



WASTE MANAGEMENT

OCT 2 10 17 AM '98

September 30, 1998

Mr. Robert Butler
VT Department of Environmental Conservation
Waste Management Division
103 South Main St./ West Bldg.
Waterbury, VT 05671-0404

RE: Subsurface Investigation, Londonderry Town Garage, Londonderry, VT,
(VTDEC #97-2324)

Dear Robert:

Enclosed please find the September 1998 *Report on the Site Investigation of Suspected Subsurface Petroleum Contamination* for the Londonderry Town Garage site in Londonderry, Vermont. Mr. Jim Twitchell requested that we forward a copy to you. Please do not hesitate to call if you have any questions or comments.

Sincerely,

Timothy J. Kelly, PG
Geologist

Encl.

cc: Jim Twitchell (w/o encl.)
GI #59841261

**REPORT ON THE
SITE INVESTIGATION
OF SUSPECTED SUBSURFACE
PETROLEUM CONTAMINATION**

AT

**LONDONDERRY TOWN GARAGE
South Londonderry, Vermont**

VTDEC Site #97-2324
Griffin Proj. #59841261

September 1998

Prepared For:

Jim Twitchell, Town Clerk
Town of Londonderry
PO Box 118
Londonderry, VT 05155

Prepared by



P.O. Box 943/ 19 Commerce St.
Williston, Vermont 05495
(802) 865-4288

WASTE MANAGEMENT
DIVISION

Oct 2 10 17 AM '98

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I. INTRODUCTION

This report provides a summary of the tasks completed for the site investigation of suspected subsurface petroleum contamination at the Londonderry Town Garage on Old School Road in Londonderry, Vermont (see Site Location Map in Appendix A). Results of the following investigative tasks performed by Griffin International, Inc., (Griffin) are presented:

- ◇ monitoring well installation;
- ◇ site survey;
- ◇ determination of groundwater flow direction and gradient;
- ◇ groundwater sampling and analyses;
- ◇ sensitive receptor survey.

This work is being performed based on a request from Mr. Robert Butler of the Vermont Department of Environmental Conservation (VTDEC) in a letter to Mr. Jim Twitchell of the Town of Londonderry, dated June 4, 1998. Work was performed in accordance with the May 8, 1998, *Work Plan and Cost Estimate for the Initial Site Investigation of Suspected Petroleum Contamination*, prepared by Griffin.

II. SITE BACKGROUND

Londonderry Town Garage is located at the end of Old School Road, approximately one quarter mile south of the intersection of Vermont Route 100 and Thompsonburg Road in South Londonderry, Vermont (see Site Location Map in Appendix A). Topography at the site is flat in the vicinity of the town garage building. The Londonderry Town Garage is bordered on the north, west, and south sides by residential properties. East of the garage is a woodland area.

The subject property and the surrounding properties are served by private water supply wells. The site is underlain by kame terrace outwash gravel according to the *Surficial Geologic Map of Vermont* (Ref. 1). The bedrock underlying the site is mapped as fine to medium-grained biotitic gneiss of the Cambrian-aged Mount Holly Complex, according to the *Centennial Geologic Map of Vermont* (Ref. 2).

The suspected sources of petroleum contamination at the site are spills and overfills associated with the fill piping of the former 10,000-gallon capacity diesel underground storage tank (UST) as detected during a UST removal inspection on December 16, 1997. The existing 10,000-gallon UST, which replaced the former 10,000-gallon UST, and the associated fuel dispenser is in approximately the same location as the previous UST and dispenser. Approximately 120 cubic yards of soils, slightly contaminated with petroleum, were stockpiled on-site north of the Londonderry Town Garage building.

III. INVESTIGATIVE PROCEDURES

To further define the extent of subsurface petroleum contamination in the area of Londonderry Town Garage, the following additional investigative tasks were undertaken as per the May 8, 1998, Work Plan: installation of four monitoring wells; site survey; determination of groundwater flow direction and gradient; groundwater sampling and analyses for petroleum-related constituents; and an evaluation of sensitive receptors.

A. Monitoring Well Installation

On June 23, 1998, four overburden monitoring wells were installed at the site (see Site Map in Appendix A). The boreholes were drilled utilizing hollow-stem auger (HSA) drilling methods. T&K Drilling of Troy, New Hampshire, installed the wells under the direct supervision of a Griffin geologist. During borehole advancement, soil samples were collected every five feet. Soil samples were screened for volatile organic compounds (VOCs) using an HNu™ Model HW-101 portable photoionization detector (PID) using the Griffin Jar/Polyethylene Bag Headspace Screening Protocol, which conforms to state and industry standards. Soil characteristics and headspace concentrations were recorded by the geologist in detailed well logs which are presented in Appendix B.

Monitoring well construction records are included in Appendix B. Wells were completed with 2-inch diameter Schedule 40 PVC riser and factory-slotted screened intervals (0.010-inch slots). A silica sand pack was installed in the annular space surrounding the screened interval. The sand pack was brought to a minimum of 0.5 foot above the top of the screened interval. Each of the four wells was completed with a flush-mounted road box and secured with a compression cap.

The soils encountered in the monitoring well boreholes consisted of medium brown, fine to coarse sand with gravel, silt, and cobbles from grade to approximately 2 feet below grade. Soils from 5 feet below grade to 7 feet below grade generally consisted of interbedded dark brown, locally organic, micaceous silt and olive-gray or brown silt with some sand. Soils from 10 feet below grade to 12 feet below grade generally consisted of olive to light brown silt with some sand. Auger refusal, inferred to be the bedrock surface, was encountered at 9.5 feet below grade in the MW-4 boring. Weathered bedrock was encountered at 12.6 to 13.0 feet below grade in MW-2. No volatile organic compounds (VOCs) were detected above 1 part per million (ppm) in the headspace of soil samples collected from the MW-1, MW-2, and MW-3 boreholes. No petroleum odors or stains were observed in the MW-1, MW-2, and MW-3 boreholes. VOCs were detected at a headspace concentration of 3.3 ppm in the soil screening sample collected from 5 feet to 7 feet below grade in MW-4 and at a headspace concentration of 36 ppm on the auger cuttings from below approximately 7 feet below grade in MW-4. Minor petroleum odors were observed in the soil samples collected from the MW-4 borehole. No petroleum staining was observed in the MW-4 borehole.

B. Determination of Groundwater Flow Direction and Gradient

The four wells were located in azimuth and elevation for inclusion on the Site Map presented in Appendix A. The top of PVC casing in MW1 was assigned an arbitrary elevation of 100.00 feet.

Prior to groundwater sampling on June 29, 1998, all four on-site monitoring wells were monitored for presence of free floating product and depths to water. Results are tabulated as Liquid Level Monitoring Data in Appendix C. No free-phase product was noted in the wells on June 29, 1998. For each well, the measured depth to water was subtracted from the surveyed elevation of the measurement reference point to determine the water table elevation. Water table elevations were plotted on the site map to generate the Groundwater Contour Map presented in Appendix A. From this figure it can be seen that the groundwater flow is directed generally to the west toward the West River at an approximate gradient of 1.0%.

C. Groundwater Sampling and Analyses

A groundwater sample was collected from each of the four on-site monitoring wells, using disposable bailers, on June 29, 1998. Groundwater samples were analyzed by EPA Method 602 by Endyne, Inc., laboratory of Williston, Vermont, for petroleum-related constituents including benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds and methyl tertiary butyl ether (MTBE) and by Modified EPA Method 8100 for total petroleum hydrocarbons (TPHs). Quality control (QC) samples (a trip blank and duplicate sample) were also collected. Analytical results are summarized in tabular form in Appendix D. The applicable groundwater standards are provided for reference in this summary table. Appendix D also contains the analytical laboratory reports. Analytical results of the trip blank and duplicate sample indicate that adequate Quality Assurance/ Quality Control was maintained throughout sample collection and analyses.

Xylenes were detected in the sample from MW-4 at a concentration well below the Vermont Groundwater Enforcement Standards (VGES) for these compounds. Total petroleum hydrocarbons were detected at a trace concentration below the quantitation limit in MW-4. There is no VGES for TPHs. No VOCs were detected in samples collected from MW-1, MW-2, or MW-3 on June 29, 1998. No TPHs were detected in samples collected from MW-1, MW-2, or MW-3 on June 29, 1998.

The total BTEX and MTBE concentrations detected in the samples from the monitoring wells were plotted on the Site Map to generate the Contaminant Concentration Map contained in Appendix A.

D. Surface Water Inspection

During the monitoring well installation on June 23, 1998, visual, olfactory, and PID screening evidence of the presence of petroleum was observed on the bank of the small stream, upstream

from and near MW-4. An occasional sheen was noted on the water surface within two inches of the shoreline. Petroleum odors were noted on soils scooped from the bank immediately adjacent to the stream. The soil of the stream bank was overturned at four locations and the PID probe was held within one inch of the newly exposed surface of the soil. The PID readings on the exposed soil ranged from 0 to 24 ppm. As a precaution, and to assess the potential volume of material, sorbent pads were placed along the stream bank. On June 29, 1998, the sorbent pads were inspected for the presence of petroleum product. No petroleum product was absorbed to the pads on June 29, 1998.

E. Soil Stockpile Screening

Soil samples were collected from various locations and depths from in on-site soil stockpile and were screened for the presence of VOCs on June 23, 1998, with a PID. Soils in the soil stockpile exhibited an average headspace concentration of less than 1 ppm. The sample locations are depicted on the Soil Screening Sample Location Map in Appendix A. The following is a summary of the headspace readings from the soil stockpile.

Sample ID	Depth (ft)	Headspace Conc.(ppm)	Sample ID	Depth (ft)	Headspace Conc.(ppm)
1	3	0.6	5	3.5	0.0
2	3.2	0.0	6	3.6	3.7
3	1.5	1.2	7	2.9	0.0
4	4	1.7	8	3.7	0.4

IV. EVALUATION OF POTENTIALLY SENSITIVE RECEPTORS

The following potentially sensitive receptors in the vicinity of the Londonderry Town Garage site were identified:

- ♦ the existing Londonderry Town Garage building,
- ♦ the first order tributary to the West River, located approximately 20 feet east of the Londonderry Town Garage UST site,
- ♦ the residential water supply wells downgradient of the Londonderry Town Garage building.

The Londonderry Town Garage building has no basement and was therefore not inspected and screened with a PID for the presence of organic vapors on June 23, 1998. Given the low source strength, the lack of detections of petroleum compounds in the downgradient wells, and significant distance of the West River from the source area, the risks posed to this potential receptor are likely to be minimal. Given the low source strength, the lack of detections of

petroleum compounds in the downgradient wells, and significant distance of the local supply wells from the source area, the risks posed to these potential receptors are likely to be minimal.

V. CONCLUSIONS

Based upon the results of the above investigative tasks, Griffin presents the following conclusions:

- 1) Four monitoring wells were installed at the site on June 23, 1998. Three of the monitoring wells were installed to approximately 13 feet below grade (MW-1, MW-2, and MW-3). MW-4 was installed to a depth of 9.5 feet below grade.
- 2) Groundwater was encountered at an approximate average depth of 2.5 feet on June 29, 1998. Based on the groundwater elevations measured on June 29, 1998, groundwater flows to the west toward the West River at an approximate gradient of 1.0%.
- 3) No dissolved petroleum-related compounds were detected in the samples collected from MW-1, MW-2, or MW-3 on June 29, 1998. Xylenes were detected in the sample collected from MW-4 at a concentration well below the VGES for these compounds. TPHs were also detected in the sample collected from MW-4 on June 29, 1998, at a trace concentration below the detection limit; there is no VGES for TPH. It is expected that dissolved petroleum constituent concentrations will decrease over time with the progressive action of natural mitigative processes, including biodegradation, dispersion, and dilution.
- 4) No free phase product was detected in the on-site monitoring wells on June 29, 1998.
- 5) Visual, olfactory, and PID screening evidence of the presence of petroleum was observed on the bank of the small stream, upstream from and near MW-4, on June 29, 1998. An occasional sheen was noted on the water surface within two inches of the shoreline. Petroleum odors were noted on soils scooped from the bank immediately adjacent to the stream. The soil of the stream bank was overturned at four locations. The PID readings on the exposed soil ranged from 0 to 24 ppm.
- 6) Risks posed to potentially sensitive receptors in the vicinity of the Londonderry Town Garage building appear minimal, based on currently available data.

VI. RECOMMENDATIONS

Based upon the above conclusions, Griffin recommends the following additional work.

- 1) Based on the available data, the soil stockpile should be thinspread on-site.

2) Based on the available data, a stream sample should be collected to determine the impact of the petroleum observed on the stream bank on the water of the small stream.

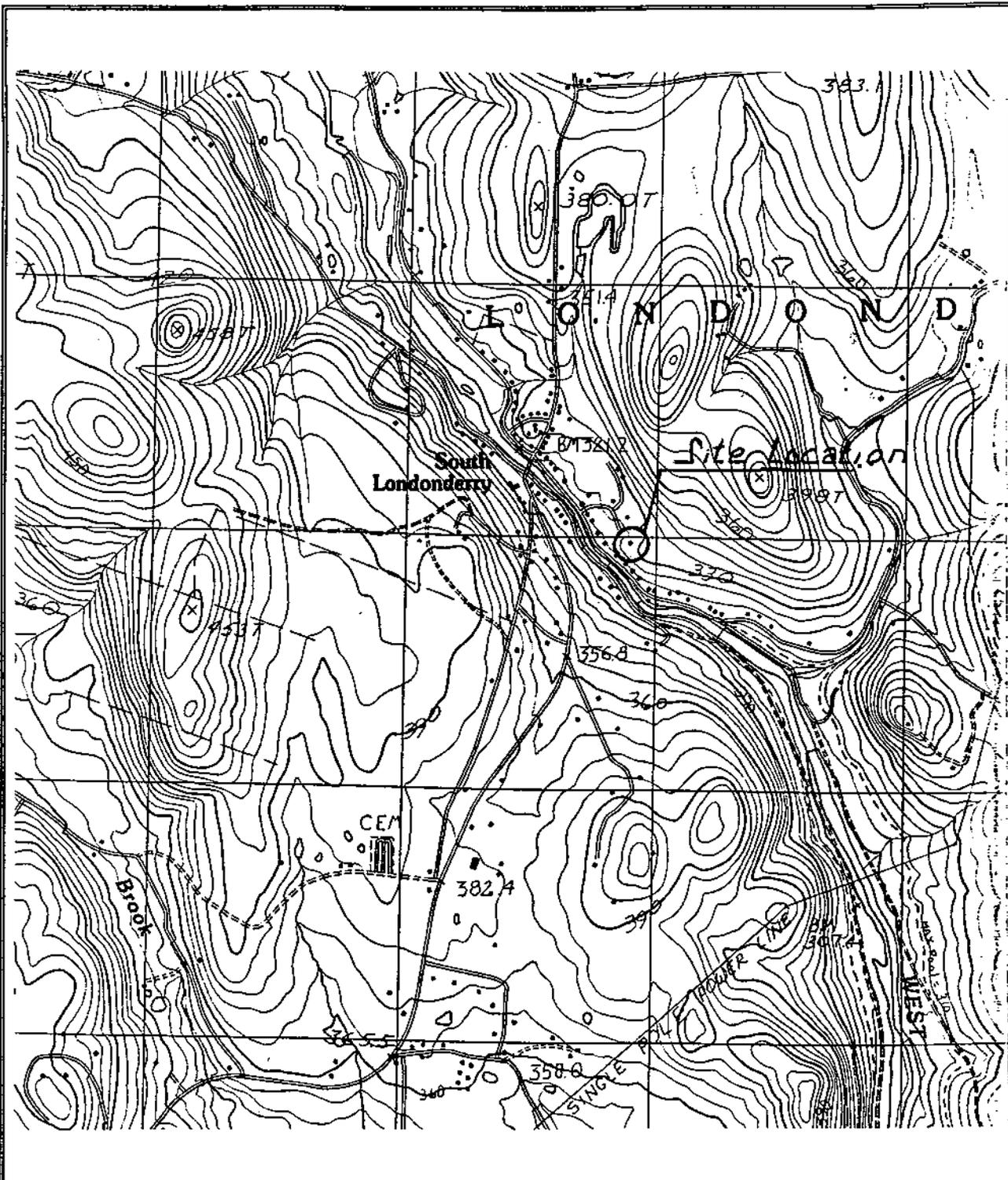
3) If no petroleum contamination is detected in the stream sample, the site should be designated Sites Management Activity Completed (SMAC).

VII. REFERENCES

1. Doll, Chuck G., D.P. Stewart, and P. MacClintock, eds., 1970, *Surficial Geologic Map of Vermont*, State of Vermont.
2. Doll, Chuck G., W.M. Cady, J. B. Thompson, Jr., and M.P. Billings eds., 1961, *Centennial Geologic Map of Vermont*, State of Vermont.

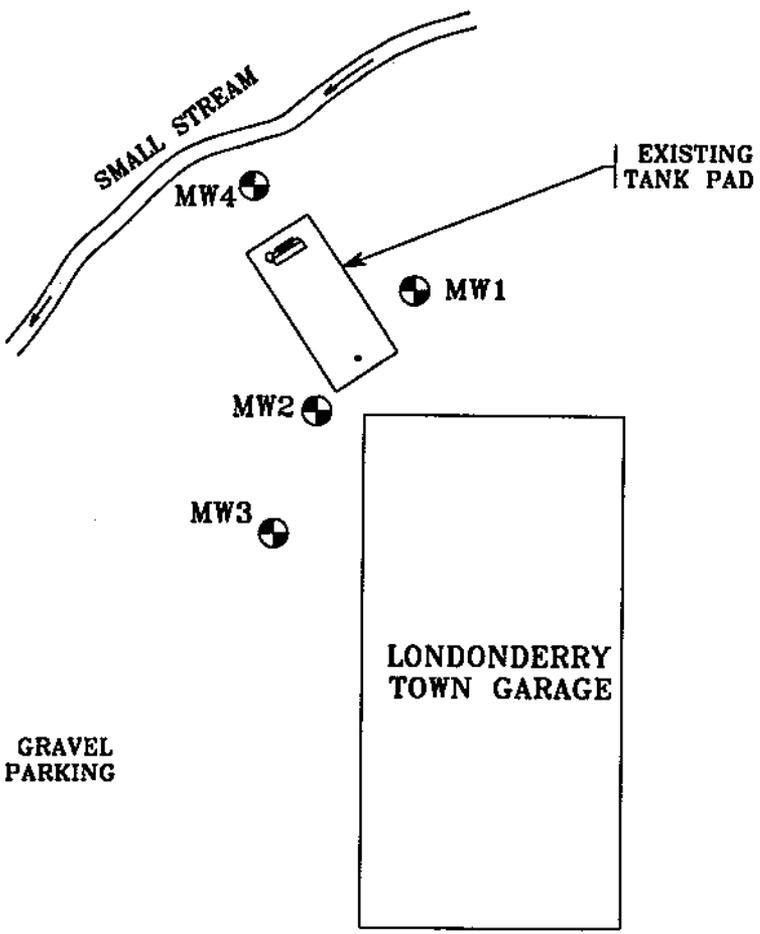
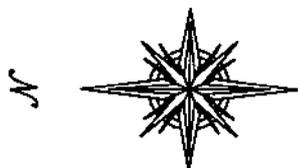
APPENDIX A

Site Maps



SITE LOCATION MAP

**LONDONDERRY TOWN GARAGE
LONDONDERRY, VERMONT**
Londonderry (1986), VT., Provisional
USGS QUADRANGLE MAP
1 : 24,000



LEGEND

-  MW2 MONITORING WELL
-  PUMP
-  FILL PORT

JOB #: 59841261

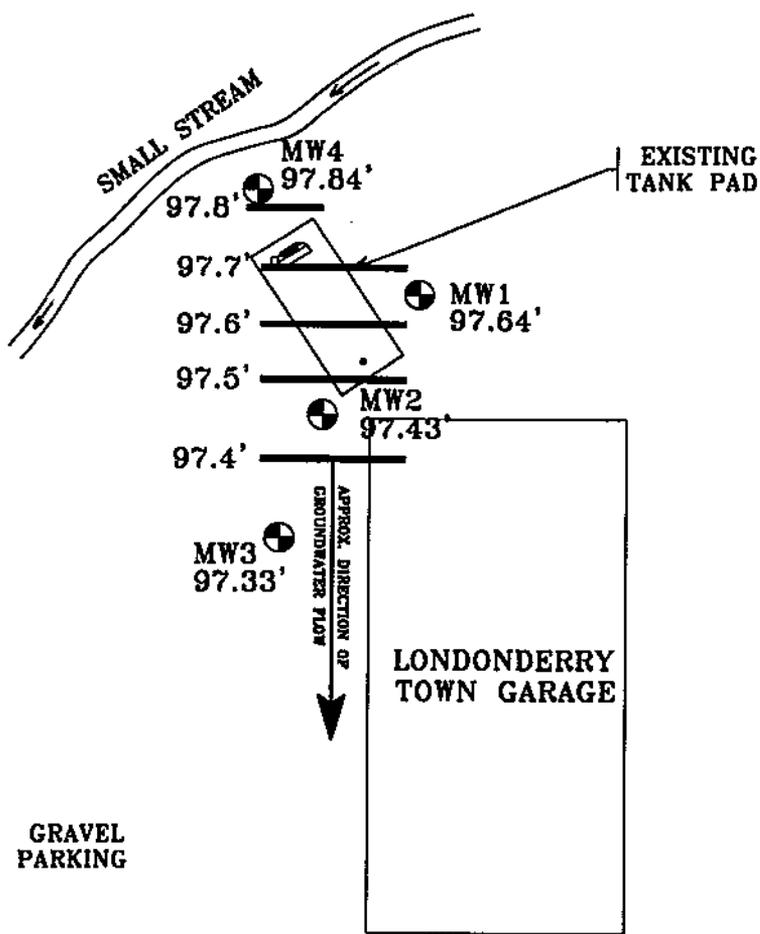
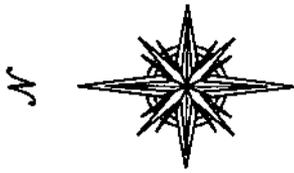


LONDONDERRY TOWN GARAGE

SOUTH LONDONDERRY, VERMONT

SITE MAP

DATE: 6/24/98	DWG.#:2	SCALE: 1"=30'	DRN.:SB	APP.:TK
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LEGEND

- MW2 97.43' MONITORING WELL AND WATER TABLE ELEVATION IN FEET
- 97.5' GROUNDWATER CONTOUR IN FEET (DASHED WHERE INFERRED)
- PUMP
- FILL PORT

JOB #: 59841261

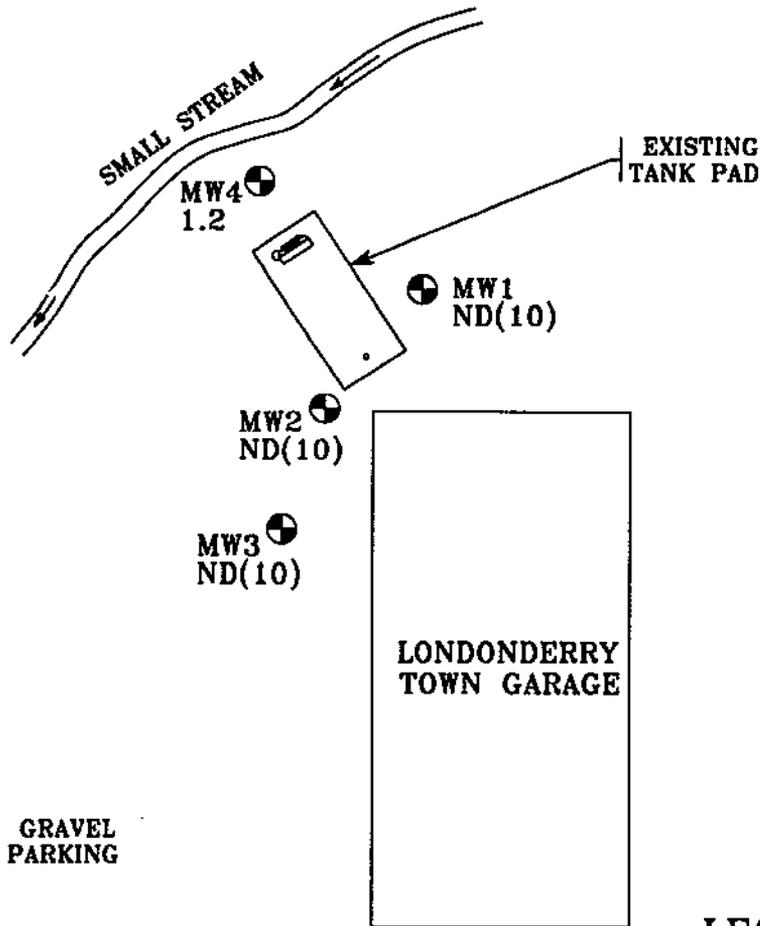
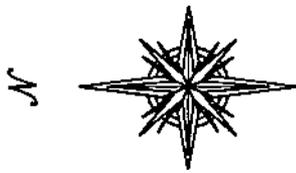


LONDONDERRY TOWN GARAGE

SOUTH LONDONDERRY, VERMONT

GROUNDWATER CONTOUR MAP
MEASUREMENT DATE: 6/29/98

DATE: 9/1/98	DWG.#:3	SCALE: 1"=30'	DRN.:SB	APP.:TK
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LEGEND

-  MW4 1.2 MONITORING WELL AND TOTAL BTEX AND MTBE CONCENTRATION (ppb)
- ND NONE DETECTED
-  PUMP
-  FILL PORT

JOB #: 59841261

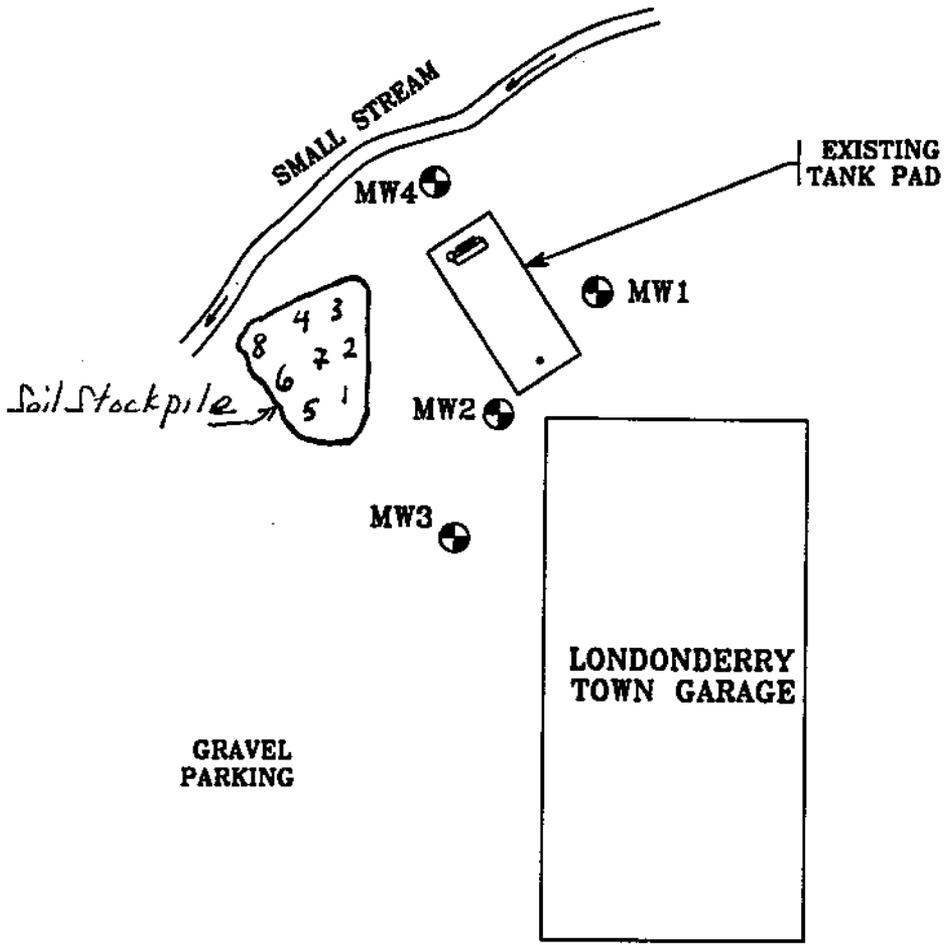
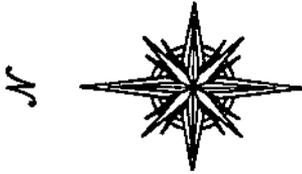


LONDONDERRY TOWN GARAGE

SOUTH LONDONDERRY, VERMONT

CONTAMINANT CONCENTRATION MAP
SAMPLE DATE: 6/29/98

DATE: 9/1/98	DWG.#:4	SCALE: 1"=30'	DRN.:SB	APP.:TK
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LEGEND

-  MW2 MONITORING WELL
-  PUMP
-  FILL PORT

JOB #: 59841261



LONDONDERRY TOWN GARAGE

SOUTH LONDONDERRY, VERMONT

Soil Stockpile Sampling Location Map

DATE: 6/24/98	DWG.#:2	SCALE: 1"=30'	DRN.:SB	APP.:TK
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APPENDIX B

Monitoring Well Logs and Construction Records

PROJECT LONDONDERRY TOWN GARAGE

LOCATION LONDONDERRY, VERMONT

DATE DRILLED 6/25/98 TOTAL DEPTH OF HOLE 12.7'

DIAMETER 4.25"

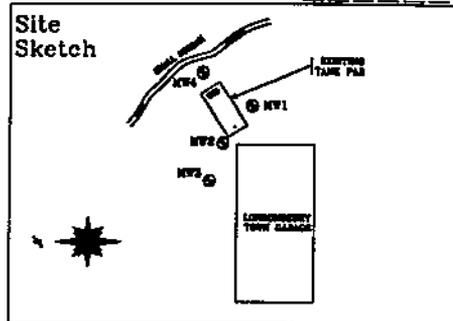
SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"

CASING DIA. 2" LENGTH 2.2' TYPE sch 40 pvc

DRILLING CO. T&K DRILLING METHOD HSA

DRILLER ALAN TOMMILA LOG BY T. KELLY

WELL NUMBER MW1



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX				0
0	LOCKING WELL CAP				0
0	CONCRETE				0
1	NATIVE BACKFILL			Medium brown, fine to coarse SAND, some gravel, little silt, moist, no odors or stains, cobbles and boulders.	1
2	BENTONITE				2
3	WELL RISER				3
4				4.5' WATER TABLE	4
5				Olive gray, fine, micaceous SAND, wet.	5
6	SAND PACK		5'-7'- 1/2/2/4 0 ppm	Dark brown, micaceous SAND, wet.	6
7				Gray, fine, micaceous SAND, wet.	7
8					8
9	WELL SCREEN				9
10					10
11			10'-12'- 4/9/13/18 0 ppm	Olive brown fine SILT with some sand, laminated, no odor, wet.	11
12	BOTTOM CAP				12
13	BEDROCK			BASE OF WELL AT 12.7' AUGER REFUSAL AT 12.7'	13
14					14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

PROJECT LONDONDERRY TOWN GARAGE

LOCATION LONDONDERRY, VERMONT

DATE DRILLED 6/25/98 TOTAL DEPTH OF HOLE 13.0'

DIAMETER 4.25"

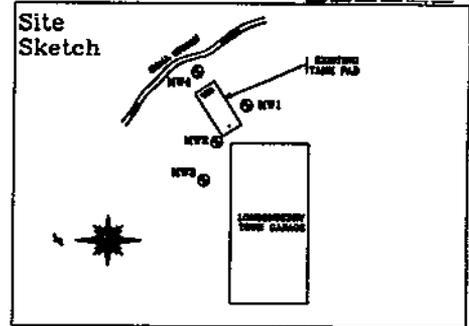
SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"

CASING DIA. 2" LENGTH 2.5' TYPE sch 40 pvc

DRILLING CO. T&K DRILLING METHOD HSA

DRILLER ALAN TOMMILA LOG BY T. KELLY

WELL NUMBER MW2



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX				0
0	LOCKING WELL CAP				0
0	CONCRETE				0
1	NATIVE BACKFILL			Medium brown, fine to coarse SAND, little silt, little gravel, moist, cobbles and boulders.	1
2	BENTONITE				2
3	WELL RISER				3
4					4
5				Olive brown, micaceous SILT, moist.	5
6	SAND PACK		5'-7'- 2/3/5/4 0 ppm	Olive brown, fine to medium SAND, moist.	6
7				Dark brown, organic SILT, moist, rootlets/ leafy locally.	7
8					8
9					9
10	WELL SCREEN			10.0' WATER TABLE	10
11			10'-12'- 2/2/6/7 0 ppm	Greenish gray, silty SAND, micaceous, wet, weathered bedrock fragments at 12.8' to 13.0'.	11
12	BOTTOM CAP				12
13	BEDROCK			BASE OF WELL AT 13.0' END OF EXPLORATION AT 13.0'	13
14					14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

PROJECT LONDONDERRY TOWN GARAGE

LOCATION LONDONDERRY, VERMONT

DATE DRILLED 6/25/98 TOTAL DEPTH OF HOLE 13.0'

DIAMETER 4.25"

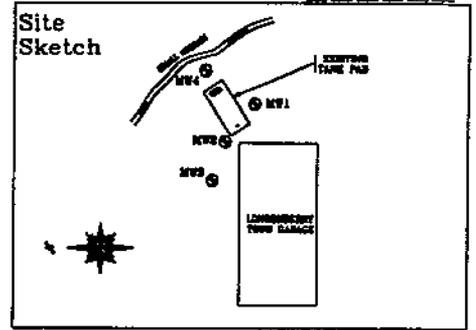
SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"

CASING DIA. 2" LENGTH 2.5' TYPE sch 40 pvc

DRILLING CO. T&K DRILLING METHOD HSA

DRILLER ALAN TOMMILA LOG BY T. KELLY

WELL NUMBER MW3



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX LOCKING WELL CAP CONCRETE				0
1	NATIVE BACKFILL				1
2	BENTONITE			Medium brown, fine to coarse SAND, little silt, little gravel, moist, cobbles and boulders.	2
3	WELL RISER				3
4					4
5					5
6	SAND PACK		5'-7'- 4/4/3/4 0 ppm	Dark brown, SILT, some sand, micaceous, moist.	6
7				Dark brown, organic SILT, abundant roots and leaves, moist.	7
8					8
9					9
10	WELL SCREEN			10.0' WATER TABLE	10
11			10'-12'- 1/4/5/7 0 ppm	Light olive SILT, some sand, wet.	11
12	BOTTOM CAP				12
13	BEDROCK			BASE OF WELL AT 13.0' END OF EXPLORATION AT 13.0'	13
14					14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

PROJECT LONDONDERRY TOWN GARAGE

LOCATION LONDONDERRY, VERMONT

DATE DRILLED 6/25/98 TOTAL DEPTH OF HOLE 9.5'

DIAMETER 4.25"

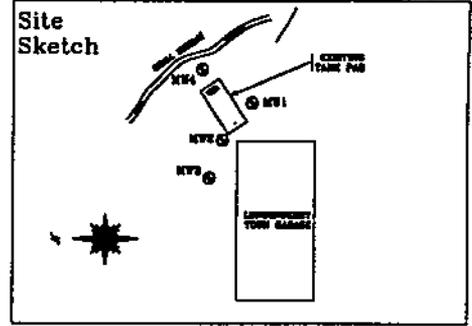
SCREEN DIA. 2" LENGTH 8.0' SLOT SIZE 0.010"

CASING DIA. 2" LENGTH 1.0' TYPE sch 40 pvc

DRILLING CO. T&K DRILLING METHOD HSA

DRILLER ALAN TOMMILA LOG BY T. KELLY

WELL NUMBER MW4



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0	ROAD BOX LOCKING WELL CAP CONCRETE				0
1	BENTONITE				1
2	WELL RISER			Medium brown, fine to coarse SAND, little silt, little gravel, moist,	2
3					3
4	SAND PACK				4
5				5.0' WATER TABLE	5
6	WELL SCREEN		5'-7'- 4/1/2/7 3.3 ppm	Olive brown, fine SAND, little silt, wet.	6
7				Dark brown, organic SILT, rootlets/leaves of grass.	7
8	BOTTOM CAP			Grayish olive, sandy SILT, moist.	8
9					9
10	BEDROCK		36 ppm on auger cuttings	BASE OF WELL AT 9.5' AUGER REFUSAL AT 9.5'	10
11					11
12					12
13					13
14					14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

APPENDIX C

Liquid Level Data, June 29, 1998

**Liquid Level Monitoring Data, Londonderry Town Garage
South Londonderry, VT**

Monitoring Date: 6-29-98

Well I.D.	Top of Casing Elevation	Depth to Product	Depth to Water	Product Thickness	Water Table Elevation
MW-1	100.00	-	2.36	-	97.64
MW-2	100.27	-	2.84	-	97.43
MW-3	100.40	-	3.07	-	97.33
MW-4	99.81	-	1.97	-	97.84

Note: All values reported in feet.
NM = Not Measured

APPENDIX D

Groundwater Quality Data, June 29, 1998

Summary of Groundwater Quality Data, Londonderry Town Garage
 South Londonderry, VT

PARAMETER	6-29-98				VGES*
	MW1	MW2	MW3	MW4	
Benzene	ND(1)	ND(1)	ND(1)	ND(1)	5.0
Chlorobenzene	ND(1)	ND(1)	ND(1)	ND(1)	100.0
1,2-DCB	ND(1)	ND(1)	ND(1)	ND(1)	600.0
1,3-DCB	ND(1)	ND(1)	ND(1)	ND(1)	600.0
1,4-DCB	ND(1)	ND(1)	ND(1)	ND(1)	75.0
Ethylbenzene	ND(1)	ND(1)	ND(1)	ND(1)	700.0
Toluene	ND(1)	ND(1)	ND(1)	ND(1)	1,000.0
Xylenes	ND(1)	ND(1)	ND(1)	1.2	10,000.0
Total BTEX	ND(1)	ND(1)	ND(1)	1.2	-
MTBE	ND(10)	ND(10)	ND(10)	ND(10)	40
BTEX+MTBE	ND(10)	ND(10)	ND(10)	1.2	-
TPH(mg/l)	ND(0.4)	ND(0.4)	ND(0.4)	TBQ(0.4)	-

All values reported in ug/L (ppb)

Detections are Bold

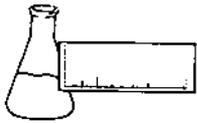
NA - Not Analyzed

ND(1000) - Not Detected (Detection Limit)

TBQ(1) - Trace Below Quantitation Limit (Detection Limit)

VGES - Vermont Groundwater Enforcement Standard, Source VT Groundwater Protection Rule and Strategy, 11/15/97

Values greater than the applicable VGES are shaded



ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

59841261

CLIENT: Griffin International
PROJECT NAME: Londonderry Town Garage
REPORT DATE: July 8, 1998
DATE SAMPLED: June 29, 1998

PROJECT CODE: GILT1437
REF.#: 123,317 - 123,322

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

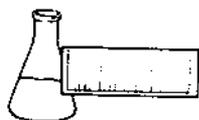
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International

DATE RECEIVED: June 30, 1998

PROJECT NAME: Londonderry Town Garage

REPORT DATE: July 8, 1998

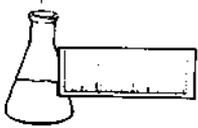
CLIENT PROJ. #: 59841261

PROJECT CODE: GILT1437

Ref. #:	123,317	123,318	123,319	123,320	123,321
Site:	Trip Blank	MW-3	Duplicate (MW-3)	MW-2	MW-1
Date Sampled:	6/29/98	6/29/98	6/29/98	6/29/98	6/29/98
Time Sampled:	7:45	13:25	13:25	13:35	13:45
Sampler:	R. Basile	R. Basile	R. Basile	R. Basile	R. Basile
Date Analyzed:	7/4/98	7/4/98	7/7/98	7/4/98	7/6/98
UIP Count:	0	0	0	0	0
Dil. Factor (%):	100	100	100	100	100
Surr % Rec. (%):	109	107	102	102	100
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)
Benzene	<1	<1	<1	<1	<1
Chlorobenzene	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1
Toluene	<1	<1	<1	<1	<1
Xylenes	<1	<1	<1	<1	<1
MTBE	<10	<10	<10	<10	<10

Ref. #:	123,322				
Site:	MW-4				
Date Sampled:	6/29/98				
Time Sampled:	13:55				
Sampler:	R. Basile				
Date Analyzed:	7/7/98				
UIP Count:	>10				
Dil. Factor (%):	100				
Surr % Rec. (%):	98				
Parameter	Conc. (ug/L)				
Benzene	<1				
Chlorobenzene	<1				
1,2-Dichlorobenzene	<1				
1,3-Dichlorobenzene	<1				
1,4-Dichlorobenzene	<1				
Ethylbenzene	<1				
Toluene	<1				
Xylenes	1.2				
MTBE	<10				

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



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Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International

PROJECT CODE: GILT1438

PROJECT NAME: Londonderry Town Garage/59841261 REF. #: 123,323 - 123,326

DATE REPORTED: July 13, 1998

DATE SAMPLED: June 29, 1998

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

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

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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**Laboratory Services**

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

LABORATORY REPORT**TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100**

DATE: July 13, 1998
CLIENT: Griffin International
PROJECT: Londonderry Town Garage/#59841261
PROJECT CODE: GILT1438
COLLECTED BY: Rob Basile
DATE SAMPLED: June 29, 1998
DATE RECEIVED: June 30, 1998

Reference #	Sample ID	Concentration (mg/L) ¹
123,323	MW-3; 13:25	ND ²
123,324	MW-2; 13:35	ND
123,325	MW-1; 13:45	ND
123,326	MW-4; 13:55	TBQ ³

Notes:

- 1 Values quantitated based on the response of #2 Fuel Oil. Method detection limit is 0.4 mg/L.
- 2 None detected
- 3 Trace below quantitation limit



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

JOB # 59841201

20010

CHAIN-OF-CUSTODY RECORD

Project Name: <i>Londonderry Town Garage</i>	Reporting Address: <i>GRIFFIN</i>	Billing Address:
Site Location: <i>Londonderry, VT</i>		
Endyne Project Number: <i>GILT/438</i>	Company: Contact Name/Phone #: <i>T. KELLY</i>	Sampler Name: Phone #: <i>Rob Baskin</i>

Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
	TRIP BLANK	H ₂ O	YES		6/29/98 7:45	2	40ml		8020	HCl	
	MW-3				13:25	2			8020	HCl	
123,323	MW-3				13:25	2			8100 TPH		
	DUPLICATE (MW-3)				13:25	2			8020		
	MW-2				13:35	2			8020		
123,324	MW-2				13:35	2			8100 TPH		
	MW-1				13:45	2			8020		
123,325	MW-1				13:45	2			8100 TPH		
	MW-4				13:55	2			8020		
123,326	MW-4				13:55	2			8100 TPH		

Relinquished by: Signature <i>Rob Baskin</i>	Received by: Signature <i>Lina Desrochers</i>	Date/Time <i>6-30-98 10:35</i>
Relinquished by: Signature <i>Lina Desrochers</i>	Received by: Signature <i>Tonia M. Chamberlain</i>	Date/Time <i>6-30-98 10:35</i>

New York State Project: Yes No

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pests/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Pests/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										