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DEC 31 10 12 AM 1998

December 29, 1998

Mr. Richard Spiese
State of Vermont
Department of Environmental Conservation
Waste Management Division
103 South Main Street
Waterbury, VT 05671-0404

RE: Site Investigation Report for Colonial Mart, Winooski, VT
(VTDEC Site #89-0324)

Dear Mr. Spiese:

Enclosed please find Griffin's Site Investigation Report for the Colonial Mart (Former K&L Quick Stop) in Winooski, Vermont.

If you have any questions regarding this report, please call.

Sincerely,

Kevin McGraw
Hydrogeologist

Enclosure

cc: Mr. Dennis Boise, Champlain Oil Co.
GI Project #89741089

**REPORT ON THE
INVESTIGATION OF SUBSURFACE
PETROLEUM CONTAMINATION**
at
**COLONIAL MART
ROUTE 7
WINOOSKI, VERMONT**

October 19, 1998

Prepared for:

Champlain Oil Company, Inc.
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Prepared by:



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Griffin Project #89741089

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I. INTRODUCTION

This report summarizes the investigation of subsurface petroleum contamination at Colonial Mart (former K&L Quick Stop) located on Route 7 in Winooski, Vermont (see Site Location Map and Site Map, Appendix A). The following investigation has been conducted to define more clearly the degree and extent of petroleum contamination which was detected in the soils at this site during the piping replacement for three gasoline underground storage tanks (USTs) and the removal of one gasoline UST in September of 1997. Included in the report are the findings from the hollow-stem auger drilling along with the results of subsequent groundwater sampling conducted at the property. Also presented are calculated groundwater flow direction and gradient, and results of a sensitive receptor survey. This work has been completed for Champlain Oil Company, Inc. by Griffin International, Inc. (Griffin) in accordance with the approved work plan dated April 15, 1998.

II. HISTORICAL BACKGROUND

On September 8, 9, and 10, 1997, gasoline UST piping was replaced and one gasoline UST was removed from the subsurface at Colonial Mart on Main Street (Route 7) in Winooski, Vermont. An 8,000-gallon gasoline tank was removed and replaced with a new 10,000-gallon double-wall UST. Two (2) 4,000-gallon gasoline USTs were not replaced. The fiberglass piping for the three gasoline tanks was replaced with new double wall Environ™ plastic piping. The locations of the three gasoline USTs are shown on the Site Map in Appendix A.

Soil samples were collected during the excavations for the piping and UST replacements and screened for volatile organic compounds (VOCs) using a portable photoionization detector (PID). Minimal gasoline contamination (<10 ppm) was observed adjacent to the piping. Contamination was observed in the soils adjacent to the replaced gasoline tank, and the southern end of one of the in-situ 4000-gallon tanks. Groundwater was not encountered during the excavation. Since the extent of the gasoline contamination could not be determined without disturbing the gasoline tanks, all soils from the excavations were backfilled.

In response to the soil contamination detected during the replacement of the gasoline piping and UST, the Vermont Department of Environmental Conservation (VTDEC) requested a site investigation to further define the degree and extent of contamination at the site. This request was contained in a letter dated November 18, 1997. The following report presents the findings from Griffin's Site Investigation conducted in July, 1998.

III. SITE DESCRIPTION

The Winooski Colonial Mart is situated on the eastern fringe of the Champlain Valley south and west of Interstate 89, in the City of Winooski. Local terrain is relatively level. The elevation of the site is approximately 300 feet above mean sea level.

The area surrounding the site is used for both residential and commercial uses. The area, including Colonial Mart, is served by the municipal water supply.

The Surficial Geologic Map of Vermont maps the surrounding area as pebbly marine sands (Ref. 1). These sands are thought to be associated with shore deposits of the post-glacial Champlain Sea (Ref. 1). According to the Centennial Geologic Map of Vermont (Ref. 2), the overburden deposits at the site are underlain by Winooski dolomite.

IV. SUBSURFACE INVESTIGATION

On July 8, 1998, four monitoring wells were installed by T&K Drilling, Inc. using a hollow-stem drill rig. The monitoring wells, designated MW-1 through MW-4, were installed to help define the degree and extent of petroleum contamination in the vicinity of the former gasoline piping and the removed UST. MW-1 was installed on the east side of the gasoline tanks. The boring for MW-2 was drilled on the south side of the property, south and south-east of the existing gasoline tanks. MW-2 was installed in the presumed downgradient location from the former gasoline piping and removed UST based on review of site topography. MW-3 was installed to the west of the existing gasoline tanks, and south of the pump island, in a possible downgradient or cross-gradient direction. MW-4 was installed to the north of the existing gasoline tanks and pumps, in the estimated upgradient direction. The locations of the wells are shown on the Site Map in Appendix A.

Split-spoon samples were collected in each boring at five foot intervals to the maximum depth of advancement. Soil samples were screened for VOCs using an HNU (Model PI-101) photoionization device. In addition, soil characteristics were recorded in detailed boring logs by the supervising Griffin engineer.

In the boring for MW-1, fine to medium sand with traces of silt and clay were observed between 5 and 7 feet below grade. Silt with traces of clay was observed between 10 and 12 feet below grade. Soils retrieved at depths greater than 15 feet below grade consisted of clay with traces of silt or sand. Groundwater was encountered at approximately 12 feet below grade. A maximum PID reading of 98 ppm was recorded for the 10 to 12-foot split-spoon soil sample.

Soils retrieved from the boring for MW-2 consisted of fine sand with traces of silt from approximately 5 to 7 feet below grade. Silt with traces of sand was observed between 10 and 12 feet below grade. Fine sand with a trace of silt was collected between 15 and 17

feet below grade. Clay was observed between 20 and 22 feet below grade. Groundwater was encountered at approximately 12 feet below grade. A maximum PID reading of 120 ppm was recorded for a soil sample collected from 5 to 7 feet below grade.

In the boring for MW-3, fine sand with a trace of silt was observed from 5 to 7 feet below grade. Silt with a trace of fine sand was observed from 10 to 12 feet below grade. Sand with a trace of silt was observed between 15 and 17 feet. Clay was encountered in the 2- to 22-foot split-spoon sample. Groundwater was encountered at approximately 12 feet below grade. A maximum PID reading of 120 ppm was recorded for the soil sample collected from 5 to 7 feet below grade.

Soils retrieved from the boring for MW-4 consisted of silt with some clay or fine sand from approximately 5 to 16 feet below grade. Clay was observed between 16 and 22 feet below grade. Groundwater was encountered at approximately 12 feet below grade. Elevated PID readings were not observed in any of the soil samples screened from this boring.

The screens in all 4 monitoring wells were set from 10 to 20 feet below grade. The monitoring wells were constructed with 2-inch diameter, Schedule 40 PVC riser and 0.010" slotted screen. A silica sand pack was placed around the screened portion of each well and a bentonite seal was placed in the annulus immediately above the sand pack. To complete the construction of each well, a road box was set in concrete at grade level. In addition, a locking well cap was placed on each monitoring well. The boring logs and well construction details for these wells are included in Appendix B.

The general lithology encountered at the site (silty sands overlying silts/clays and fine sands) is more fine-grained than published accounts would suggest (Ref. 1). Overburden deposits are heterogeneous and layered. Layers are relatively thin (vertically) and it is possible that distinct lithologic layers less than two feet in thickness may not have been revealed using the five-foot spaced split-spoon sampling intervals. The screened intervals of wells MW1 through MW4 intercept the various strata at this site. It is possible that more than one water-bearing unit (i.e., aquifer) may be present in these overburden deposits. Soils encountered in each boring during split-spoon sampling and auguring appeared to be dry until a depth of approximately 12 feet below grade. A sand layer was encountered at and below this approximate elevation, generally at the site, overlain by silt with traces of fine sand. Given the layered lithologies present, and their respective typical permeabilities, the water-bearing unit encountered at this elevation may exhibit semi-confined to confined conditions.

Given the size of the UST removed from the site (8,000 gallons, 8 to 10-foot diameter), and its apparent burial depth of 12 feet, the former excavation for this tank (and the two 4,000 gallon tanks that remain in service) likely cut through these shallow lithologic layers to intercept the water-bearing unit encountered at approximately 12 feet below grade.

While soils encountered at shallower depths than 12 feet below grade were dry on July 8, 1998, it is possible that a perched aquifer exists in the fill material and coarser native soils which overlie the silts and clays encountered in the 5- to 7-foot and the 10- to 12-foot split spoon samples. Recharge to the site and immediate site vicinity from precipitation, snowmelt, and surface runoff is substantially limited by the widespread pavement and development in the area.

V. WATER LEVELS AND WATER QUALITY

A. Water Table Elevations

Water level elevation measurements were collected from MW-1 through MW-4 on July 20, 1998. In addition, the monitoring wells were surveyed in azimuth and elevation relative to the top-of-casing of MW-4 which has been assigned an arbitrary elevation of 100.00 feet. The corrected depth to water in each well was subtracted from the top-of-casing elevation to obtain the relative water level elevation in each well. A table presenting the liquid level monitoring data collected on July 20 is included in Appendix C.

Groundwater was measured at approximately three to eight feet below grade in the on-site monitoring wells. In each well the measured water level elevation was above the screened portion of the well, and above the groundwater elevation observed during the installation of the monitoring well. These observations are consistent with wells which target a semi-confined or confined aquifer.

Based on a review of topographic gradients and the adjacent position of the Winooski River, groundwater at the site would be expected to flow generally to the south. If piezometric surface elevations in wells MW1, MW3, and MW4 are considered, a south-southwest direction of groundwater flow at a gradient of 0.06 is apparent for the site. The piezometric surface elevation measured in MW2 is higher than expected under this flow regime, and has not been considered in the development of the Piezometric Surface Contour Map contained in Appendix A.

B. Water Quality

Griffin collected groundwater samples at the site from all four monitoring wells. The groundwater samples were analyzed for petroleum compounds by EPA Method 602. The analytical results have been plotted to show the distribution of dissolved contamination across the site (see Contaminant Concentration Map, Appendix A). The contaminant concentration pattern is consistent with the south-southwesterly groundwater flow pattern determined previously.

Relatively low levels of dissolved benzene, toluene, ethylbenzene and xylenes (BTEX) were detected in the samples from MW-1, MW-2, and MW-3. The Vermont Groundwater Enforcement Standard (VGES) for benzene was exceeded in these three samples. The VGES for MTBE was exceeded in the samples collected from MW-1 and MW-3. Traces of MTBE below the quantitation limit were measured in MW-2. The MTBE detection limit of 200 ppb exceeds the VGES of 40 ppb. Dissolved BTEX and MTBE were not detected in the groundwater sample collected from MW-4. A groundwater quality summary for this sampling event is presented in Appendix D. The Endyne laboratory analytical report is also included in this appendix.

The trip blank and duplicate sample analytical results indicate that proper quality assurance and quality control were maintained during the sampling and analysis.

VI. RECEPTOR RISK ASSESSMENT

A receptor risk assessment was conducted to identify known and potential receptors of the petroleum contamination detected at the Winooski Colonial Mart. A visual survey was conducted at the time of monitoring well installation and during the UST closure/piping replacement inspection. A determination of the potential risk to identified receptors was conducted based on proximity, groundwater flow direction and gradient, and contaminant concentration levels.

Water Supplies

As outlined in Section III of this report, the area in the vicinity of the Winooski Colonial Mart is served by the municipal water system. Winooski obtains its water from the Champlain Water District, which receives water from Lake Champlain. Given its distance from the subject site, this public water supply source is not at risk from the contamination observed at the Colonial Mart.

There also do not appear to be any private drinking water supply wells in the immediate vicinity of the site, based on visual observation.

Buildings in the Vicinity

The Colonial Mart does not have a basement, and it is unlikely that petroleum vapors will accumulate. Given their sufficient distance, other buildings in the immediate area are not likely at risk of vapor impact from the onsite gasoline contamination.

Surface Water

The Winooski River is the nearest surface water to the site, located approximately 0.75 mile south of Colonial Mart in a presumed downgradient with respect to shallow groundwater flow. Based on the degree of dissolved groundwater contamination detected

at the site, it appears that there is minimal risk to this surface water, given its sufficient distance from the site.

VII. CONCLUSIONS

Based on the investigation at this site, Griffin has reached the following conclusions:

1. In each of the four soil borings, heterogeneous soils consisting of sand, silt and clay were observed. Adsorbed petroleum contamination was detected in three of the four soil borings advanced for this site investigation (MW-1, MW-2, and MW-3).
2. The water level elevation beneath the site ranged from approximately 3 to 8 feet below grade. Water level elevation measurements made in MW-2 are not believed to be representative, and were not used to determine the direction of groundwater flow. Surface topography and the location of the Winooski River relative to the site suggest that groundwater flow is generally to the south. Based on the water table elevation data collected in July 1998 from MW-1, MW-3, and MW-4, groundwater is estimated to be flowing south-southwest at a hydraulic gradient of 0.06.
3. Relatively low levels of dissolved BTEX contamination were detected in the groundwater samples collected from MW-1, MW-2 and MW-3, located downgradient and cross-gradient from the gasoline USTs. The VGES for benzene was exceeded in these three samples. The VGES for MTBE was exceeded in the samples from MW-1 and MW-3.
4. Dissolved contamination was not detected in the groundwater sample collected from MW-4 which is located upgradient of the pump island and gasoline USTs.
5. The groundwater analytical results suggest that the downgradient extent of contamination has not been determined.
6. The sensitive receptor assessment for this site has determined that there appear to be no receptors at significant risk of impact from residual petroleum contamination at the site at this time. There do not appear to be any public or private drinking water supplies at risk from the onsite petroleum contamination. The area in the immediate vicinity of the site is serviced by municipal water. In addition, the risk posed to the nearest surface water appears to be minimal.

VIII. RECOMMENDATIONS

Based on the above conclusions, Griffin recommends that a semi-annual groundwater monitoring schedule be implemented to document the fluctuations in dissolved contaminant concentrations in the monitoring wells. Water table elevations should be

measured in each well prior to sampling. Groundwater from the four monitoring wells should be sampled and analyzed for BTEX and MTBE by EPA Method 8021B.

At the conclusion of each monitoring event, a semi-annual groundwater monitoring report should be prepared and submitted to the VTDEC. This report will include a groundwater contour map, a contaminant concentration map, current and historical groundwater analytical data, conclusions and recommendations. The first semi-annual monitoring should occur in November, 1998. Groundwater monitoring should continue at the site until the concentrations of BTEX and MTBE are all below the Vermont Groundwater Enforcement Standards.

REFERENCES

1. Doll, Charles G., ed., 1970, *Surficial Geologic Map of Vermont*, State of Vermont.
2. Doll, Charles G., ed., 1961, *Centennial Geologic Map of Vermont*, State of Vermont.

APPENDICES

APPENDIX A

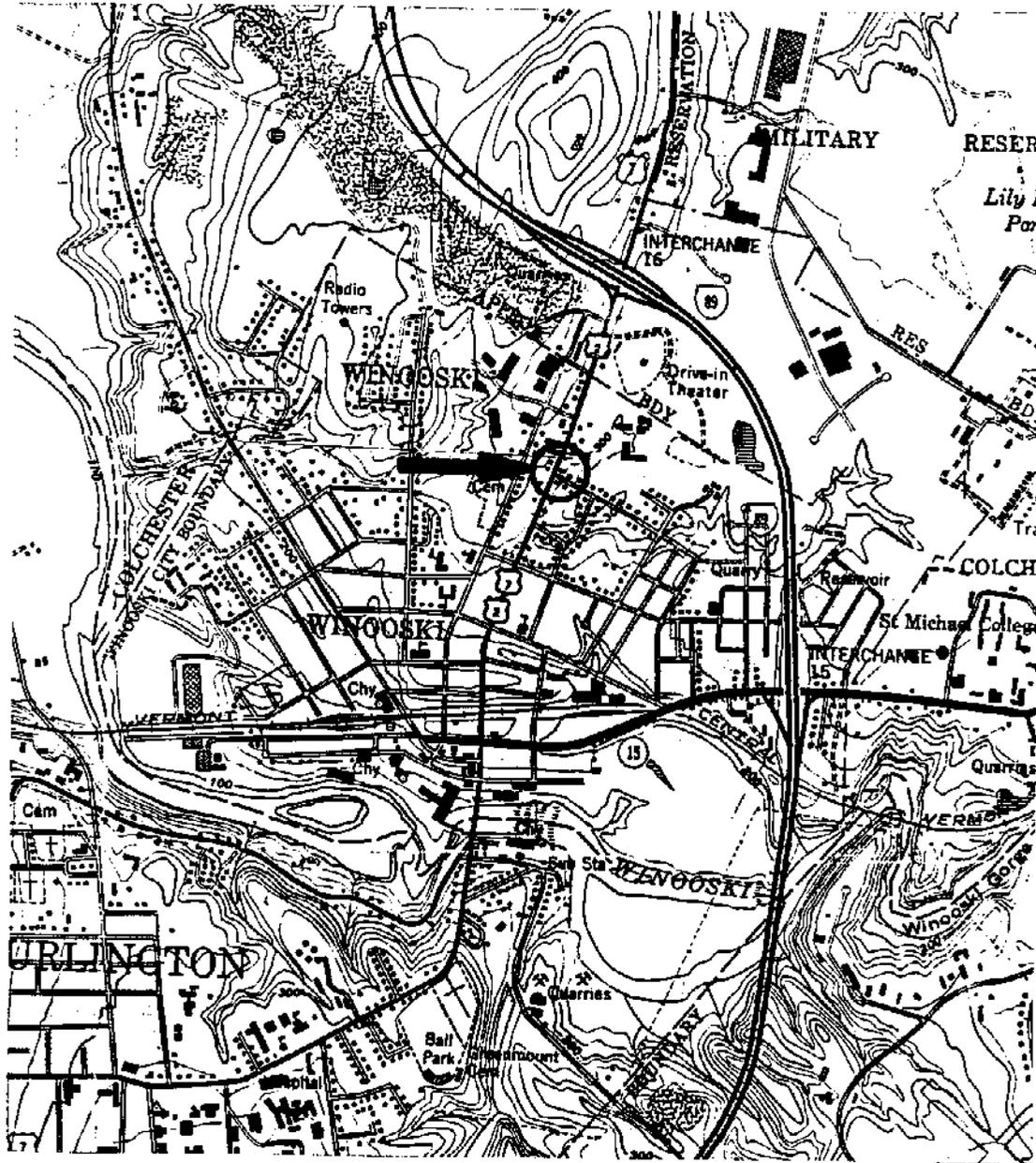
Maps

Site Location Map

Site Map

Piezometric Surface Contour Map

Contaminant Concentration Map



OB #: 89741089
 SOURCE: USGS- BURLINGTON AND COLCHESTER, VERMONT QUADRANGLE

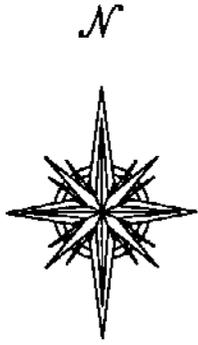


COLONIAL MART

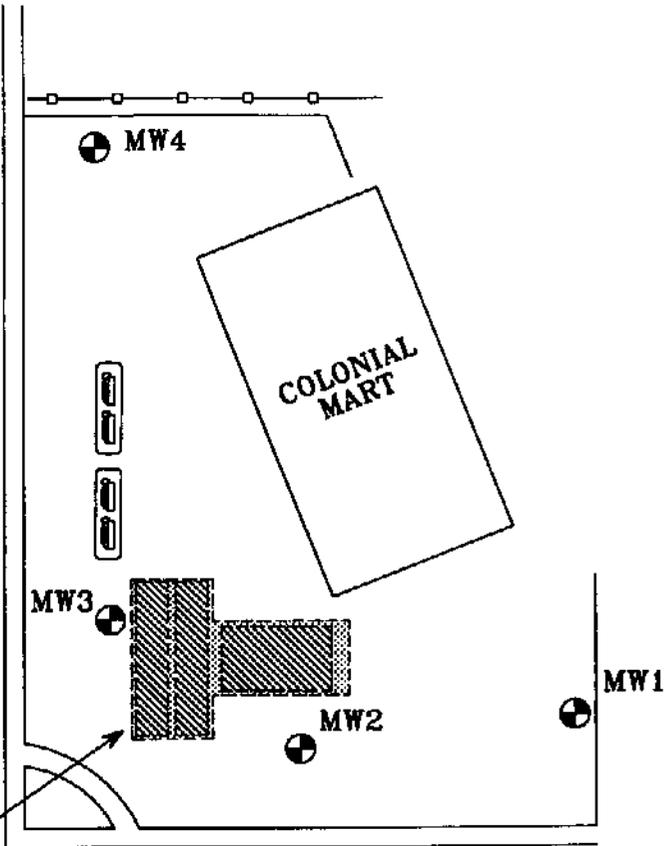
WINOOSKI, VERMONT

SITE LOCATION MAP

DATE: 9/18/98	DWG. #: 1	SCALE: 1:24000	DRN.: SB	APP.: KM
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MAIN STREET



BELLEVUE STREET

LOCATION OF (2)
EXISTING 4,000 GALLON
GASOLINE UST's AND (1)
NEW 10,000 GALLON
GASOLINE UST. (1)
EXISTING 8,000 GALLON
GASOLINE UST REMOVED
9/9/97.

LEGEND

- MW2 MONITORING WELL
- PUMP ISLAND
- FENCE LINE

JOB #: 89741089

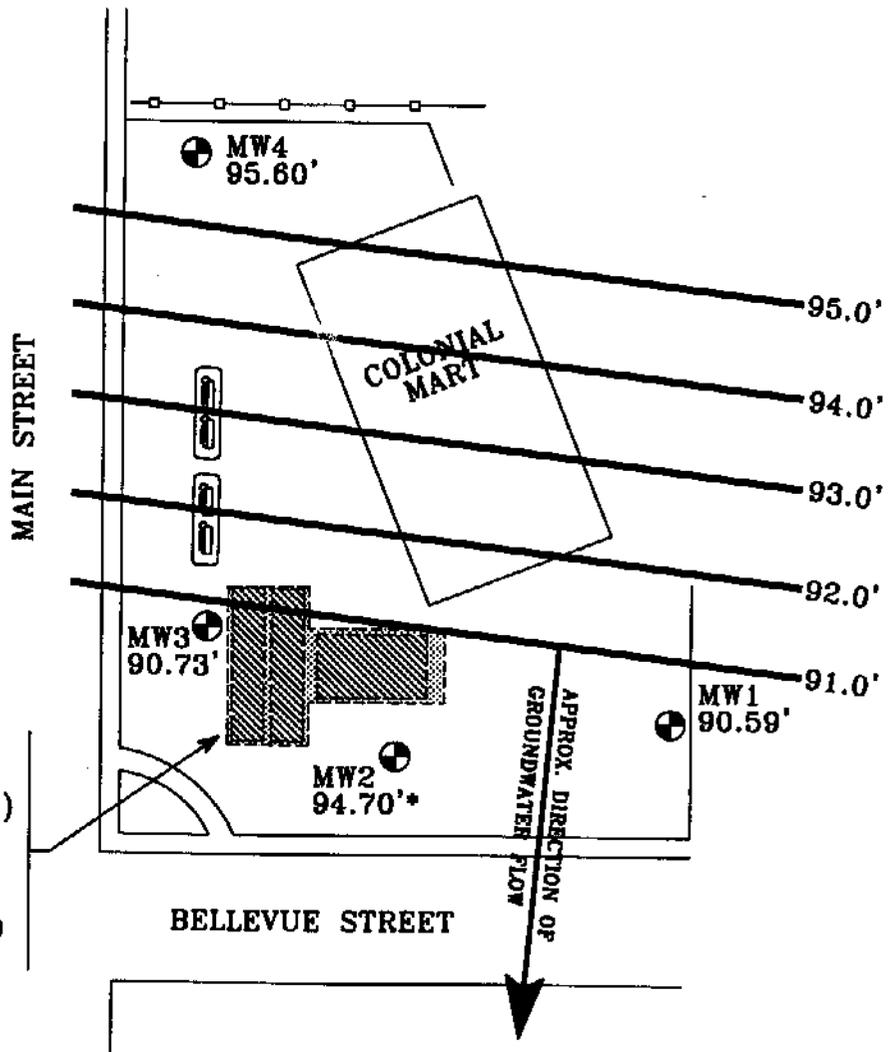


COLONIAL MART

WINOOSKI, VERMONT

SITE MAP

DATE: 9/18/98 DWG.#:2 SCALE: 1"=30' DRN.:SB APP.:KM



LOCATION OF (2) EXISTING 4,000 GALLON GASOLINE UST's AND (1) NEW 10,000 GALLON GASOLINE UST. (1) EXISTING 8,000 GALLON GASOLINE UST REMOVED 9/9/97.

LEGEND

- MW3 90.73' MONITORING WELL AND PIEZOMETRIC SURFACE ELEVATION IN FEET
- 93.0' PIEZOMETRIC SURFACE CONTOUR IN FEET (DASHED WHERE INFERRED)
- PUMP ISLAND
- FENCE LINE

NOTE *: PIEZOMETRIC SURFACE CONTOUR IN MW2 WAS NOT USED IN CONTOURING.

JOB #: 89741089

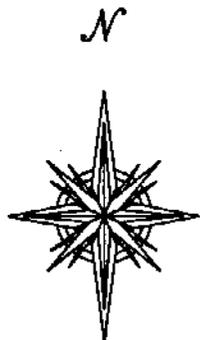


COLONIAL MART

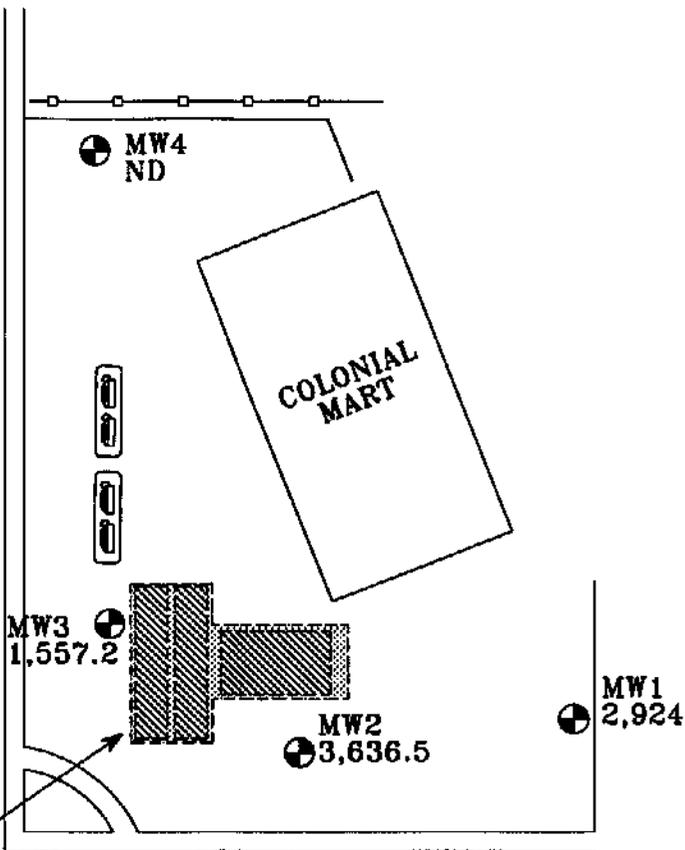
WINOOSKI, VERMONT

PIEZOMETRIC SURFACE CONTOUR MAP
MEASUREMENT DATE: 7/20/98

DATE: 9/25/98	DWG.#:3	SCALE: 1"=30'	DRN.:SB	APP.:KM
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MAIN STREET



LOCATION OF (2)
EXISTING 4,000 GALLON
GASOLINE UST's AND (1)
NEW 10,000 GALLON
GASOLINE UST. (1)
EXISTING 8,000 GALLON
GASOLINE UST REMOVED
9/9/97.

BELLEVUE STREET

LEGEND

- 
MW2
 3,636.5
- MONITORING WELL AND TOTAL
 BTEX AND MTBE CONCENTRATION (ppb)
- ND
- NONE DETECTED
- 
 PUMP ISLAND
- 
 FENCE LINE

JOB #: 89741089



COLONIAL MART

WINOOSKI, VERMONT

CONTAMINANT CONCENTRATION MAP
SAMPLE DATE: 7/20/98

DATE: 9/25/98	DWG.#:4	SCALE: 1"=30'	DRN.:SB	APP.:KM
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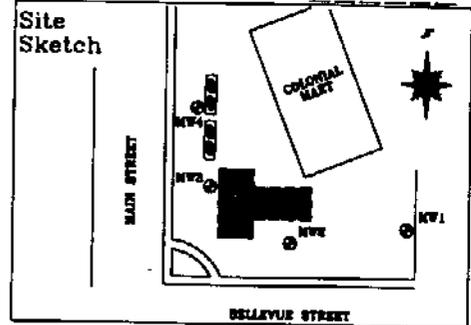
APPENDIX B

Well Logs

PROJECT COLONIAL MART

WELL NUMBER MW1

LOCATION WINOOSKI, VERMONT



DATE DRILLED 7/8/98 TOTAL DEPTH OF HOLE 24.0'

DIAMETER 4.25"

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

CASING DIA. 2" LENGTH 9.5' TYPE sch 40 pvc

DRILLING CO. T&K DRILLING METHOD HSA

DRILLER ALAN TOMMILA LOG BY W. DOE

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
1	CONCRETE				1
2					2
3	NATIVE BACKFILL				3
4					4
5	WELL RISER				5
6			5'-7' 1/1/1/1 7.5 ppm	Fine to medium SAND with some silt, trace clay and cobbles, dry, slight petroleum odor.	6
7					7
8	BENTONITE				8
9					9
10					10
11	SAND PACK		10'-12' 5/8/10/14 98 ppm	SILT with trace clay and fine sand, moist, moderate odor.	11
12				12.0' WATER TABLE	12
13					13
14					14
15	WELL SCREEN				15
16			15'-17' 7/12/17/32 0.2 ppm	Gray/brown CLAY with some silt, slight odor to very fine SAND, moist, trace clay, no odor.	16
17					17
18					18
19	BOTTOM CAP				19
20					20
21			20'-22' 0/0/4/4 0.8 ppm	Soft, gray CLAY, trace fines, moist, no odor.	21
22					22
23			22'-24' 2/4/3/3 0 ppm	Soft, gray CLAY, trace fines, moist, no odor.	23
24					24
25	UNDISTURBED NATIVE SOIL			BASE OF WELL AT 20' END OF EXPLORATION AT 24'	25

PROJECT COLONIAL MART

LOCATION WINOOSKI, VERMONT

DATE DRILLED 7/8/98 TOTAL DEPTH OF HOLE 22.0'

DIAMETER 4.25"

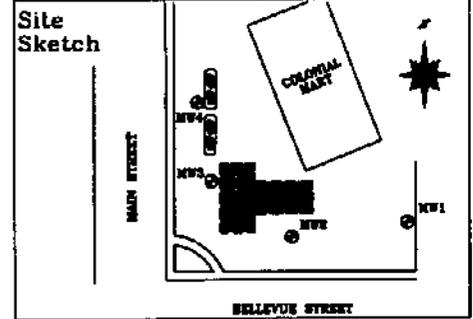
SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"

CASING DIA. 2" LENGTH 9.5' TYPE sch 40 pvc

DRILLING CO. T&K DRILLING METHOD HSA

DRILLER ALAN TOMMILA LOG BY W. DOE

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	LOCKING WELL CAP			0
1	CONCRETE				1
2					2
3	NATIVE BACKFILL				3
4					4
5					5
6	WELL RISER		5'-7' 6/11/12/9 120 ppm	Brown, fine SAND, trace silt, dry, moderate petroleum odor.	6
7					7
8	BENTONITE				8
9					9
10					10
11	SAND PACK		10'-12' 4/6/12/13 110 ppm	Brown SILT with trace of very fine sand, dry, moderate petroleum odor.	11
12				12.0' WATER TABLE 	12
13					13
14					14
15	WELL SCREEN		15'-17' 40/26/12/13 0 ppm	Brown, fine SAND, trace silt, moist, no odor, gray clay at 17'.	15
16					16
17					17
18					18
19	BOTTOM CAP				19
20					20
21			20'-22' 0/0/3/2 0 ppm	Soft, gray CLAY, trace fines, moist, no odor.	21
22					22
23	UNDISTURBED NATIVE SOIL			BASE OF WELL AT 20' END OF EXPLORATION AT 22'	23
24					24
25					25

PROJECT COLONIAL MART

LOCATION WINOOSKI, VERMONT

DATE DRILLED 7/8/98 TOTAL DEPTH OF HOLE 22.0'

DIAMETER 4.25"

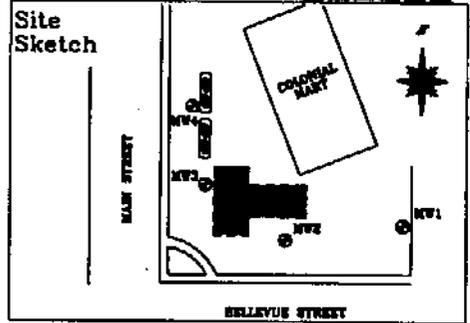
SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"

CASING DIA. 2" LENGTH 9.5' TYPE sch 40 pvc

DRILLING CO. T&K DRILLING METHOD HSA

DRILLER ALAN TOMMILA LOG BY W. DOE

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			0
1	CONCRETE				1
2					2
3	NATIVE BACKFILL				3
4					4
5	WELL RISER		5'-7' 8/11/12/9 120 ppm	Brown, fine SAND, trace silt, dry, moderate petroleum odor.	5
6					6
7					7
8	BENTONITE				8
9					9
10	SAND PACK		10'-12' 4/8/12/13 110 ppm	Brown SILT with trace of very fine sand, dry, moderate petroleum odor.	10
11					11
12				12.0' WATER TABLE	12
13					13
14					14
15	WELL SCREEN		15'-17' 40/26/12/13 0 ppm	Brown, fine SAND, trace silt, moist, no odor, gray clay at 17'.	15
16					16
17					17
18					18
19	BOTTOM CAP				19
20					20
21			20'-22' 0/0/3/2 0 ppm	Soft, gray CLAY, trace fines, moist, no odor.	21
22	UNDISTURBED NATIVE SOIL				22
23				BASE OF WELL AT 20' END OF EXPLORATION AT 22'	23
24					24
25					25

PROJECT COLONIAL MART

LOCATION WINOOSKI, VERMONT

DATE DRILLED 7/8/98 TOTAL DEPTH OF HOLE 22.0'

DIAMETER 4.25"

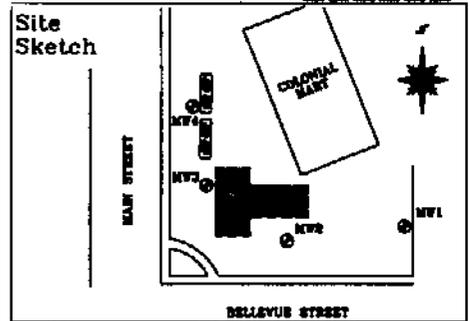
SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"

CASING DIA. 2" LENGTH 9.5' TYPE sch 40 pvc

DRILLING CO. T&K DRILLING METHOD HSA

DRILLER ALAN TOMMILA LOG BY W. DOE

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			0
1	CONCRETE				1
2	NATIVE BACKFILL				2
3	NATIVE BACKFILL				3
4	NATIVE BACKFILL				4
5	WELL RISER				5
6	WELL RISER		5'-7' 5/7/14/9 0 ppm	SILT with some clay, little fine sand, dry, no odor.	6
7	WELL RISER				7
8	BENTONITE				8
9	BENTONITE				9
10	SAND PACK				10
11	SAND PACK		10'-12' 8/8/12/8 0 ppm	SILT with some fine sand, dry, no odor.	11
12	SAND PACK			12.0' WATER TABLE	12
13	SAND PACK				13
14	SAND PACK				14
15	WELL SCREEN				15
16	WELL SCREEN		15'-17' 8/4/4/4 0 ppm	Silt with some fine sand, wet, no odor. Gray CLAY, wet, no odor.	16
17	WELL SCREEN				17
18	WELL SCREEN				18
19	BOTTOM CAP				19
20	BOTTOM CAP				20
21	BOTTOM CAP		20'-22' 0/0/1/3 0 ppm	Same as above.	21
22	UNDISTURBED NATIVE SOIL			BASE OF WELL AT 20' END OF EXPLORATION AT 22'	22
23	UNDISTURBED NATIVE SOIL				23
24					24
25					25

APPENDIX C

Liquid Level Monitoring Data

**Liquid Level Monitoring Data
Colonial Mart, Winooski, Vermont**

7/20/98

Well I.D.	Top of Casing Elevation	Depth To Product	Water	Product Thickness	Specific Gravity Of Product	Water Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	97.87		7.28					90.59
MW-2	97.36		2.66					94.70
MW-3	98.08		7.35					90.73
MW-4	100.00		4.40					95.60

All Values Reported in Feet

Top-of-Casing Elevations Measured in Feet Relative to MW-4 set at 100.00'

APPENDIX D

Groundwater Quality Summary

Laboratory Report

**Groundwater Quality Summary
Colonial Mart
Winooski, Vermont**

July 20, 1998

PARAMETER	Sample Point						VGES
	MW-1	MW-2	MW-3	MW-4	Duplicate of MW-2	Trip Blank	
Benzene	1,660.	1,660.	339.	ND	1,780.	ND	5.
Chlorobenzene	ND	ND	ND	ND	ND	ND	100.
1,2-DCB	ND	ND	ND	ND	ND	ND	600.
1,3-DCB	ND	ND	ND	ND	ND	ND	600.
1,4-DCB	ND	ND	ND	ND	ND	ND	75.
Ethylbenzene	270.	69.5	11.2	ND	79.4	ND	700.
Toluene	TBQ	507.	106.	ND	563.	ND	1,000.
Xylenes	407.	1,400.	146.	ND	1,550.	ND	10,000.
Total BTEX	2,337.	3,636.5	602.2	ND	3,972.4	ND	-
MTBE	587.	TBQ	955.	ND	TBQ	ND	40.
BTEX+MTBE	2,924.	3,636.5	1,557.2	ND	3,972.4	ND	-

All Values Reported in ug/L (ppb)

VGES - Vermont Groundwater Enforcement Standard

ND - None Detected

TBQ - Trace Below Quantitation



Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: K&L Quickstop
REPORT DATE: July 28, 1998
DATE SAMPLED: July 20, 1998

PROJECT CODE: GIKL1792
REF.#: 124,340 - 124,345

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.

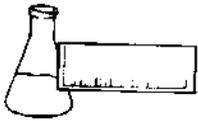
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

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

enclosures



ENDYNE, INC.

Laboratory Services

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

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Griffin International

DATE RECEIVED: July 21, 1998

PROJECT NAME: K&L Quickstop

REPORT DATE: July 28, 1998

CLIENT PROJ. #: 89741089

PROJECT CODE: GIKL1792

Ref. #:	124,340	124,341	124,342	124,343	124,344
Site:	Trip Blank	MW-1	MW-2	Duplicate (MW-2)	MW-3
Date Sampled:	7/20/98	7/20/98	7/20/98	7/20/98	7/20/98
Time Sampled:	8:30	11:22	11:35	11:35	11:43
Sampler:	Rob Basile	Rob Basile	Rob Basile	Rob Basile	Rob Basile
Date Analyzed:	7/25/98	7/25/98	7/25/98	7/27/98	7/27/98
UIP Count:	0	>10	>10	>10	>10
Dil. Factor (%):	100	5	5	5	10
Surr % Rec. (%):	100	97	97	87	91
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)
Benzene	<1	1,660.	1,660.	1,780.	339.
Chlorobenzene	<1	<20	<20	<20	<10
1,2-Dichlorobenzene	<1	<20	<20	<20	<10
1,3-Dichlorobenzene	<1	<20	<20	<20	<10
1,4-Dichlorobenzene	<1	<20	<20	<20	<10
Ethylbenzene	<1	270.	69.5	79.4	11.2
Toluene	<1	TBQ <20	507.	563.	106.
Xylenes	<1	407.	1,400.	1,550.	146.
MTBE	<10	587.	TBQ <200	TBQ <200	955.

Ref. #:	124,345				
Site:	MW-4				
Date Sampled:	7/20/98				
Time Sampled:	11:54				
Sampler:	Rob Basile				
Date Analyzed:	7/25/98				
UIP Count:	3				
Dil. Factor (%):	100				
Surr % Rec. (%):	104				
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				
MTBE	<10				

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

Project Name: K&L QUICKSTOP	Reporting Address: GRIFFIN	Billing Address:
Site Location: WINDOSKI, VT		
Endyne Project Number: GJKL1792	Company: Contact Name/Phone #: K. McGRAW	Sampler Name: ROB BASILE Phone #:

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				
124,340	TRIP BLANK	H ₂ O	YES		7/20/98 8:30	2	40ml		8020	HCl	
124,341	MW-1				11:22						
124,342	MW-2				11:35						
124,343	DUPLICATE (MW-2)				11:35						
124,344	MW-3				11:43						
124,345	MW-4				11:54						
		SIGNED									

Relinquished by: Signature <i>Rob Basile</i>	Received by: Signature <i>Tim Desio</i>	Date/Time 7-21-98 9:50
Relinquished by: Signature <i>Tim Desio</i>	Received by: Signature <i>Tom M. ...</i>	Date/Time 7-21-98 9:50

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 Pest/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 606 Pest/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):										