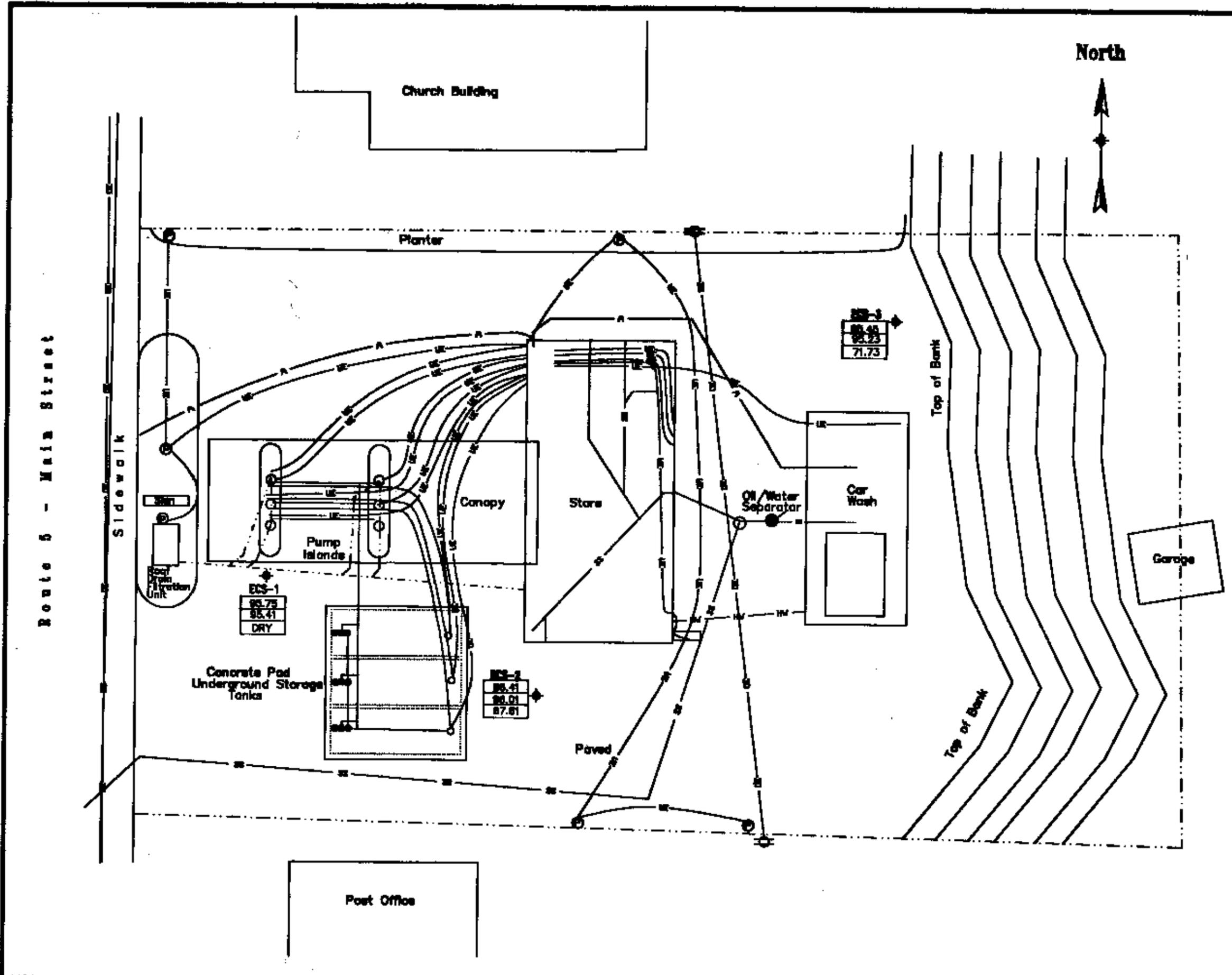


Name: MT ASCUTNEY
 Date: 6/15/98
 Scale: 1 inch equals 2000 feet

Location: 043° 28' 30.5" N 072° 23' 10.9" W
 Caption: Windsor Texaco Station
 55 Main Street
 Windsor, VT

Appendix B

Site Plan



Legend

- Approximate Property Line
- ◆ Monitoring Well
- ECS-1 Well Identification
- 85.75 Rim Elevation
- 85.41 PVC Elevation
- DRY Groundwater Elevation
- Vent Pipes/Lines
- Fuel Lines
- Sanitary Sewer
- Water Lines
- Hot Water
- Underground Electric Lines
- Overhead Electric
- Roof Drain Lines
- ⊙ Lights
- ⊕ Utility Pole

General Notes

Site Plan prepared from information obtained from site plans provided by Fleming Oil, Co. and a site visit by ECS, Inc. personnel.

All locations, dimensions of the site features, and property lines are approximate. This plan should not be used for construction or land conveyance purposes.

Vertical and horizontal location of monitoring wells and selected site features determined by a site survey conducted by ECS, Inc. personnel.



ENVIRONMENTAL COMPLIANCE SERVICES, INC.
207 Old Colchester Road, P.O. Southtown, VT 05888

Fleming Texaco
Route 5
Windsor, VT

Site Plan
Fleming Texaco

DATE: 11/11/88	SCALE: 1" = 20'	PROJECT NO: 40066.00	SHEET NO: 2
DESIGNED BY: CS	CHECKED BY: CS	APPROVED BY: SLP	DATE: Mar. 1988
DRAWN BY: CS	SCALE: 1" = 20'	PROJECT NO: 40066.00	SHEET NO: 2

Appendix C

Soil Boring/Monitoring Well Construction Logs



Environmental Compliance Services, Inc.
388 Silver Street, Agawam, Massachusetts 01001

SOIL BORING / MONITORING WELL LOG

BORING NO.:	ECS-1		
DOCUMENT NO.:			
SHEET	1	OF	1
LOCATION			

BORING COMPANY:	ECS	JOB NUMBER:	40096
BORING COMPANY ADDRESS:	Agawam, MA	PROJECT NAME:	Windsor Texaco
FOREMAN:	Stanley Werbicki	PROJECT ADDRESS:	Route 5, Windsor, VT
ECS INSPECTOR:	Julie Prior	CLIENT NAME:	Fleming Oil Company

GROUND WATER OBSERVATIONS				CASING	SAMPLER	CORE BARREL
Date	Depth	Stabilization Time	TYPE			
			SIZE INSIDE DIAMETER			
			HAMMER WEIGHT			
			HAMMER FALL			
SPECIAL NOTES:						

Casing Elevation (ft.)	
Surface Elevation (ft.)	
Date Started	December 08, 1998
Date Completed	December 08, 1998

Depth	Sample Number	Sample Depths From - To	Penetration Recovery	Blows per 6" Penetration	Strata Changes	Soil Description	Well As Built	Field Testing	Notes
	S-1	0-2'	12"	14/ 21/ 24/ 11		fill and asphalt medium brown SAND		0.2 ppm	
	S-2	2-4'	12"	16/ 8/ 9/ 15		fill; medium brown SAND with trace cobbles		0.3 ppm	no odor
	S-3	4-6'	18"	8/ 6/ 5/ 7		green-gray very fine SAND, dry		0.3 ppm	no odor
	S-4	6-8'	24"	1/ 1/ 4/ 5		green-gray very fine SAND, dry		35 ppm	no odor
	S-5	8-10'	24"	3/ 3/ 6/ 6		0-12": salt and pepper very fine SAND 12-24": green-gray very fine SAND; dry		231 ppm	odors
	S-6	10-12'	20"	4/ 5/ 9/ 8		salt and pepper SAND with orange moltening		346 ppm	odors
	S-7	12-14'	24"	5/ 6/ 14/ 10		0-4": medium salt and pepper SAND with trace cobbles 4-24": fine salt and pepper SAND		388 ppm	odors
	S-8	14-16'	12"	5/ 5/ 5/ 8		0-6": medium salt and pepper SAND with trace cobbles 6-12": moist green-gray CLAY		392 ppm	odors
	S-9	16-18'	18"	6/ 4/ 3/ 5		wet green-gray very fine SAND with some Silt		177 ppm	odors
	S-10	18-20'	24"	8/ 6/ 8/ 10		wet green-gray SILT with some very fine Sand		6.0 ppm	

REMARKS:

Work completed using mobile hollow stem rotary auger drill rig.

Total Well Depth: 18' Screen Diameter: 4" Length: 10' Riser Diameter: 4" Length: 8' PID: 2020 Slot Size: 0.01



Environmental Compliance Services, Inc.
588 Silver Street, Agawam, Massachusetts 01001

**SOIL BORING / MONITORING
WELL LOG**

BORING NO.:	ECS-3		
DOCUMENT NO.:			
SHEET	1	OF	1

BORING COMPANY:	ECS	JOB NUMBER:	40096
BORING COMPANY ADDRESS:	Agawam, MA	PROJECT NAME:	Windsor Texaco
FOREMAN:	Stanley Werbicki	PROJECT ADDRESS:	Route 5, Windsor, VT
ECS INSPECTOR:	Juilee Prior	CLIENT NAME:	Fleming Oil Company

LOCATION	
Casing Elevation (ft.)	
Surface Elevation (ft.)	
Date Started	December 08, 1998
Date Completed	December 08, 1998

GROUND WATER OBSERVATIONS			CASING	SAMPLER	CORE BARREL
Date	Depth	Stabilization Time	TYPE		
			SIZE INSIDE DIAMETER		
			HAMMER WEIGHT		
			HAMMER FALL		
SPECIAL NOTES:					

Depth	Sample Number	Sample Depths From - To	Penetration Recovery	Blows per 6" Penetration	Strata Changes	Soil Description	Well As Built	Field Testing	Notes
	S-1	0-2'				dry medium brown SAND		1.2 ppm	
	S-2	5-7'	18"	3/ 3/ 3/ 4		dry fine brown SAND		1.1 ppm	no odor
	S-3	10-12'	12"	3/ 5/ 5/ 7		dry fine-medium salt and pepper SAND		1.2 ppm	no odor
	S-4	15-17'	8"	4/ 8/ 8/ 9		dry medium salt and pepper SAND		1.6 ppm	no odor
	S-5	20-22'	24"	7/ 6/ 8/ 4		very fine-fine brown SAND with some Silt: moist		1.5 ppm	no odor
	S-6	25-27'	24"	7/ 7/ 10/ 5		wet very fine-fine brown SAND with some Silt		1.4 ppm	no odor
	S-7	30-32'	24"	1/ 1/ 1/ 1		wet gray and brown very fine sand with some silt		1.3 ppm	no odor

REMARKS:
Work completed using mobile hollow stem rotary auger drill rig.

Total Well Depth: 30' Screen Diameter: 4" Length: 10' Riser Diameter: 4" Length: 20' PID: 2020 Slot Size: 0.01

Appendix D
Soil Pile Status Report



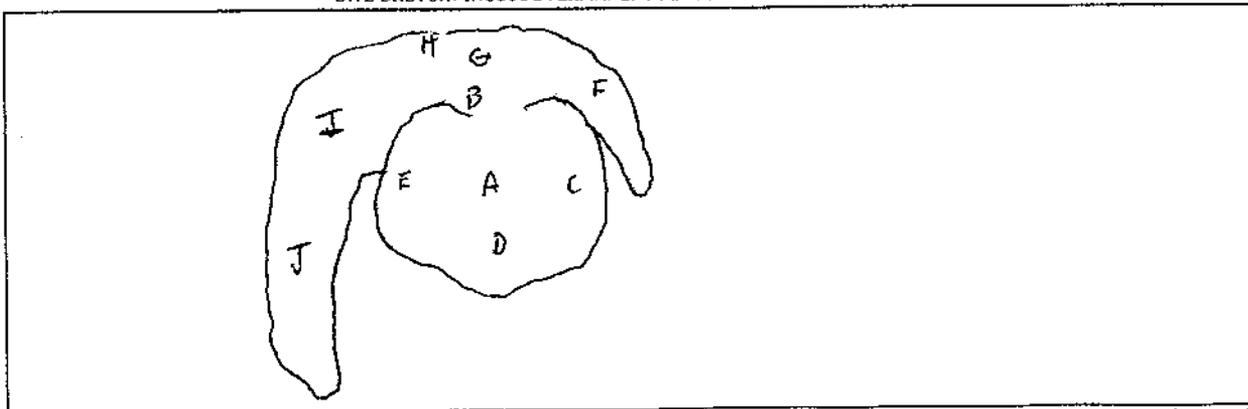
ENVIRONMENTAL COMPLIANCE SERVICES, INC.

SOIL PILE STATUS REPORT

SITE NAME: WINDSOR TEXALO SOIL STOCKPILE VT DEC # _____ JOB # 40096
SITE LOCATION: WINDSOR VT ON SITE: 9:00 OFF SITE: 11:15
SCREENING DATE: 12/1/96 PID USED: 2020 CONTAMINANT: _____ VOLUME: _____
DATE OF STOCKPILE: _____ SAMPLE NEEDED FOR THIN SPREADING? YES ___ NO [X]

Table with 5 columns: SAMPLE LOCATION (SEE SKETCH BELOW), and four columns for DEPTH OF SAMPLE (FEET) (0-1, 1-2, 2-3, 3-4). Rows A-J contain numerical data for VOCs in ppmV.

SITE SKETCH: INCLUDE PERMANENT FEATURES AND NORTH ARROW



COMMENTS: RE PLACED MOST OF POLY BUT DID NOT HAVE ENOUGH MATERIAL
[POLY SHEETING NEEDED] [ADDITIONAL SCREENING WARRANTED] [SUMMARY LETTER]
WILL FINISH JOBS ON 12/3/96.

SOIL ANALYSIS FOR OFF SITE STOCKPILE:
[VOC BY 8021 WITH MIBE* (#2 FUEL OIL AND GASOLINE*)]
[VOC BY 8260 (USED OIL AND #6 FUEL OIL)]
[TPH BY 8100M (ALL PETROLEUM CONTAMINATION)]

SOIL ANALYSIS FOR ON SITE STOCKPILE:
[MAY REQUIRE COMPOUND SPECIFIC AND TPH: (USED OIL, #4, #6 FUEL OIL)]

SAMPLER NAME: ANDREW J. MALAFAY

Appendix E

Laboratory Data Sheets and Chain of Custody Record



SPECTRUM ANALYTICAL, INC.

Massachusetts Certification M-MA 138
Connecticut Approval # PH 0777
Rhode Island # 98 & Maine # n/a
New Hampshire ID # 2538
New York ID #11393
Florida HRS87448

*ECS, Inc.
157 Old Guilford Road, #6
Brattleboro, VT 05301*

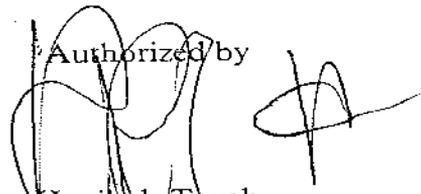
December 31, 1998

Attn: Sue Pittenger

Client Project No.: 40096

Location: Windsor Texaco - Windsor, VT

<u>Lab ID No.</u>	<u>Client ID</u>	<u>Analysis Requested</u>
AB28989	ECS-2	EPA Method 8021B
AB28990	ECS-3	EPA Method 8021B
AB28991	DUP	EPA Method 8021B
AB28992	TRIP	EPA Method 8021B

Authorized by 
 Hanibal Tayeh
 President/Laboratory Director

ENVIRONMENTAL ANALYSES

SPECTRUM ANALYTICAL, INC.

Laboratory Report

Client ID: ECS-2
Lab ID No: AB28989

Location: Windsor Texaco - Windsor, VT
Client Job No: 40096

Matrix: Ground Water
Sampled on 12/16/98 by ECS
Received on 12/17/98 by MBR
QC and Data Review by DDR

Preservative: Refrigeration, HCl
Container: 2 VOA Vials
Condition of Sample as Received: Satisfactory
Delivered by: Courier

Volatile Organics

EPA Method 8021B

Parameter for AB28989	Result (in ug/L)	MDL	Analyzed	Analyst
Benzene	Not detected	1.0	12/30/98	CD
Toluene	Not detected	1.0	12/30/98	CD
Ethylbenzene	Not detected	1.0	12/30/98	CD
m-p-Xylenes	2.4	2.0	12/30/98	CD
o-Xylene	1.1	1.0	12/30/98	CD
Napthalene	Not detected	1.0	12/30/98	CD
1,2,4-Trimethylbenzene	7.0	1.0	12/30/98	CD
1,3,5-Trimethylbenzene	2.5	1.0	12/30/98	CD
Methyl-t-butyl ether	Not detected	1.0	12/30/98	CD
Bromofluorobenzene (%SR)	106		12/30/98	CD

SPECTRUM ANALYTICAL, INC.

Laboratory Report

Client ID: **ECS-3**
Lab ID No: **AB28990**

Location: **Windsor Texaco - Windsor, VT**
Client Job No: **40096**

Matrix: **Ground Water**
Sampled on 12/16/98 by **ECS**
Received on 12/17/98 by **MBR**
QC and Data Review by

Preservative: **Refrigeration, HCl**
Container: **2 VOA Vials**
Condition of Sample as Received: **Satisfactory**
Delivered by: **Courier**

Volatile Organics

EPA Method 8021B

Parameter for AB28990	Result (in ug/L)	MDL	Analyzed	Analyst
Benzene	Not detected	1.0	12/30/98	CD
Toluene	Not detected	1.0	12/30/98	CD
Ethylbenzene	Not detected	1.0	12/30/98	CD
m-p-Xylenes	Not detected	2.0	12/30/98	CD
o-Xylene	Not detected	1.0	12/30/98	CD
Napthalene	Not detected	1.0	12/30/98	CD
1,2,4-Trimethylbenzene	Not detected	1.5	12/30/98	CD
1,3,5-Trimethylbenzene	Not detected	1.0	12/30/98	CD
Methyl-t-butyl ether	Not detected	1.0	12/30/98	CD
Bromofluorobenzene (%SR)	101		12/30/98	CD

SPECTRUM ANALYTICAL, INC.

Laboratory Report

Client ID: **DUP**
Lab ID No: **AB28991**

Location: **Windsor Texaco - Windsor, VT**
Client Job No: **40096**

Matrix: **Ground Water**
Sampled on **12/16/98** by **ECS**
Received on **12/17/98** by **MBR**
QC and Data Review by **DDR**

Preservative: **Refrigeration, HCl**
Container: **2 VOA Vials**
Condition of Sample as Received: **Satisfactory**
Delivered by: **Courier**

Volatile Organics

EPA Method 8021B

Parameter for AB28991	Result (in ug/L)	MDL	Analyzed	Analyst
Benzene	Not detected	1.0	12/30/98	CD
Toluene	Not detected	1.0	12/30/98	CD
Ethylbenzene	Not detected	1.0	12/30/98	CD
m-p-Xylenes	2.1	2.0	12/30/98	CD
o-Xylene	Not detected	1.0	12/30/98	CD
Napthalene	Not detected	1.0	12/30/98	CD
1,2,4-Trimethylbenzene	6.4	1.0	12/30/98	CD
1,3,5-Trimethylbenzene	4.4	1.0	12/30/98	CD
Methyl-t-butyl ether	Not detected	1.0	12/30/98	CD
Bromofluorobenzene (%SR)	110		12/30/98	CD

SPECTRUM ANALYTICAL, INC.

Laboratory Report

Client ID: TRIP
Lab ID No: AB28992

Location: Windsor Texaco - Windsor, VT
Client Job No: 40096

Matrix: DI Water
Sampled on 12/16/98 by ECS
Received on 12/17/98 by MBR
QC and Data Review by DDR

Preservative: Refrigeration, HCl
Container: 1 VOA Vial
Condition of Sample as Received: Satisfactory
Delivered by: Courier

Volatile Organics

EPA Method 8021B

Parameter for AB28992	Result (in ug/L)	MDL	Analyzed	Analyst
Benzene	Not detected	1.0	12/30/98	CD
Toluene	Not detected	1.0	12/30/98	CD
Ethylbenzene	Not detected	1.0	12/30/98	CD
m-p-Xylenes	Not detected	2.0	12/30/98	CD
o-Xylene	Not detected	1.0	12/30/98	CD
Napthalene	Not detected	1.0	12/30/98	CD
1,2,4-Trimethylbenzene	Not detected	1.0	12/30/98	CD
1,3,5-Trimethylbenzene	Not detected	1.0	12/30/98	CD
Methyl-t-butyl ether	Not detected	1.0	12/30/98	CD
Bromofluorobenzene (%SR)	98		12/30/98	CD

Spectrum Analytical, Inc.

Laboratory Report Supplement

References

- Methods for the Determination of Organic Compounds in Drinking Water. EPA-600/4-88/039. EMSL 1988.
- Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. EMSL 1983.
- Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater. EPA 600/4-82-057. EMSL 1982.
- Test Methods for Evaluating Solid Waste. Physical/Chemical Methods. EPA SW-846. 1986.
- Standard Methods for the Examination of Water and Wastes. APHA-AWWA-WPCF. 16th Edition. 1985.
- Standard Methods for Comparison of Waterborne Petroleum Oils by Gas Chromatography. ASTM D 3328. 1982.
- Oil Spill Identification System. U.S. Coast Guard CG-D-52-77. 1977.
- Handbook for Analytical Quality Control in Water and Wastewater Laboratories. EPA 600/4-79-019. EMSL 1979.
- Choosing Cost-Effective QA/QC (Quality Assurance/Quality Control) Programs for Chemical Analyses. EPA 600/4-85/056. EMSL 1985.

Report Notations

Not Detected, Not Det, ND or nd	=	<i>The compound was not detected at a concentration equal to or above the established method detection limit.</i>	
NC	=	<i>Not Calculated</i>	
MCL	=	<i>EPA Maximum Contamination Level</i>	
VOA	=	<i>Volatile Organic Analysis</i>	
BFB	=	<i>4-Bromofluorobenzene</i>	<i>(An EPA 624 Surrogate)</i>
p-DFB	=	<i>1,4-Difluorobenzene</i>	<i>(An EPA 624 Surrogate)</i>
CLB-d5	=	<i>Chlorobenzene-d5</i>	<i>(An EPA 624 Surrogate)</i>
BCP	=	<i>2-Bromo-1-chloropropane</i>	<i>(An EPA 601 Surrogate)</i>
TFT	=	<i>a,a,a-Trifluorotoluene</i>	<i>(An EPA 602 Surrogate)</i>
Decachlorobiphenyl	=	<i>(an EPA 608/8080 Surrogate)</i>	

Definitions

Surrogate Recovery = The recovery (expressed as a percent) of a non-method analyte (see surrogates listed above) added to the sample for the purpose of monitoring system performance.

Matrix Spike Recovery = The recovery (expressed as a percent) of method analytes added to the sample for the purpose of determining any effect of sample composition on analyte recovery.

Laboratory Replicate = Two sample aliquots taken in the analytical laboratory and analyzed separately with identical procedures. Analyses of laboratory duplicates give a measure of the precision associated with laboratory procedures, but not with sample collection, preservation, or storage procedures.

Field Duplicate = Two separate samples collected at the same time and place under identical circumstances and treated exactly the same throughout field and laboratory procedures. Analysis of Field duplicates give a measure of the precision associated with sample collection, preservation and storage, as well as with laboratory procedures.

Relative Percent Difference (% RPD) = The precision measurement obtained on duplicate/replicate analyses. %RPD is calculated as:

$$\%RPD = \frac{(\text{value1} - \text{value2})}{\text{ave. value}} * 100\%$$



CHAIN OF CUSTODY RECORD

Special Handling:

- Standard TAT - 7 to 10 business days
- Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval; min. 24 hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Page 1 of 1

Report To: <u>FCS-VT</u>	Invoice To: <u>ECS-MA</u>	Project No.: <u>40096</u>
		Site Name: <u>Windsor Texas</u>
		Location: <u>Windsor</u> State: <u>VT</u>
Project Mgr.: <u>S Pittenger</u>	P.O. No.: _____ RQN: _____	Sampler(s): <u>JCP + DCB</u>

1=4°C 2=HCl 3=H ₂ SO ₄ 4=HNO ₃ 5=NaOH 6=MeOH 7=_____							Containers:				Analyses:				Notes:
Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	pH	# Of VOA Vials	# Of Amber Glass	# Of Clear Glass	# Of Plastic				
AB 28989	ECS-2	12/16/98	2:00	G	GW	12		2							
AB 28990	ECS-3	↓	1:51	G	GW	12		2							
AB 28991	DUP	↓	—	G	GW	12		2							
AB 28992	Trip	↓	—	G	X1	12		1							
AB															
AB															
AB															
AB															
AB															

Additional Instructions: <u>VT VOC Scan</u>	Relinquished By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	Date: <u>12-17-98</u>	Time: <u>1:00</u>
			Date: <u>12-17-98</u>	Time: <u>2:15</u>