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## EXECUTIVE SUMMARY

This report details the results of an Initial Site Investigation (ISI) performed by ECSMarin at Rod's Used Car Dealership (formerly Rod's Mobil), located in East St. Johnsbury, Vermont. The ISI was performed following the discovery of petroleum contamination during the removal of two permitted gasoline underground storage tanks (USTs) and one un-permitted gasoline/waste oil UST in April 1997. Based on the results of the site investigation described above, ECSMarin concludes the following:

- Groundwater contaminated with petroleum hydrocarbons above Vermont Groundwater Enforcement Standards (VGESs) was detected in the vicinity of the gasoline USTs and dispenser island and at least 45 feet downgradient of the dispenser island. The contamination appears to be migrating east toward the Moose River, which is located approximately 150 feet from the site. The downgradient extent of contamination has not been fully characterized, but likely travels under US Route 2. The highest benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations were detected in a sample collected from downgradient monitoring well MW-6, located approximately 20 feet west of US Route 2.
- The soils generally consisted of a brown silt, sand, and gravel mix between ground surface and nine feet below ground surface (bgs) and dark grayish brown sand with silt to twelve feet bgs. Refusal was met at eight feet below ground surface in MW-5 on presumed bedrock; however, bedrock was not encountered in the other borings to a depth of 12 feet. PID soil headspace readings ranged from non-detect to 700 parts per million (ppm).
- The groundwater in the unconfined surficial aquifer at the site appears to flow generally east toward the Moose River. The average horizontal hydraulic gradient is approximately 3 percent.
- The Moose River is located approximately 150 feet east of the former UST locations. No petroleum discharge (i.e., oil sheen) was observed at the bank or in the river at locations downgradient of the site on 9 March 2004.
- The site is served by an onsite private overburden supply well, located approximately 30 feet off the northwest corner of the building. The well was sampled on 30 March 2004, and no petroleum hydrocarbons were detected.
- At least 20 private supply wells are located within ½-mile of the site. Based on the relative locations of the supply wells to the former UST area, impact to these wells is unlikely.

On the basis of the conclusions stated above, ECSMarin recommends the following:

1. In order to define the downgradient extent of petroleum contamination and further evaluate the risk to the Moose River, a Supplemental Site Investigation should be performed that includes the installation of offsite soil borings and monitoring wells. Soil borings/monitoring wells should be hand-installed along the riverbank to determine if dissolved phase groundwater petroleum contamination is entering the Moose River.
2. Groundwater samples should be collected from all monitoring wells and the onsite supply well and analyzed for volatile organic compounds (VOCs) by EPA Method 8021B. Depth to groundwater measurements should also be performed to determine groundwater flow direction across the site.
3. Upon completion of the additional work, a summary report should be prepared which includes water-quality analytical results, figures showing groundwater flow direction and contaminant distribution, relevant tables, and recommendations for further action.

## 1.0 INTRODUCTION

This report details the results of an Initial Site Investigation (ISI) performed by ECSMarin at Rod's Used Car Dealership (formerly Rod's Mobil), located in East St. Johnsbury, Vermont (Figure 1). The ISI was performed following the discovery of petroleum contamination during the removal of two permitted gasoline underground storage tanks (USTs) and one unpermitted gasoline/waste oil UST in April 1997 (Figure 2). The ISI included the screening of soil from six borings, the installation and sampling of six monitoring wells, and an evaluation of potential threats to nearby sensitive receptors. This work was requested by the Vermont Department of Environmental Conservation Sites Management Section (VT DEC SMS) in a letter dated 21 October 2003.

### 1.1 SITE DESCRIPTION AND PHYSICAL SETTING

The site currently houses an automobile dealership and repair shop located on U.S. Route 2. The USTs were located between the road and the building. The surrounding areas are primarily residential properties located along U.S. Routes 2. The ground surface at the property slopes to the east, toward Moose River. The site and surrounding properties are serviced by private water and septic systems. Moose River is located approximately 150 feet east of the site. The site building does not have a basement or crawlspace.

The site is served by private water and septic systems. According to the Vermont Agency of Natural Resources Internet Mapping Site of Private Wells, at least twenty private water supply wells are located within a ½-mile of the site. The wells that are identified as being on the west side of The Moose River are cross-gradient to the site. The three wells within 1,000 feet of the site are greater than 250 feet deep and located northeast and southwest of the site.

### 1.2 SITE HISTORY

On 30 April 1997, Rusty Ayotte of Bradford Oil Company inspected the removal of two permitted 3,000 gallon gasoline USTs (UST #1 and #2) and one unpermitted 1,000 gallon gasoline/waste oil UST (UST #3) at Rod's Mobil. During the tank pull, soils had peak volatile organic compound (VOC) concentrations ranging from 250 to 300 parts per million (ppm) as measured by a photoionization detector (PID). The USTs were reported to be in fair to good condition upon removal, with no signs of holes. The limits of soil contamination were not defined. All excavated soils were backfilled into the excavation. Soils in the excavation consisted of sand and gravel fill material from grade to approximately seven feet below grade. No bedrock was encountered in the excavation. Groundwater was encountered in the excavation at a depth of approximately five to six feet. Free-phase petroleum product was found to be present as a sheen on groundwater during the excavation, noted in the UST #1 excavation. No replacement tanks were installed at the site and all associated piping was reportedly removed.

### 1.3 OBJECTIVES AND SCOPE OF WORK

The objectives of this ISI were to:

- Evaluate the degree and extent of petroleum contamination in soil and groundwater;
- Qualitatively assess the risks to environmental and public health via relevant sensitive receptors and potential contaminant migration pathways; and,

- Identify appropriate monitoring and/or remedial actions based on the site conditions.

To accomplish these objectives, ECSMarin has:

- Supervised the advancement of six soil borings and subsequent installation of six water-table monitoring wells (MW-1 through MW-6);
- Screened subsurface soils from the soil borings for the possible presence of VOCs using a PID;
- Identified sensitive receptors in the area, and assessed the risk posed by the contamination to these potential receptors; and,
- Prepared this summary report, which details the work performed, qualitatively assesses risks, provides conclusions, and offers recommendations for further action.

## **2.0 INVESTIGATIVE PROCEDURES AND RESULTS**

### **2.1 SOIL BORING / MONITORING WELL INSTALLATION**

On 24 February 2004, ECSMarin supervised the completion of six soil borings and monitoring wells (MW-1 through MW-6) to initially characterize contaminant and hydrogeologic conditions at the site.

During drilling activities, the soils generally consisted of a brown silt, sand, and gravel mix between ground surface and nine feet bgs and dark grayish brown sand with silt to twelve feet bgs. Refusal was met at eight feet below ground surface in MW-5 on presumed bedrock; however, bedrock was not encountered in the other borings to a depth of 12 feet.

MW-1 was installed in the former 3,000-gallon (UST #1) excavation; MW-2 was installed in the former 1,000-gallon gasoline/waste oil (UST #3) excavation; MW-3 was installed in the vicinity of the former dispenser island; MW-4 was installed in the former 3,000-gallon (UST #2) excavation; MW-5 was installed downgradient of the former UST #1 location; and MW-6 was installed downgradient of the dispenser island.

ECSMarin installed the soil borings using direct-push drilling methodology. Soil samples were collected continuously from each boring using four-foot long polyethylene sleeves. All downhole drilling and sampling equipment was decontaminated during use, as appropriate.

The monitoring wells were constructed with one-inch diameter polyvinyl chloride (PVC) casing and factory-slotted 0.010-inch slot screen. The tops of the screen sections were set between three and five feet above the presumed groundwater level, if possible. Sections of solid PVC riser were added to bring the tops of the well casings to approximately 0.5 feet bgs. Clean silica #1 filter sand was placed in the borehole annulus around each well approximately two feet above the slotted interval. A granular bentonite seal, approximately one foot thick, was set above the sand pack and the remainder of the annular space was backfilled with native material.

A flush-mounted steel roadbox was placed over each monitoring well and cemented into place. The wells were developed using a peristaltic pump and/or pre-cleaned bailers and dropline after installation was complete. All purge water was discharged to the ground surface in the vicinity of each well.

On 9 March 2004, the monitoring wells and soil boring locations were surveyed relative to existing site features, with an azimuth accuracy of  $\pm 1.0$  feet and an elevation accuracy of  $\pm 0.01$  feet. Monitoring-well construction details are included on the soil-boring and well-construction logs in Appendix A.

### **2.2 SOIL-SCREENING RESULTS**

During the soil-boring program on 24 February 2004, PID readings ranging from zero to 700 parts per million (ppm) were obtained from soil samples collected from the soil borings. The highest PID readings were recorded on soil samples collected within the smear zone in MW-3, located in the vicinity of the former dispenser island. The second highest PID readings were collected in the smear zone of MW-6, located downgradient of MW-3.

An ECSMarin hydrogeologist screened soil samples from discrete intervals in each soil boring for the possible presence of VOCs using a Thermo 580B portable PID. The PID was calibrated in the field with an isobutylene standard gas to a benzene reference. Soil samples were placed into a polyethylene bag,

which was then sealed, agitated, and allowed to equilibrate. The PID probe was inserted into the headspace, and the highest reading was recorded. PID screening results are included on the boring logs in Appendix A.

### 2.3 GROUNDWATER CHARACTERISTICS

Based on the hydrogeologic data, the groundwater in the unconfined surficial aquifer at the site appears to flow generally east toward The Moose River. The average horizontal hydraulic gradient is approximately 3 percent. The vertical groundwater flow components at the site, and the hydraulic relationship between the shallow unconfined aquifer and the bedrock aquifer, are currently unknown.

Fluid levels were measured in the monitoring wells on 9 March 2004 to calculate the groundwater flow direction. Depths to groundwater in the on-site monitoring wells ranged from 7.70 feet (MW-4) to 9.53 feet (MW-6) below top-of-casing. Static water-table elevations were computed for each monitoring well by subtracting the measured depth-to-water readings from the surveyed top-of-casing elevations, which are relative to an arbitrary site datum of 100.00 feet. Water-level measurements and elevation calculations are presented in Table 1. A groundwater flow direction map was prepared using these data (Figure 3).

### 2.4 SAMPLING AND ANALYSIS

Groundwater samples were collected on 9 March 2004 from the newly installed monitoring wells and analyzed for the possible presence of VOCs via EPA Method 8021B and for total petroleum hydrocarbons (TPH) via EPA Method 8015 for gasoline range organics (GRO) (Figure 4).

Vermont Groundwater Enforcement Standards<sup>2</sup> (VGESs) were exceeded for one or more petroleum-related compounds in all monitoring wells, with the exception of MW-5, which was dry. Benzene, toluene, ethyl benzene, and xylene (BTEX) concentrations ranged from 25 micrograms per liter ( $\mu\text{g/L}$ ) in MW-2, located in the former gasoline/waste oil UST #3 excavation, to 76,770  $\mu\text{g/L}$  in MW-6, located downgradient of the former dispenser island, approximately 20 feet from U.S. Route 2.

TPH was detected in the samples collected from all monitoring wells at concentrations ranging from 0.2 milligrams per liter ( $\text{mg/L}$ ) in MW-2 and MW-4 to 128  $\text{mg/L}$  in MW-6.

The on-site water supply well was sampled on 30 March 2004. The sample was collected from the bathroom sink after purging the line for approximately 10 minutes. No petroleum-related compounds were detected in the shallow supply well, located approximately 30 feet from the northwest corner of the building.

Based on the VOC and TPH groundwater concentrations in samples obtained from the monitoring wells, especially MW-6, petroleum-related contamination may have migrated beneath US Route 2, towards the Moose River. There are no water or sewer lines running parallel to US Route 2 at the site; therefore, the migration of contaminants along utility corridors is not a concern.

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<sup>2</sup> Vermont Groundwater Enforcement Standards (VGESs) for eight petroleum related VOCs are as follows: benzene - 5  $\mu\text{g/L}$ ; toluene — 1,000  $\mu\text{g/L}$ ; ethylbenzene - 700  $\mu\text{g/L}$ ; xylenes — 10,000  $\mu\text{g/L}$ ; MTBE, a gasoline additive, - 40  $\mu\text{g/L}$ ; naphthalene — 20  $\mu\text{g/L}$ ; 1, 2, 4-trimethylbenzene — 5  $\mu\text{g/L}$ ; and 1, 3, 5-trimethylbenzene — 4  $\mu\text{g/L}$ .

Prior to groundwater sample collection, the monitoring wells were purged with a disposable bailer and then sampled in accordance with ECSMarin standard protocols. Purge water was discharged directly to the ground in the vicinity of each well. A trip blank and a duplicate sample were collected to ensure that adequate quality assurance/quality control (QA/QC) standards were maintained.

All samples were transported under chain-of-custody in an ice-filled cooler to Spectrum Analytical, Inc. of Agawam, Massachusetts, where they were analyzed for the possible presence of VOCs by EPA Method 8021B and for TPH by EPA Method 8015 GRO.

Analytical results of the duplicate sample, collected from MW-6, were all within the EPA reporting limit of 30 percent of the sample results. No petroleum-related compounds were detected in the trip blank. Analytical results are included in Table 2 and the laboratory analytical reports are presented in Appendix B.

### 3.0 SENSITIVE RECEPTOR SURVEY AND RISK ASSESSMENT

#### 3.1 SENSITIVE RECEPTOR SURVEY

ECSMarin conducted a survey to identify sensitive receptors in the vicinity of Rod's Mobil that could potentially be impacted by contamination associated with the site. The following sensitive receptors were identified in the vicinity of the property.

- The soils beneath the former UST and dispenser excavation areas;
- The shallow overburden aquifer and onsite supply well;
- Moose River, located 150 feet east of the site; and,
- More than 20 private water supply wells, identified as being within ½-mile of the site.

#### 3.2 RISK ASSESSMENT

ECSMarin qualitatively assessed the risks that the residual soil and dissolved-phase subsurface contamination poses to the receptors identified above. In general, human exposure to petroleum-related contamination is possible through inhalation, ingestion, or direct contact while impacts to environmental receptors are due either to a direct release or contaminant migration through one receptor to another or along a preferential pathway.

- Soil Beneath the Former UST Excavation - Elevated VOCs were detected in soil samples collected during closure of the former USTs. All soils were returned to the excavation. The former excavation area is presently not paved or otherwise capped, but because this area is used as a parking area, access to impacted soils in this area is limited and the risk to human exposure is low.
- Shallow Overburden Aquifer and Onsite Supply Well – The shallow overburden aquifer in the vicinity of the former USTs is impacted by petroleum hydrocarbons. The depth to groundwater is approximately eight feet bgs. The risk of human exposure is considered low.

The site is served by a private water supply well. The well is located approximately 30 feet off of the northwest corner of the building, upgradient of the former UST locations. The well is a shallow spring. Although it is unlikely that the upgradient well has been influenced by the dissolved phase contamination, there is a moderate risk associated with its proximity to the source area.

- Moose River – The Moose River is located approximately 150 feet east of the former UST area. Evidence of petroleum impact was not observed along the bank east of US Route 2 or on the water surface. The downgradient extent of plume migration is not known at this time; however, considering the concentrations in MW-6, there is likely a moderate risk of impact to the Moose River.
- Water Supply Wells – At least 20 private water supply wells are identified as being within ½-mile of the site. Most of these wells are located on the opposite (west) side of the Moose River; however, there are three wells within 1,000 feet of the site. These wells are cross-gradient (northeast and southwest) to the direction of groundwater flow and are greater than 250 feet deep. Based on the relative locations of the supply wells to the former UST area, impact to these wells is unlikely.

## 4.0 CONCLUSIONS

Based on the results of the site investigation described above, ECSMarin concludes the following:

- Groundwater contaminated with petroleum hydrocarbons above VGESs was detected in the vicinity of the gasoline USTs and dispenser island and at least 45 feet downgradient of the dispenser island. The contamination appears to be migrating east toward the Moose River, which is located approximately 150 feet from the site. The downgradient extent of contamination has not been fully characterized, but likely travels under US Route 2. The highest BTEX concentrations were detected in a sample collected from downgradient monitoring well MW-6, located approximately 20 feet west of US Route 2.
- The soils generally consisted of a brown silt, sand, and gravel mix between ground surface and nine feet bgs and dark grayish brown sand with silt to twelve feet bgs. Refusal was met at eight feet below ground surface in MW-5 on presumed bedrock; however, bedrock was not encountered in the other borings to a depth of 12 feet. PID soil headspace readings ranged from non-detect to 700 ppm.
- The groundwater in the unconfined surficial aquifer at the site appears to flow generally east toward the Moose River. The average horizontal hydraulic gradient is approximately 3 percent.
- The Moose River is located approximately 150 feet east of the former UST locations. No petroleum discharge (i.e., oil sheen) was observed at the bank or in the river at locations downgradient of the site on 9 March 2004.
- The site is served by an onsite private overburden supply well, located approximately 30 feet off the northwest corner of the building. The well was sampled on 30 March 2004, and no petroleum hydrocarbons were detected.
- At least 20 private supply wells are located within ½-mile of the site. Based on the relative locations of the supply wells to the former UST area, impact to these wells is unlikely.

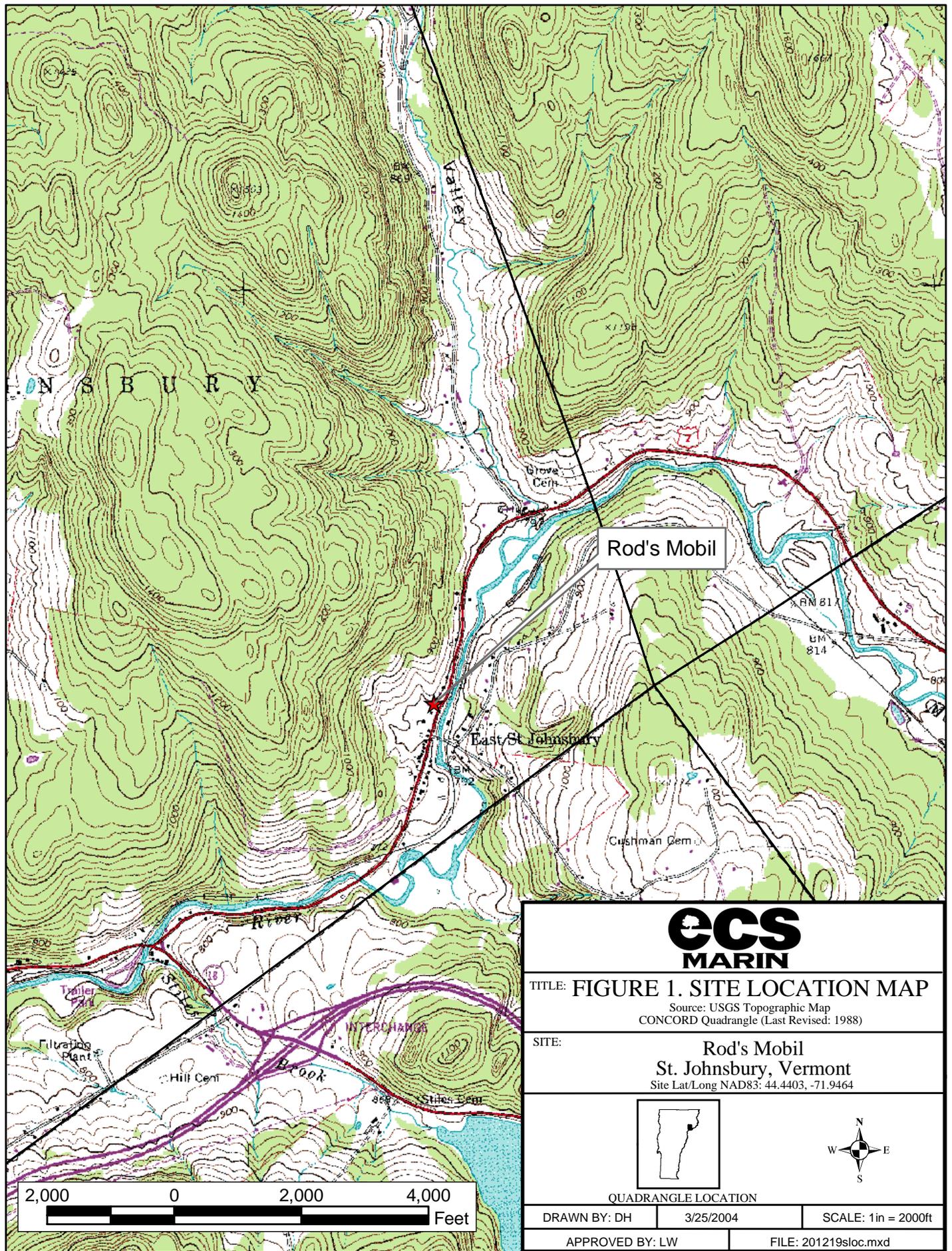
## **5.0 RECOMMENDATIONS**

On the basis of the results of this investigation and the conclusions stated above, ECSMarin recommends the following:

1. In order to define the downgradient extent of petroleum contamination and further evaluate the risk to the Moose River, a Supplemental Site Investigation should be performed that includes the installation of offsite soil borings and monitoring wells. Soil borings/monitoring wells should be hand-installed along the riverbank to determine if dissolved phase groundwater petroleum contamination is entering the Moose River.
2. Groundwater samples should be collected from all monitoring wells and the onsite supply well and analyzed for VOCs by EPA Method 8021B. Depth to groundwater measurements should also be performed to determine groundwater flow direction across the site.
3. Upon completion of the additional work, a summary report should be prepared which includes water-quality analytical results, figures showing groundwater flow direction and contaminant distribution, relevant tables, and recommendations for further action.

## **FIGURES**

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**ecs**  
**MARIN**

**TITLE: FIGURE 1. SITE LOCATION MAP**

Source: USGS Topographic Map  
CONCORD Quadrangle (Last Revised: 1988)

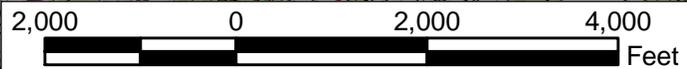
**SITE: Rod's Mobil**  
**St. Johnsbury, Vermont**  
Site Lat/Long NAD83: 44.4403, -71.9464



QUADRANGLE LOCATION

DRAWN BY: DH      3/25/2004      SCALE: 1in = 2000ft

APPROVED BY: LW      FILE: 201219sloc.mxd





Rod's Used  
Car Dealership

Approximate location  
of on-site water  
supply well

Former UST #3  
1,000 gallon gasoline/  
waste oil

MW-4

Former UST #2  
3,000 gallon gasoline

MW-3

Former  
Dispenser  
Island

MW-2

MW-1

Former UST #1  
3,000 gallon gasoline

MW-5

MW-6

Telephone Pole

RT 2

Telephone Pole

Moose River

ALL LOCATIONS ARE APPROXIMATE



FIGURE 2.  
SITE MAP  
With Monitoring Well Locations

Rod's Mobil  
East St. Johnsbury, VT

LEGEND

- MW-2 MONITORING WELL
- CATCH BASIN
- TELEPHONE POLE

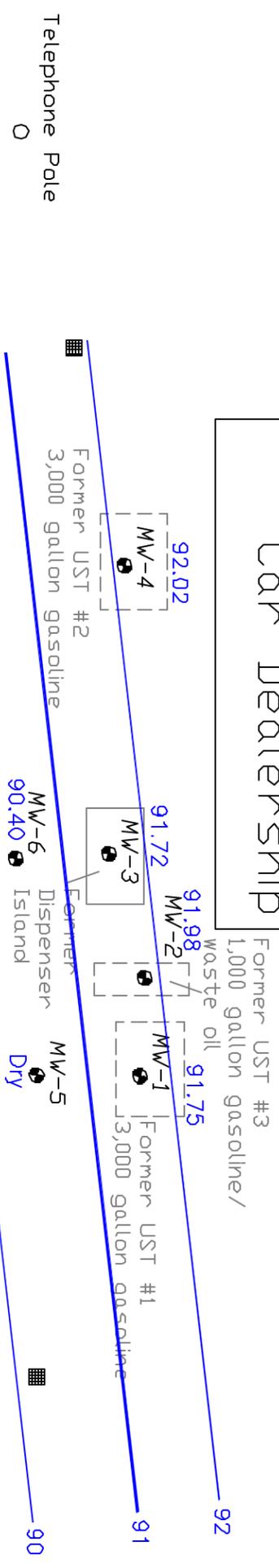


DRAWN BY: DH	DATE: 03/22/04	SCALE: 1" = 20'
APPROVED BY: LW	FILE No.: 201219sp	



Approximate location of on-site water supply well

Rod's Used Car Dealership



RT 2

Telephone Pole

Moose River

LEGEND

- MW-2 MONITORING WELL
- CATCH BASIN
- TELEPHONE POLE
- GROUNDWATER CONTOUR
- TOTAL BTEX CONCENTRATION



ALL LOCATIONS ARE APPROXIMATE



FIGURE 3.  
Groundwater Contours  
Monitoring Date: 9 March 2004

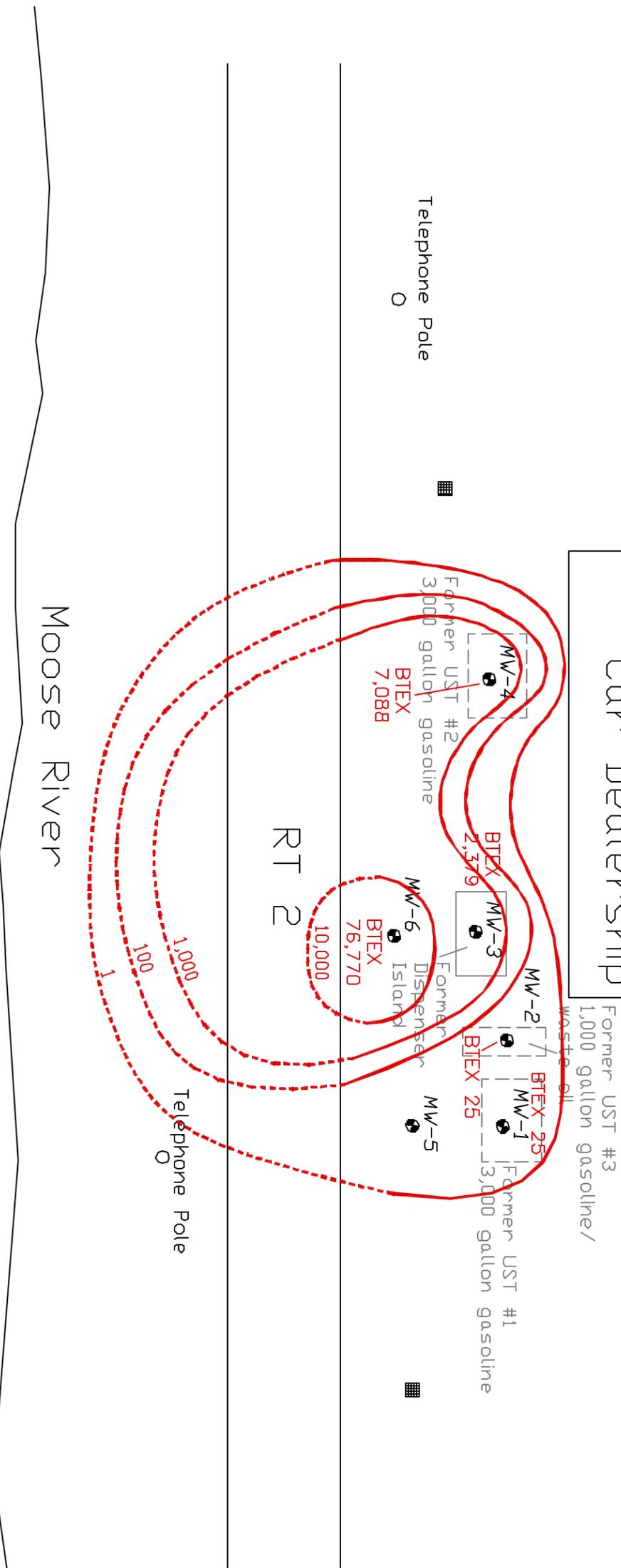
Rod's Mobil  
East St. Johnsbury, VT

DRAWN BY: DH	DATE: 03/22/04	SCALE: 1" = 20'
APPROVED BY: LW	FILE No.:	201219sp



Approximate location  
of on-site water  
supply well  
**BTEX ND**

Rod's Used  
Car Dealership



**LEGEND**

- MW-2 MONITORING WELL
- CATCH BASIN
- TELEPHONE POLE
- CONTAMINANT CONTOUR
- BTEX 25** TOTAL BTEX CONCENTRATION



ALL LOCATIONS ARE APPROXIMATE



FIGURE 4.  
Contaminant Distribution  
Monitoring Date: 9 March 2004

Rod's Mobil  
East St. Johnsbury, VT

DRAWN BY: DH	DATE: 03/22/04	SCALE: 1" = 20'
APPROVED BY: LW	FILE No.:	201219sp

## **TABLES**

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**TABLE 1  
GROUNDWATER ELEVATION CALCULATIONS**

**Rod's Mobil  
East St. Johnsbury, VT**

**Monitoring Date: 9 March 2004**

Well I.D.	Top of Casing Elevation	Depth to Water	Water Table Elevation
MW-1	100.00	8.25	91.75
MW-2	100.18	8.20	91.98
MW-3	100.06	8.34	91.72
MW-4	99.72	7.70	92.02
MW-5	99.74	dry	dry
MW-6	99.93	9.53	90.40

All values reported in feet relative to arbitrary site datum of 100.00 feet.

**Table 2**  
**Summary of Analytical Results**

Rod's Mobil  
East St. Johnsbury, VT

Monitoring Date: 9 March 2004

Well I.D.	Benzene	Toluene	Ethyl benzene	Xylenes	Total BTEX	MTBE	1,3,5-TMB	1,2,4-TMB	Naphthalene	TPH
MW-1	ND<1.0	ND<1.0	<b>21.2</b>	<b>13.3</b>	<b>35</b>	<b>6.0</b>	ND<1.0	<b>15.0</b>	<b>2.3</b>	<b>0.2</b>
MW-2	ND<1.0	<b>1.2</b>	<b>5.1</b>	<b>18.2</b>	<b>25</b>	<b>6.5</b>	<b>6.7</b>	<b>28.6</b>	<b>3.8</b>	<b>1.0</b>
MW-3	<b>45.0</b>	<b>728</b>	<b>162</b>	<b>1,444</b>	<b>2,379</b>	<b>39.0</b>	<b>112</b>	<b>329</b>	<b>24.0</b>	<b>3.7</b>
MW-4	ND<50.0	<b>360</b>	<b>708</b>	<b>6,020</b>	<b>7,088</b>	ND<50.0	<b>336</b>	<b>1,330</b>	<b>204</b>	<b>0.2</b>
MW-5	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
MW-6	<b>1,850</b>	<b>39,100</b>	<b>5,220</b>	<b>30,600</b>	<b>76,770</b>	<b>2,590</b>	<b>2,010</b>	<b>7,000</b>	<b>1,050</b>	<b>128</b>
Duplicate (MW-6)	1,700	36,400	5,290	30,390	73,780	2,290	2,490	8,030	1,380	127
% difference	9	7	1	1	4	13	19	13	24	1
Trip Blank	ND<1	ND<1	ND<1	ND<2	ND<1	ND<1	ND<1	ND<1	ND<1	NS
<b>VGES</b>	<b>5</b>	<b>1,000</b>	<b>700</b>	<b>10,000</b>	<b>--</b>	<b>40</b>	<b>4</b>	<b>5</b>	<b>20</b>	<b>--</b>

Notes:

Results given in micrograms per liter (µg/L).

BTEX - a sum of benzene, toluene, ethylbenzene, and total xylenes

MTBE - methyl tertiary butyl ether

TMB - trimethyl benzene

TPH - total petroleum hydrocarbons (mg/L)

ND - None detected at indicated detection limit.

VGES - Vermont Groundwater Enforcement Standards, shaded area denotes exceedence of VGES

All samples collected by ECSMarin and analyzed by Spectrum Analytical, Inc.

**APPENDIX A**

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**SOIL BORING LOGS AND WELL CONSTRUCTION DIAGRAMS**



65 MILLET STREET (802) 434-4500  
 RICHMOND, VERMONT 05477 (802) 434-6076 - FAX

**BORING / WELL IDENTIFICATION: MW-1**

SITE NAME: **Rod's Mobil**

SITE LOCATION: **East St. Johnsbury**

INSTALLATION DATE: **24 February 2004**

JOB NUMBER: **08-201219**

WELL DEPTH:	<b>12 ft bgs</b>	BORING DEPTH:	<b>12 ft bgs</b>	MARIN REPRESENTATIVE:	<b>Laura Woodard</b>
DEPTH TO WATER (DURING DRILLING):	<b>8 ft bgs</b>	DRILLING COMPANY:	<b>ECSMarin</b>		
SCREEN DIAMETER:	<b>1-inch</b>	DEPTH:	<b>2 to 12 ft bgs</b>	SAMPLING METHOD:	<b>Earthprobe – continuous core</b>
SCREEN TYPE/SIZE:	<b>0.10 factory-slotted PVC</b>			REFERENCE POINT (RP):	
RISER DIAMETER:	<b>1-inch</b>	DEPTH:	<b>0 to 2 ft bgs</b>	ELEVATION OF RP:	<b>not measured</b>
RISER TYPE/SIZE:	<b>PVC</b>				
REMARKS:	<b>In excavation of UST #1; southwest of the garage.</b>				

DEPTH (IN FEET)	SAMPLE DEPTH	RECOVERY (FT)	SAMPLE DESCRIPTION AND NOTES	PID (PPM)	WELL PROFILE	LEGEND
0		48/48	(0-1) Well graded sand, L5Y 5/6 light olive brown, non-plastic, dry granular, very loose, weak cement, mostly quartz, mafic, feldspar, angular to sub rounded.	0.8		Concrete
1						Native Material
2			(2-4) sand, gravel, silt/silty sand with gravel, 10 YR 4/2 dark grayish brown, slightly plastic, dry, cohesive medium still, moderate cementation, angular to sub-angular, micas, qtz, mostly mafics, some bands of leachate.	0.6		Bentonite
3				1.1		Filter Sand
4		48/48	(4-5) same as above.	1.6		Riser
5			(5-8) Well-graded sand, 10YR 7/6 yellow, nonplastic, granular, medium dense, weak cementation, angular to sub-rounded, mostly quartz, some mafics.	0.6		Screen
6				0.6		Water Level
7				0.6		
8			(8-9) Same as above, saturated	2.3		
9				5.0		
10			(9.5-12) silt with sand, 2.5Y 4/2 dark grayish brown, plastic, cohesive, medium still, unable to determine mineralogy	1.4		
11				1.1		
12						
13						
14						
15						
End of Sampling = 12 feet Well set @ 12 feet						

<b>PROPORTIONS USED</b> AND 33-50% SOME 20-33% LITTLE 10-20% TRACE 0-10%	<b>BLOW COUNT (COHESIVE SOILS)</b> <2 VERY SOFT 2-4 SOFT 4-8 MEDIUM STIFF 8-15 STIFF 15-30 VERY STIFF >30 HARD	<b>BLOW COUNT (GRANULAR SOILS)</b> 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE	Notes: PID used: Thermo Model 580B
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65 MILLET STREET (802) 434-4500  
 RICHMOND, VERMONT 05477 (802) 434-6076 - FAX

**BORING / WELL IDENTIFICATION: MW-2**

SITE NAME: **Rod's Mobil**

SITE LOCATION: **East St. Johnsbury**

INSTALLATION DATE: **24 February 2004**

JOB NUMBER: **08-201219**

WELL DEPTH:	<b>12 ft bgs</b>	BORING DEPTH:	<b>12 ft bgs</b>	MARIN REPRESENTATIVE:	<b>Laura Woodard</b>
DEPTH TO WATER (DURING DRILLING):	<b>9 ft bgs</b>	DRILLING COMPANY:	<b>ECSMarin</b>		
SCREEN DIAMETER:	<b>1-inch</b>	DEPTH:	<b>2 to 12 ft bgs</b>	SAMPLING METHOD:	<b>Earthprobe – continuous core</b>
SCREEN TYPE/SIZE:	<b>0.10 factory-slotted PVC</b>			REFERENCE POINT (RP):	
RISER DIAMETER:	<b>1-inch</b>	DEPTH:	<b>0 to 2 ft bgs</b>	ELEVATION OF RP:	<b>not measured</b>
RISER TYPE/SIZE:	<b>PVC</b>				
REMARKS:	In excavation of UST #3; former waste oil tank discovered during tank removal southwest of the garage.				

DEPTH (IN FEET)	SAMPLE DEPTH	RECOVERY (FT)	SAMPLE DESCRIPTION AND NOTES	PID (PPM)	WELL PROFILE	LEGEND
0		48/48	(0-2) Sand, gravel, silt mix (silty sand with gravel) 10YR 4/2 dark greenish brown, slightly plastic, dry, cohesive, medium stiff, moderate cementation, angular to sub rounded, micas, quartz, mafics, trace feldspar.	0.6		Concrete Native Material Bentonite Filter Sand Riser Screen Water Level
1				2.8		
2			(2-4) Well-graded sand with gravel, 10YR 7/6 yellow, non-plastic, granular, medium dense, weak cementation, angular to sub-rounded, mostly qtz and mafics.	3.1		
3				1.3		
4		36/48	(4-5) No recovery			
5			(5-8) Well-graded sand with gravel, 10YR 7/6 yellow, non-plastic, granular, medium dense, weak cementation, angular to sub-rounded, mostly qtz and mafics.	1.9		
6				0.6		
7				0.8		
8		48/48	(8-9) Same as above.	7.0		
9	▼		(9-12) Silty with sand; 2.5YR 4/2 dark grayish brown, plastic, wet, cohesive, medium stiff, strong odor	27.6		
10				3.0		
11				1.6		
12				1.0		
13						
14						
15						
				End of Sampling = 12 feet Well set @ 12 feet		

<b>PROPORTIONS USED</b> AND 33-50% SOME 20-33% LITTLE 10-20% TRACE 0-10%	<b>BLOW COUNT (COHESIVE SOILS)</b> <2 VERY SOFT 2-4 SOFT 4-8 MEDIUM STIFF 8-15 STIFF 15-30 VERY STIFF >30 HARD	<b>BLOW COUNT (GRANULAR SOILS)</b> 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE	Notes: PID used: Thermo Model 580B
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**BORING / WELL IDENTIFICATION: MW-3**

65 MILLET STREET (802) 434-4500  
 RICHMOND, VERMONT 05477 (802) 434-6076 - FAX

SITE NAME: **Rod's Mobil**

SITE LOCATION: **East St. Johnsbury**

INSTALLATION DATE: **24 February 2004**

JOB NUMBER: **08-201219**

WELL DEPTH:	<b>12 ft bgs</b>	BORING DEPTH:	<b>12 ft bgs</b>	MARIN REPRESENTATIVE:	<b>Laura Woodard</b>
DEPTH TO WATER (DURING DRILLING):	<b>10 ft bgs</b>			DRILLING COMPANY:	<b>ECSMarin</b>
SCREEN DIAMETER:	<b>1-inch</b>	DEPTH:	<b>2 to 12 ft bgs</b>		
SCREEN TYPE/SIZE:	<b>0.10 factory-slotted PVC</b>			SAMPLING METHOD:	<b>Earthprobe – continuous core</b>
RISER DIAMETER:	<b>1-inch</b>	DEPTH:	<b>0 to 2 ft bgs</b>	REFERENCE POINT (RP):	
RISER TYPE/SIZE:	<b>PVC</b>			ELEVATION OF RP:	<b>not measured</b>
REMARKS:	Located at former dispenser island vicinity.				

DEPTH (IN FEET)	SAMPLE DEPTH	RECOVERY (FT)	SAMPLE DESCRIPTION AND NOTES	PID (PPM)	WELL PROFILE	LEGEND
0		48/48	(0-4) silty sand with gravel, 10YR 4/2 dark grayish brown, slightly plastic, dry, cohesive; soft, moderate cementation, angular to sub-rounded, quartz mafics, feldspar.	1.1		Concrete
1				46.0		Native Material
2				193		Bentonite
3				260		Filter Sand
4		24/36	(4-5) No recovery			Riser
5			(5-7) Poorly graded sand, 2.5Y 5/4 light olive, brown, moist; slightly plastic, granular medium dense, massive, mostly quartz, sub-rounded to rounded, strong odor.	493		Screen
6				700		Water Level
7			Wood chunks, no sample	531		
8			(8-10) No recovery			
9						
10	▼		(10-12) Poorly graded sand with silt, 2.5Y 3/2 very dark grayish brown, wet, plastic, cohesive, soft, some small laminae.	13.0		
11						
12						
13						
14						
15						
				End of Sampling = 12 feet Well set @ 12 feet		

<b>PROPORTIONS USED</b> AND 33-50% SOME 20-33% LITTLE 10-20% TRACE 0-10%	<b>BLOW COUNT (COHESIVE SOILS)</b> <2 VERY SOFT 2-4 SOFT 4-8 MEDIUM STIFF 8-15 STIFF 15-30 VERY STIFF >30 HARD	<b>BLOW COUNT (GRANULAR SOILS)</b> 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE	Notes:  PID used: Thermo Model 580B
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65 MILLET STREET (802) 434-4500  
 RICHMOND, VERMONT 05477 (802) 434-6076 - FAX

### BORING / WELL IDENTIFICATION: MW-4

SITE NAME: **Rod's Mobil**

SITE LOCATION: **East St. Johnsbury**

INSTALLATION DATE: **24 February 2004**

JOB NUMBER: **08-201219**

WELL DEPTH:	<b>12 ft bgs</b>	BORING DEPTH:	<b>12 ft bgs</b>	MARIN REPRESENTATIVE:	<b>Laura Woodard</b>
DEPTH TO WATER (DURING DRILLING):	<b>10 ft bgs</b>			DRILLING COMPANY:	<b>ECSMarin</b>
SCREEN DIAMETER:	<b>1-inch</b>	DEPTH:	<b>2 to 12 ft bgs</b>	SAMPLING METHOD:	<b>Earthprobe – continuous core</b>
SCREEN TYPE/SIZE:	<b>0.10 factory-slotted PVC</b>			REFERENCE POINT (RP):	
RISER DIAMETER:	<b>1-inch</b>	DEPTH:	<b>0 to 2 ft bgs</b>	ELEVATION OF RP:	<b>not measured</b>
RISER TYPE/SIZE:	<b>PVC</b>				
REMARKS:	Located at former UST #3; south of the garage.				

DEPTH (IN FEET)	SAMPLE DEPTH	RECOVERY (FT)	SAMPLE DESCRIPTION AND NOTES	PID (PPM)	WELL PROFILE	LEGEND
0		48/48	(0-1) Silty sand with gravel, 10YR 4/2 dark grayish brown, dry, slightly plastic, cohesive, very stiff, moderate cementation, angular to subangular, mostly quartz and mafics.	1.1		Concrete
1				1.4		Native Material
2			(2-3) Well-graded sand, 2.5Y 6/4 light yellowish brown, granular, loose, dry, rounded to sub-angular, mostly quartz, trace feldspar	48.8		Bentonite
3			(3-4) Sandy silt with gravel, 10YR 3/3 dark brown, slightly plastic, moist, cohesive, medium stiff, moderate cementation, angular to sub angular.	1.6		Filter Sand
4			(4-6) Same as above	24		Riser
5				1.4		Screen
6			(6-7) Interlayered sand and clay, well-graded sand, 10YR 7/6 yellow, moist, granular medium dense, non-plastic, weak cementation, rounded to sub angular	1.0		Water Level
7			(7-8) Silty sand with clay, several color changes in multiple laminae, plastic, wet, soft.	193		
8			(8-9) Silty sand with clay, 2.5Y 5/6 light olive brown, wet, granular, medium dense, non-plastic, angular to sub-angular.	46		
9			(9-12) Sand with silt, 7.5 YR 5/0 gray, plastic, cohesive, stiff, some laminae of sand, weak cementation, wet.	45		
10	▼			13		
11				3.9		
12				4.0		
13						
14						
15						
				End of Sampling = 12 feet Well set @ 12 feet		

<b>PROPORTIONS USED</b> AND 33-50% SOME 20-33% LITTLE 10-20% TRACE 0-10%	<b>BLOW COUNT (COHESIVE SOILS)</b> <2 VERY SOFT 2-4 SOFT 4-8 MEDIUM STIFF 8-15 STIFF 15-30 VERY STIFF >30 HARD	<b>BLOW COUNT (GRANULAR SOILS)</b> 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE	Notes: PID used: Thermo Model 580B
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65 MILLET STREET (802) 434-4500  
 RICHMOND, VERMONT 05477 (802) 434-6076 - FAX

**BORING / WELL IDENTIFICATION: MW-5**

SITE NAME: **Rod's Mobil**

SITE LOCATION: **East St. Johnsbury**

INSTALLATION DATE: **24 February 2004**

JOB NUMBER: **08-201219**

WELL DEPTH:	<b>8 ft bgs</b>	BORING DEPTH:	<b>8 ft bgs</b>	MARIN REPRESENTATIVE:	<b>Laura Woodard</b>
DEPTH TO WATER (DURING DRILLING):	<b>7 ft bgs</b>			DRILLING COMPANY:	<b>ECSMarin</b>
SCREEN DIAMETER:	<b>1-inch</b>	DEPTH:	<b>2 to 8 ft bgs</b>	SAMPLING METHOD:	<b>Earthprobe – continuous core</b>
SCREEN TYPE/SIZE:	<b>0.10 factory-slotted PVC</b>			REFERENCE POINT (RP):	
RISER DIAMETER:	<b>1-inch</b>	DEPTH:	<b>0 to 2 ft bgs</b>	ELEVATION OF RP:	<b>not measured</b>
RISER TYPE/SIZE:	<b>PVC</b>				
REMARKS:	Located downgradient of former UST #1, near Route 2.				

DEPTH (IN FEET)	SAMPLE DEPTH	RECOVERY (FT)	SAMPLE DESCRIPTION AND NOTES	PID (PPM)	WELL PROFILE	LEGEND
0		48/48	(0-2) Sand, gravel, silt mix, 10YR 5/3 brown, dry, non-plastic, granular, medium dense, moderate cementation, angular to subangular, micas, mafics, and quartz, some bands of leaching	0.8		Concrete
1				1.1		Native Material
2			(2-3) Poorly graded sand, 10YR 7/4 very pale brown, moist, non-plastic, granular, loose, massive, mostly quartz feldspar and mafics	0.8		Bentonite
3			(3-4) Sand gravel silt mix, 7.5 YR 3/2 dark brown, dry, non-plastic, cohesive, stiff, moderate cementation, massive, micas, mafics, quartz.	0.5		Filter Sand
4		24/48	(4-5) No recovery			Riser
5			(5-6) Sand gravel silt mix, same as (3-4).	0.2		Screen
6			(6-7) No recovery (rock chips)			Water Level
7	▼		(7-8) Silt with sand, 2.5 Y 4/4 olive brown, wet, plastic, cohesive, very soft, small laminae, some organics present.	0.0		
8			Met refusal at 8 feet.			
9						
10						
11						
12						
13						
14						
15						
				End of Sampling = 8 feet Well set @ 8 feet		

<b>PROPORTIONS USED</b> AND 33-50% SOME 20-33% LITTLE 10-20% TRACE 0-10%	<b>BLOW COUNT (COHESIVE SOILS)</b> <2 VERY SOFT 2-4 SOFT 4-8 MEDIUM STIFF 8-15 STIFF 15-30 VERY STIFF >30 HARD	<b>BLOW COUNT (GRANULAR SOILS)</b> 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE	Notes: PID used: Thermo Model 580B
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65 MILLET STREET (802) 434-4500  
 RICHMOND, VERMONT 05477 (802) 434-6076 - FAX

## BORING / WELL IDENTIFICATION: MW-6

SITE NAME: **Rod's Mobil**

SITE LOCATION: **East St. Johnsbury**

INSTALLATION DATE: **24 February 2004**

JOB NUMBER: **08-201219**

WELL DEPTH:	<b>12 ft bgs</b>	BORING DEPTH:	<b>12 ft bgs</b>	MARIN REPRESENTATIVE:	<b>Laura Woodard</b>
DEPTH TO WATER (DURING DRILLING):	<b>7.5 ft bgs</b>	DRILLING COMPANY:	<b>ECSMarin</b>		
SCREEN DIAMETER:	<b>1-inch</b>	DEPTH:	<b>2 to 12 ft bgs</b>		
SCREEN TYPE/SIZE:	<b>0.10 factory-slotted PVC</b>			SAMPLING METHOD:	<b>Earthprobe – continuous core</b>
RISER DIAMETER:	<b>1-inch</b>	DEPTH:	<b>0 to 2 ft bgs</b>		
RISER TYPE/SIZE:	<b>PVC</b>			REFERENCE POINT (RP):	
			ELEVATION OF RP:	<b>not measured</b>	
REMARKS:	Located downgradient of the former dispenser island; north of Route 2.				

DEPTH (IN FEET)	SAMPLE DEPTH	RECOVERY (FT)	SAMPLE DESCRIPTION AND NOTES	PID (PPM)	WELL PROFILE	LEGEND
0		48/48	(0-1) Silty sand with gravel, 10YR 4/2, dark grayish brown, slightly plastic, cohesive, soft, friy, weak cementation, angular to sub rounded.	8.0		Concrete
1			(1-4) Well-graded sand with gravel, 10YR 4/3 dark brown, moist, non-plastic, granular, medium dense, sub angular to sub rounded, feldspar, quartz, mafic.	2.2		Native Material
2				1.3		Bentonite
3				2.2		Filter Sand
4			(4-5) No recovery (old asphalt at 5 ft bgs (6" thick).	5.0		Riser
5			(5-6) Rock fragments (granite, possibly very weathered)			Screen
6			(6-8) Poorly graded sand with silt, 10YR 3/0 very dark gray, strong odor; slightly plastic, cohesive, soft, quartz and trace minerals to determine angularity; large quartz cobbles present at 7.5 feet	389 433		Water Level
7	▼			498		
8			(8-9) Same as above.	172		
9			(9-12) Well-graded sand with silt, 7.5 YR 5/0, gray, wet, plastic, cohesive, stiff, several laminae of fine and coarse layers; subrounded to rounded, mostly quartz and mafics present	497		
10				501		
11				175		
12						
13						
14						
15						
End of Sampling = 12 feet Well set @ 12 feet						

<b>PROPORTIONS USED</b> AND 33-50% SOME 20-33% LITTLE 10-20% TRACE 0-10%	<b>BLOW COUNT (COHESIVE SOILS)</b> <2 VERY SOFT 2-4 SOFT 4-8 MEDIUM STIFF 8-15 STIFF 15-30 VERY STIFF >30 HARD	<b>BLOW COUNT (GRANULAR SOILS)</b> 0-4 VERY LOOSE 4-10 LOOSE 10-30 MEDIUM DENSE 30-50 DENSE >50 VERY DENSE	Notes: PID used: Thermo Model 580B
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**APPENDIX B**

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LABORATORY ANALYTICAL REPORTS

Report Date:  
23-Mar-04 12:05

- Final Report
- Re-Issued Report
- Revised Report

## *Laboratory Report*

ECS/Marin  
65 Millet Street; Suite 301  
Richmond, VT 05477  
Attn: Laura Woodard

Project: Rod's Mobil - East St - Johnsbury, VT  
Project #: 08-201219.00

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<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SA09441-01	MW-1	Ground Water	09-Mar-04 11:45	10-Mar-04 13:30
SA09441-02	MW-2	Ground Water	09-Mar-04 11:50	10-Mar-04 13:30
SA09441-03	MW-3	Ground Water	09-Mar-04 12:10	10-Mar-04 13:30
SA09441-04	MW-4	Ground Water	09-Mar-04 12:00	10-Mar-04 13:30
SA09441-05	MW-6	Ground Water	09-Mar-04 12:15	10-Mar-04 13:30
SA09441-06	Duplicate	Ground Water	09-Mar-04 12:18	10-Mar-04 13:30
SA09441-07	Trip	Ground Water	09-Mar-04 08:00	10-Mar-04 13:30

I attest that all information contained within this report has been reviewed for accuracy and checked against all quality control requirements outlined in each applicable method and meet the requirements of NELAC.

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Massachusetts Certification # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87600  
Maine # MA138  
New Hampshire # 2538  
New York # 11393  
Rhode Island # 98  
USDA # S-51435



Authorized by:

Hanibal C. Tayeh, Ph.D.  
President/Laboratory Director

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Sample IdentificationMW-1  
SA09441-01Client Project #

08-201219.00

Matrix

Ground Water

Collection Date/Time

09-Mar-04 11:45

Received

10-Mar-04

<u>Analyte(s)</u>	<u>Result</u>	<u>*RDL/Units</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Analyst</u>	<u>Flag</u>
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**Volatile Organic Compounds**Gasoline Range Organics

Prepared by method Volatiles

Gasoline Range Organics	0.2	0.08 mg/l	1	8015B Modified	17-Mar-04	17-Mar-04	4031144	tim	
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<i>Surrogate: 2,5-Dibromotoluene (GCMS)</i>	114	70-130 %		"	"	"	"	"	
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<i>Surrogate: 4-Bromofluorobenzene</i>	108	70-130 %		"	"	"	"	"	
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Volatile Organic Compounds by 8260B (VT List)

Prepared by method Volatiles

Benzene	BRL	1.0 ug/l	1	SW846 8260B	17-Mar-04	"	4031000	"	
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Ethylbenzene	21.2	1.0 ug/l	1	"	"	"	"	"	
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Methyl tert-butyl ether	6.0	1.0 ug/l	1	"	"	"	"	"	
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Naphthalene	2.3	1.0 ug/l	1	"	"	"	"	"	
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Toluene	BRL	1.0 ug/l	1	"	"	"	"	"	
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1,2,4-Trimethylbenzene	15.0	1.0 ug/l	1	"	"	"	"	"	
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1,3,5-Trimethylbenzene	BRL	1.0 ug/l	1	"	"	"	"	"	
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m,p-Xylene	13.3	2.0 ug/l	1	"	"	"	"	"	
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o-Xylene	BRL	1.0 ug/l	1	"	"	"	"	"	
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<i>Surrogate: 4-Bromofluorobenzene</i>	108	70-130 %		"	"	"	"	"	
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<i>Surrogate: Toluene-d8</i>	97.6	70-130 %		"	"	"	"	"	
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<i>Surrogate: 1,2-Dichloroethane-d4</i>	113	70-130 %		"	"	"	"	"	
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<i>Surrogate: Dibromofluoromethane</i>	103	70-130 %		"	"	"	"	"	
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*This laboratory report is not valid without an authorized signature on the cover page.*

\*Reportable Detection Limit

BRL = Below Reporting Limit

Page 2 of 10

Sample IdentificationMW-2  
SA09441-02Client Project #

08-201219.00

Matrix

Ground Water

Collection Date/Time

09-Mar-04 11:50

Received

10-Mar-04

<i>Analyte(s)</i>	<i>Result</i>	<i>*RDL/Units</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Analyst</i>	<i>Flag</i>
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**Volatile Organic Compounds**Gasoline Range Organics

Prepared by method Volatiles

Gasoline Range Organics	1.0	0.4 mg/l	5	8015B Modified	17-Mar-04	17-Mar-04	4031144	tim	
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<i>Surrogate: 2,5-Dibromotoluene (GCMS)</i>	<i>118</i>	<i>70-130 %</i>		"	"	"	"	"	"
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<i>Surrogate: 4-Bromofluorobenzene</i>	<i>107</i>	<i>70-130 %</i>		"	"	"	"	"	"
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Volatile Organic Compounds by 8260B (VT List)

Prepared by method Volatiles

Benzene	BRL	1.0 ug/l	1	SW846 8260B	19-Mar-04	19-Mar-04	4031145	KL	
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Ethylbenzene	5.1	1.0 ug/l	1	"	"	"	"	"	"
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Methyl tert-butyl ether	6.5	1.0 ug/l	1	"	"	"	"	"	"
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Naphthalene	3.8	1.0 ug/l	1	"	"	"	"	"	"
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Toluene	1.2	1.0 ug/l	1	"	"	"	"	"	"
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1,2,4-Trimethylbenzene	28.6	1.0 ug/l	1	"	"	"	"	"	"
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1,3,5-Trimethylbenzene	6.7	1.0 ug/l	1	"	"	"	"	"	"
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m,p-Xylene	16.2	2.0 ug/l	1	"	"	"	"	"	"
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o-Xylene	2.0	1.0 ug/l	1	"	"	"	"	"	"
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<i>Surrogate: 4-Bromofluorobenzene</i>	<i>84.3</i>	<i>70-130 %</i>		"	"	"	"	"	"
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<i>Surrogate: Toluene-d8</i>	<i>97.0</i>	<i>70-130 %</i>		"	"	"	"	"	"
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<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>87.3</i>	<i>70-130 %</i>		"	"	"	"	"	"
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<i>Surrogate: Dibromofluoromethane</i>	<i>100</i>	<i>70-130 %</i>		"	"	"	"	"	"
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*This laboratory report is not valid without an authorized signature on the cover page.*

\*Reportable Detection Limit

BRL = Below Reporting Limit

Page 3 of 10

Sample IdentificationMW-3  
SA09441-03Client Project #

08-201219.00

Matrix

Ground Water

Collection Date/Time

09-Mar-04 12:10

Received

10-Mar-04

<u>Analyte(s)</u>	<u>Result</u>	<u>*RDL/Units</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Analyst</u>	<u>Flag</u>
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**Volatile Organic Compounds**Gasoline Range Organics

Prepared by method Volatiles

Gasoline Range Organics	3.7	1.5 mg/l	20	8015B Modified	17-Mar-04	17-Mar-04	4031144	tim	
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Surrogate: 2,5-Dibromotoluene (GCMS)	113	70-130 %		"	"	"	"	"	
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Surrogate: 4-Bromofluorobenzene	112	70-130 %		"	"	"	"	"	
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Volatile Organic Compounds by 8260B (VT List)

Prepared by method Volatiles

Benzene	45.0	10.0 ug/l	20	SW846 8260B	17-Mar-04	"	4031000	"	
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Ethylbenzene	162	10.0 ug/l	20	"	"	"	"	"	
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Methyl tert-butyl ether	39.0	10.0 ug/l	20	"	"	"	"	"	
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Naphthalene	24.0	10.0 ug/l	20	"	"	"	"	"	
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Toluene	728	10.0 ug/l	20	"	"	"	"	"	
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1,2,4-Trimethylbenzene	329	10.0 ug/l	20	"	"	"	"	"	
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1,3,5-Trimethylbenzene	112	10.0 ug/l	20	"	"	"	"	"	
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m,p-Xylene	991	20.0 ug/l	20	"	"	"	"	"	
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o-Xylene	453	10.0 ug/l	20	"	"	"	"	"	
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Surrogate: 4-Bromofluorobenzene	112	70-130 %		"	"	"	"	"	
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Surrogate: Toluene-d8	101	70-130 %		"	"	"	"	"	
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Surrogate: 1,2-Dichloroethane-d4	117	70-130 %		"	"	"	"	"	
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Surrogate: Dibromofluoromethane	103	70-130 %		"	"	"	"	"	
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\*Reportable Detection Limit

BRL = Below Reporting Limit

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Sample IdentificationMW-4  
SA09441-04Client Project #

08-201219.00

Matrix

Ground Water

Collection Date/Time

09-Mar-04 12:00

Received

10-Mar-04

<u>Analyte(s)</u>	<u>Result</u>	<u>*RDL/Units</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Analyst</u>	<u>Flag</u>
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**Volatile Organic Compounds**Gasoline Range Organics

Prepared by method Volatiles

Gasoline Range Organics	0.2	0.08 mg/l	1	8015B Modified	17-Mar-04	17-Mar-04	4031144	tim	
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<i>Surrogate: 2,5-Dibromotoluene (GCMS)</i>	112	70-130 %		"	"	"	"	"	
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<i>Surrogate: 4-Bromofluorobenzene</i>	115	70-130 %		"	"	"	"	"	
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Volatile Organic Compounds by 8260B (VT List)

Prepared by method Volatiles

Benzene	BRL	50.0 ug/l	50	SW846 8260B	17-Mar-04	"	4031000	"	
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Ethylbenzene	708	50.0 ug/l	50	"	"	"	"	"	
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Methyl tert-butyl ether	BRL	50.0 ug/l	50	"	"	"	"	"	
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Naphthalene	204	50.0 ug/l	50	"	"	"	"	"	
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Toluene	360	50.0 ug/l	50	"	"	"	"	"	
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1,2,4-Trimethylbenzene	1,330	50.0 ug/l	50	"	"	"	"	"	
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1,3,5-Trimethylbenzene	336	50.0 ug/l	50	"	"	"	"	"	
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m,p-Xylene	4,350	100 ug/l	50	"	"	"	"	"	
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o-Xylene	1,670	50.0 ug/l	50	"	"	"	"	"	
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<i>Surrogate: 4-Bromofluorobenzene</i>	115	70-130 %		"	"	"	"	"	
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<i>Surrogate: Toluene-d8</i>	101	70-130 %		"	"	"	"	"	
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<i>Surrogate: 1,2-Dichloroethane-d4</i>	116	70-130 %		"	"	"	"	"	
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<i>Surrogate: Dibromofluoromethane</i>	106	70-130 %		"	"	"	"	"	
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\*Reportable Detection Limit

BRL = Below Reporting Limit

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Sample Identification

MW-6  
SA09441-05

Client Project #

08-201219.00

Matrix

Ground Water

Collection Date/Time

09-Mar-04 12:15

Received

10-Mar-04

<u>Analyte(s)</u>	<u>Result</u>	<u>*RDL/Units</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Analyst</u>	<u>Flag</u>
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**Volatile Organic Compounds**Gasoline Range Organics

Prepared by method Volatiles

Gasoline Range Organics	128	75.0 mg/l	1000	8015B Modified	17-Mar-04	17-Mar-04	4031144	tim	
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<i>Surrogate: 2,5-Dibromotoluene (GCMS)</i>	113	70-130 %		"	"	"	"	"	
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<i>Surrogate: 4-Bromofluorobenzene</i>	111	70-130 %		"	"	"	"	"	
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Volatile Organic Compounds by 8260B (VT List)

Prepared by method Volatiles

Benzene	1,850	500 ug/l	1000	SW846 8260B	17-Mar-04	"	4031000	"	
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Ethylbenzene	5,220	500 ug/l	1000	"	"	"	"	"	
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Methyl tert-butyl ether	2,590	500 ug/l	1000	"	"	"	"	"	
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Naphthalene	1,050	500 ug/l	1000	"	"	"	"	"	
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Toluene	39,100	500 ug/l	1000	"	"	"	"	"	
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1,2,4-Trimethylbenzene	7,000	500 ug/l	1000	"	"	"	"	"	
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1,3,5-Trimethylbenzene	2,010	500 ug/l	1000	"	"	"	"	"	
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m,p-Xylene	21,200	1000 ug/l	1000	"	"	"	"	"	
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o-Xylene	9,400	500 ug/l	1000	"	"	"	"	"	
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<i>Surrogate: 4-Bromofluorobenzene</i>	111	70-130 %		"	"	"	"	"	
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<i>Surrogate: Toluene-d8</i>	97.2	70-130 %		"	"	"	"	"	
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<i>Surrogate: 1,2-Dichloroethane-d4</i>	120	70-130 %		"	"	"	"	"	
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<i>Surrogate: Dibromofluoromethane</i>	107	70-130 %		"	"	"	"	"	
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\*Reportable Detection Limit

BRL = Below Reporting Limit

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Sample Identification

**Duplicate**  
SA09441-06

Client Project #

08-201219.00

Matrix

Ground Water

Collection Date/Time

09-Mar-04 12:18

Received

10-Mar-04

<u>Analyte(s)</u>	<u>Result</u>	<u>*RDL/Units</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Analyst</u>	<u>Flag</u>
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**Volatile Organic Compounds**Gasoline Range Organics

Prepared by method Volatiles

Gasoline Range Organics	127	75.0 mg/l	1000	8015B Modified	17-Mar-04	17-Mar-04	4031144	tim	
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<i>Surrogate: 2,5-Dibromotoluene (GCMS)</i>	114	70-130 %		"	"	"	"	"	
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<i>Surrogate: 4-Bromofluorobenzene</i>	113	70-130 %		"	"	"	"	"	
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Volatile Organic Compounds by 8260B (VT List)

Prepared by method Volatiles

Benzene	1,700	500 ug/l	1000	SW846 8260B	17-Mar-04	"	4031000	"	
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Ethylbenzene	5,290	500 ug/l	1000	"	"	"	"	"	
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Methyl tert-butyl ether	2,290	500 ug/l	1000	"	"	"	"	"	
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Naphthalene	1,380	500 ug/l	1000	"	"	"	"	"	
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Toluene	36,400	500 ug/l	1000	"	"	"	"	"	
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1,2,4-Trimethylbenzene	8,030	500 ug/l	1000	"	"	"	"	"	
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1,3,5-Trimethylbenzene	2,490	500 ug/l	1000	"	"	"	"	"	
------------------------	-------	----------	------	---	---	---	---	---	--

m,p-Xylene	21,000	1000 ug/l	1000	"	"	"	"	"	
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o-Xylene	9,390	500 ug/l	1000	"	"	"	"	"	
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<i>Surrogate: 4-Bromofluorobenzene</i>	113	70-130 %		"	"	"	"	"	
--	-----	----------	--	---	---	---	---	---	--

<i>Surrogate: Toluene-d8</i>	101	70-130 %		"	"	"	"	"	
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<i>Surrogate: 1,2-Dichloroethane-d4</i>	117	70-130 %		"	"	"	"	"	
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<i>Surrogate: Dibromofluoromethane</i>	103	70-130 %		"	"	"	"	"	
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\*Reportable Detection Limit

BRL = Below Reporting Limit

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Sample Identification

**Trip**  
SA09441-07

Client Project #

08-201219.00

Matrix

Ground Water

Collection Date/Time

09-Mar-04 08:00

Received

10-Mar-04

<i>Analyte(s)</i>	<i>Result</i>	<i>*RDL/Units</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Analyst</i>	<i>Flag</i>
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**Volatile Organic Compounds**Volatile Organic Compounds by 8260B (VT List)

Prepared by method Volatiles

Benzene	BRL	1.0 ug/l	1	SW846 8260B	17-Mar-04	17-Mar-04	4031000	tim	
Ethylbenzene	BRL	1.0 ug/l	1	"	"	"	"	"	
Methyl tert-butyl ether	BRL	1.0 ug/l	1	"	"	"	"	"	
Naphthalene	BRL	1.0 ug/l	1	"	"	"	"	"	
Toluene	BRL	1.0 ug/l	1	"	"	"	"	"	
1,2,4-Trimethylbenzene	BRL	1.0 ug/l	1	"	"	"	"	"	
1,3,5-Trimethylbenzene	BRL	1.0 ug/l	1	"	"	"	"	"	
m,p-Xylene	BRL	2.0 ug/l	1	"	"	"	"	"	
o-Xylene	BRL	1.0 ug/l	1	"	"	"	"	"	

*Surrogate: 4-Bromofluorobenzene*

113

70-130 %

"

"

"

"

"

*Surrogate: Toluene-d8*

101

70-130 %

"

"

"

"

"

*Surrogate: 1,2-Dichloroethane-d4*

118

70-130 %

"

"

"

"

"

*Surrogate: Dibromofluoromethane*

106

70-130 %

"

"

"

"

"

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\*Reportable Detection Limit

BRL = Below Reporting Limit

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### Volatile Organic Compounds - Quality Control

Analyte(s)	Result	*RDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
<b>Batch 4031000 - Volatiles</b>										
<b>Blank (4031000-BLK1)</b>				Prepared & Analyzed: 17-Mar-04						
Benzene	BRL		1.0 ug/l							
Ethylbenzene	BRL		1.0 ug/l							
Methyl tert-butyl ether	BRL		1.0 ug/l							
Naphthalene	BRL		1.0 ug/l							
Toluene	BRL		1.0 ug/l							
1,2,4-Trimethylbenzene	BRL		1.0 ug/l							
1,3,5-Trimethylbenzene	BRL		1.0 ug/l							
m,p-Xylene	BRL		2.0 ug/l							
o-Xylene	BRL		1.0 ug/l							
<i>Surrogate: 4-Bromofluorobenzene</i>	57.6		ug/l	50.0		115	70-130			
<i>Surrogate: Toluene-d8</i>	55.6		ug/l	50.0		111	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	53.3		ug/l	50.0		107	70-130			
<i>Surrogate: Dibromofluoromethane</i>	48.4		ug/l	50.0		96.8	70-130			
<b>Batch 4031144 - Volatiles</b>										
<b>Blank (4031144-BLK1)</b>				Prepared: 17-Mar-04 Analyzed: 19-Mar-04						
Gasoline Range Organics	BRL		0.08 mg/l							
<i>Surrogate: 2,5-Dibromotoluene (GCMS)</i>	57.2		mg/l	50.0		114	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	59.6		mg/l	50.0		119	70-130			
<b>Batch 4031145 - Volatiles</b>										
<b>Blank (4031145-BLK1)</b>				Prepared & Analyzed: 19-Mar-04						
Benzene	BRL		1.0 ug/l							
Ethylbenzene	BRL		1.0 ug/l							
Methyl tert-butyl ether	BRL		1.0 ug/l							
Naphthalene	BRL		1.0 ug/l							
Toluene	BRL		1.0 ug/l							
1,2,4-Trimethylbenzene	BRL		1.0 ug/l							
1,3,5-Trimethylbenzene	BRL		1.0 ug/l							
m,p-Xylene	BRL		2.0 ug/l							
o-Xylene	BRL		1.0 ug/l							
<i>Surrogate: 4-Bromofluorobenzene</i>	25.0		ug/l	30.0		83.3	70-130			
<i>Surrogate: Toluene-d8</i>	27.6		ug/l	30.0		92.0	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	27.0		ug/l	30.0		90.0	70-130			
<i>Surrogate: Dibromofluoromethane</i>	31.3		ug/l	30.0		104	70-130			

*This laboratory report is not valid without an authorized signature on the cover page.*

\*Reportable Detection Limit

BRL = Below Reporting Limit

## Notes and Definitions

QM-10 LCS/LCSD were analyzed in place of MS/MSD.

BRL Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit

dry Sample results reported on a dry weight basis

NR Not Reported

RPD Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The RDL is generally 5 to 10 times the MDL. However, it may be nominally chosen within these guidelines to simplify data reporting. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Validated by:  
Hanibal C. Tayeh, Ph.D.  
Dan DeAlmeida



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

# 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.
- All samples are disposed of after 60 days unless otherwise instructed.

Page 1 of 1

Report To: ECS Marin  
65 Millet St, Suite 301  
Richmond VT

Invoice To: ECS Marin  
Agawam, MA

Project No.: 08-201219.00

Site Name: Rod's Mobil

Location: East St. Johnsbury State: VT

Project Mgr.: Laura Woodard

Inv# 2403 0692  
 P.O. No.: \_\_\_\_\_ RQN: \_\_\_\_\_

Sampler(s): MD/LW

1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid  
 7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=\_\_\_\_\_ 10=\_\_\_\_\_

DW=Drinking Water GW=Groundwater WW=Wastewater  
 O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air  
 X1=\_\_\_\_\_ X2=\_\_\_\_\_ X3=\_\_\_\_\_

Containers:

Analyses:

Notes:

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	8021B VT SCAN	8015 GRO
<u>SA09441-01</u>	<u>MW-1</u>	<u>3/9/04</u>	<u>1145</u>	<u>G</u>	<u>GW</u>	<u>2</u>	<u>4</u>				<u>X</u>	<u>X</u>
<u>-02</u>	<u>MW-2</u>	↓	<u>1150</u>	↓	↓	↓	<u>3</u>				↓	↓
<u>-03</u>	<u>MW-3</u>	↓	<u>1210</u>	↓	↓	↓	↓				↓	↓
<u>-04</u>	<u>MW-4</u>	↓	<u>1200</u>	↓	↓	↓	↓				↓	↓
<u>-05</u>	<u>MW-6</u>	↓	<u>1215</u>	↓	↓	↓	↓				↓	↓
<u>-06</u>	<u>Duplicate</u>	↓	<u>1218</u>	↓	↓	↓	<u>3</u>				↓	↓
<u>-07</u>	<u>Trip</u>	↓	<u>0800</u>	↓	↓	↓	<u>2</u>				↓	<u>-</u>

1 broken (Received)

1 Received Broken

Relinquished by:

Received by:

Date:

Time:

Laura Woodard  
Leck

UK Knowles

3/9/04 1445  
3/10/04 130

Fax results when available to \_\_\_\_\_

E-mail results when available to lwoodard@ecs Marin.com

Condition upon Receipt:  Iced  Ambient  2 °C

Report Date:  
13-Apr-04 12:16

- Final Report
- Re-Issued Report
- Revised Report

## *Laboratory Report*

ECS/Marin  
65 Millet Street; Suite 301  
Richmond, VT 05477  
Attn: Laura Woodard

Project: Rod's Mobil - East St - Johnsbury, VT  
Project #: 08201219

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<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SA10435-01	Supply Well	Ground Water	30-Mar-04 13:00	31-Mar-04 13:48

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. All applicable NELAC requirements have been met.

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Rhode Island # 98  
USDA # S-51435



Authorized by:

Hanibal C. Tayeh, Ph.D.  
President/Laboratory Director

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Sample Identification  
**Supply Well**  
 SA10435-01

Client Project #  
 08201219

Matrix  
 Ground Water

Collection Date/Time  
 30-Mar-04 13:00

Received  
 31-Mar-04

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Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
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**Volatile Organic Compounds**

*Volatile Organic Compounds by 8260B*

Prepared by method Volatiles

Benzene	BRL	1.0 ug/l	1	SW846 8260B	07-Apr-04	07-Apr-04	4040308	KW	
Ethylbenzene	BRL	1.0 ug/l	1	"	"	"	"	"	
Methyl tert-butyl ether	BRL	1.0 ug/l	1	"	"	"	"	"	
Naphthalene	BRL	1.0 ug/l	1	"	"	"	"	"	
Toluene	BRL	1.0 ug/l	1	"	"	"	"	"	
1,2,4-Trimethylbenzene	BRL	1.0 ug/l	1	"	"	"	"	"	
1,3,5-Trimethylbenzene	BRL	1.0 ug/l	1	"	"	"	"	"	
m,p-Xylene	BRL	2.0 ug/l	1	"	"	"	"	"	
o-Xylene	BRL	1.0 ug/l	1	"	"	"	"	"	

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<i>Surrogate: 4-Bromofluorobenzene</i>	<i>96.4</i>	<i>70-130 %</i>		"	"	"	"	"	
<i>Surrogate: Toluene-d8</i>	<i>100</i>	<i>70-130 %</i>		"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>102</i>	<i>70-130 %</i>		"	"	"	"	"	
<i>Surrogate: Dibromofluoromethane</i>	<i>101</i>	<i>70-130 %</i>		"	"	"	"	"	

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*This laboratory report is not valid without an authorized signature on the cover page.*

\*Reportable Detection Limit

BRL = Below Reporting Limit

## Volatile Organic Compounds - Quality Control

Analyte(s)	Result	*RDL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
<b>Batch 4040308 - Volatiles</b>										
<b>Blank (4040308-BLK1)</b>			Prepared & Analyzed: 07-Apr-04							
Benzene	BRL	1.0	ug/l							
Ethylbenzene	BRL	1.0	ug/l							
Methyl tert-butyl ether	BRL	1.0	ug/l							
Naphthalene	BRL	1.0	ug/l							
Toluene	BRL	1.0	ug/l							
1,2,4-Trimethylbenzene	BRL	1.0	ug/l							
1,3,5-Trimethylbenzene	BRL	1.0	ug/l							
m,p-Xylene	BRL	2.0	ug/l							
o-Xylene	BRL	1.0	ug/l							
<i>Surrogate: 4-Bromofluorobenzene</i>	48.1		ug/l	50.0		96.2	70-130			
<i>Surrogate: Toluene-d8</i>	50.4		ug/l	50.0		101	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	50.0		ug/l	50.0		100	70-130			
<i>Surrogate: Dibromofluoromethane</i>	50.9		ug/l	50.0		102	70-130			
<b>Matrix Spike (4040308-MS1)</b>			Source: SA10523-02		Prepared & Analyzed: 07-Apr-04					
Benzene	19.7		ug/l	20.0	BRL	98.5	70-130			
Chlorobenzene	19.5		ug/l	20.0	BRL	97.5	70-130			
1,1-Dichloroethene	18.9		ug/l	20.0	BRL	94.5	70-130			
Toluene	20.0		ug/l	20.0	BRL	100	70-130			
Trichloroethene	19.4		ug/l	20.0	BRL	97.0	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	49.1		ug/l	50.0		98.2	70-130			
<i>Surrogate: Toluene-d8</i>	49.7		ug/l	50.0		99.4	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	49.2		ug/l	50.0		98.4	70-130			
<i>Surrogate: Dibromofluoromethane</i>	49.2		ug/l	50.0		98.4	70-130			
<b>Matrix Spike Dup (4040308-MSD1)</b>			Source: SA10523-02		Prepared & Analyzed: 07-Apr-04					
Benzene	19.1		ug/l	20.0	BRL	95.5	70-130	3.09	30	
Chlorobenzene	18.0		ug/l	20.0	BRL	90.0	70-130	8.00	30	
1,1-Dichloroethene	17.9		ug/l	20.0	BRL	89.5	70-130	5.43	30	
Toluene	19.2		ug/l	20.0	BRL	96.0	70-130	4.08	30	
Trichloroethene	18.4		ug/l	20.0	BRL	92.0	70-130	5.29	30	
<i>Surrogate: 4-Bromofluorobenzene</i>	45.9		ug/l	50.0		91.8	70-130			
<i>Surrogate: Toluene-d8</i>	49.9		ug/l	50.0		99.8	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	48.6		ug/l	50.0		97.2	70-130			
<i>Surrogate: Dibromofluoromethane</i>	49.5		ug/l	50.0		99.0	70-130			

*This laboratory report is not valid without an authorized signature on the cover page.*

\*Reportable Detection Limit

BRL = Below Reporting Limit

## Notes and Definitions

BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The RDL is generally 5 to 10 times the MDL. However, it may be nominally chosen within these guidelines to simplify data reporting. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Validated by:  
Hanibal C. Tayeh, Ph.D.  
Nicole Brown



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

# 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.
- All samples are disposed of after 60 days unless otherwise instructed.

Page 1 of 1

Report To: ECS Marin  
65 MILLET ST, SUITE 301  
RICHMOND, VT 05477

Invoice To: \_\_\_\_\_  
WV#24040174

Project No.: 08201219

Site Name: ROD'S MOBIL

Location: E. ST. DUNSBURY State: VT

Project Mgr.: LAURA WOODARD

P.O. No.: \_\_\_\_\_ RQN: \_\_\_\_\_

Sampler(s): MIKE DORAN

1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid  
 7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=\_\_\_\_\_ 10=\_\_\_\_\_

#### Containers:

#### Analyses:

#### Notes:

DW=Drinking Water GW=Groundwater WW=Wastewater  
 O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air  
 X1=\_\_\_\_\_ X2=\_\_\_\_\_ X3=\_\_\_\_\_

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic										
1043501	SUPPLY WELL	3/30/04	13:00	G	GW	2	2													

Relinquished by:

Received by:

Date:

Time:

Michael...  
 UPS

Simon...

3/30/04

300

3/31/04

1348

Fax results when available to (\_\_\_\_) \_\_\_\_\_

E-mail results when available to lwoodard@ecs.marine.com

Condition upon Receipt:  Iced  Ambient  4 °C

CHEM ICE PACK

Cooler