JUN 2 4 1996

GRIFFIN INTERNATIONAL INC

June 24, 1996

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

RE: Investigation of Subsurface Petroleum Contamination at Champlain Marina, Colchester, Vermont (VTDEC Site #95-1894)

Dear Mr. Spiese:

Please find enclosed the summary report for the site investigation conducted at the Champlain Marina in Colchester. Please contact me with any questions or comments that you may have.

Sincerely,

Robert Higgins
Environmental Scientist

Enclosure
c: 10954762
Mr. Jared Leary, Champlain Club LTD

REPORT ON THE INVESTIGATION OF SUBSURFACE PETROLEUM CONTAMINATION

JUNE 17, 1996

Site Location:

CHAMPLAIN MARINA
LAKESHORE DRIVE
COLCHESTER VT
(VTDEC SITE #95-1894)

Prepared For:

CHAMPLAIN CLUB LTD
PO BOX 168
COLCHESTER VT 05829

Prepared By:

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

TABLE OF CONTENTS

I. INTRODUCTION

The following report summarizes the investigation of subsurface petroleum contamination that was conducted at the Champlain Marina on Lakeshore Drive in Colchester VT. This work has been conducted by Griffin International, Inc. (Griffin), for Mr. Jared Leary of Champlain Club Ltd. The Vermont Department of Environmental Conservation (VTDEC) requested that this work be completed in a letter addressed to Mr. Leary from Mr. Richard Spiese of the VTDEC, dated November 28, 1995. All work at the site was conducted in accordance with the May 2, 1996 Work Plan and Cost Estimate prepared by Griffin, which was approved by the VTDEC in a letter from Mr. Spiese, to Mr. Peter Schuyler of Griffin, dated May 7, 1996.

Work conducted at the site included sample collection and analysis from three groundwater monitoring wells installed during a recent underground storage tank (UST) installation, the development of a groundwater contour map for the site, and screening of soils along the former piping run. In addition, a sensitive receptor risk assessment was conducted to assess the risk that subsurface petroleum contamination at the site may pose to sensitive receptors in the area.

II. SITE BACKGROUND

A. Site History

On October 5, 1995, a 10,000 gallon capacity UST, used to contain gasoline, was permanently closed and removed from the ground at the Champlain Marina. The UST was being removed in order to be replaced with an updated system. During the UST removal inspection, petroleum contaminated soils were detected in the vicinity of the tank, and the former piping run. As the ground was covered with boats which could not be moved, the former piping was closed in place. The extent and degree of petroleum contamination to the subsurface could not be adequately defined at the time of the inspection.

A new, double walled 10,000 gallon capacity UST was installed as a replacement in approximately the same location as the former UST. As it was evident that additional investigative work would be required at the site in response to the petroleum contamination in the subsurface, three groundwater monitoring wells were installed during the installation of the new UST.

As a result of the detected petroleum contamination in the subsurface in the vicinity of the former UST, the VTDEC requested that additional work be conducted at the site to determine the extent and degree of petroleum contamination. Champlain Club Ltd. retained the services of Griffin to prepare a work plan and cost estimate for all work requested by the VTDEC. A work plan and cost estimate for an Investigation of Suspected Subsurface Petroleum Contamination was prepared for the site and approved by both Champlain Club Ltd. and the VTDEC. This report summarizes this investigation.

B. Site Description

The Champlain Marina is a facility used to store and service boats. The facility also provides fuel to boats on the water. The marina is located on Lakeshore Drive, Malletts Bay. The site consists of a small building used as a store and a larger garage used as a service area. It is situated on a large gravel lot used for boat storage. The site is bordered to the north by Lake Champlain, to the east by a public boat launch, to the south by Lakeshore Drive and further by a restaurant, and to the west by residences. Property uses in the area are primarily residential and commercial. All buildings in the vicinity are serviced by municipal water and sewer systems.

Soils in the vicinity of the UST pit consist of coarse to fine sands and gravel; further downgradient toward the lake the soils consist mostly of silt and fine sands.

III. INVESTIGATIVE PROCEDURES

A. Monitoring Well Installation

Three groundwater monitoring wells, designated MW-1, MW-2, and MW-3, were installed by backhoe. Due to the abundance of boats covering the property the placement of monitoring wells was limited, and they are consequently situated in a straight line. MW-1 is located approximately ten feet south of the tank pit, MW-2 is located approximately 40 feet north of the tank pit, and MW-3 is located approximately 90 feet north of the tank pit. The locations of the monitoring wells are displayed on the Site Map in Appendix A. The wells were installed by excavating down to approximately 7 to 8 feet below grade, setting the well in the excavation, and carefully back filling the well with native sand materials.

The wells were constructed of factory slotted, two-inch diameter PVC pipe with a slot size of 0.010 inch and a schedule 40 PVC riser. Each well was constructed of five feet of screen with riser to the surface. Specific well construction details are displayed in the detailed well logs included in Appendix B.

The soils encountered in the excavation and the vicinity of the groundwater monitoring wells consisted of moist to wet brown poorly sorted sands with silt and gravel from grade to 2.5 feet in depth, and wet gray silty medium grained sand with little gravel to 7 feet in depth. Groundwater was encountered at an approximate depth of four feet below grade.

B. Determination of Groundwater Flow Direction and Gradient

On May 21, 1996, depth to water measurements were taken with the use of a Keck interface probe for all three site related wells. These measurements were subtracted from the top of casing elevations, which were determined relative to an arbitrary datum of 100 feet at top of the casing for MW-3, to determine the water table elevation at each of the wells. From the monitoring well water table elevation data, the groundwater contours were interpolated onto the site map and the groundwater direction and gradient determined.

As displayed on the groundwater contour map included in Appendix A, the regional groundwater flow direction for May 21, 1996, was to the north, toward Lake Champlain at a gradient of approximately 7.5%. The layout of the wells makes it difficult to determine whether or not flow direction is skewed in any direction from north. However based on the steep gradient and the proximity of the lake this possibility remains highly unlikely.

No free phase petroleum product was observed in any of the monitoring wells. All groundwater level data are recorded in Appendix C.

C. Groundwater Sample Collection and Analysis

Immediately following depth to water data collection, samples of the groundwater were collected from all three of the site related monitoring wells. All samples were analyzed for benzene, toluene, ethyl benzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE), common constituents of petroleum contamination, per EPA Method 602. Results of the laboratory analyses for those wells sampled on this date are summarized in Appendix D. Laboratory report forms are presented in Appendix E.

According to the results of the analyses, low levels of dissolved petroleum contamination were detected in only one of the three on-site groundwater monitoring wells. No targeted petroleum compounds were detected by analyses of the groundwater samples collected from MW-2 or MW-3. The sample collected from MW-1 contained contaminants at concentrations slightly in excess of Vermont Groundwater Enforcement Standards (VT GES). This well is located closest to the former UST. Benzene was detected in concentration of 7.4 parts per billion (ppb), which is slightly above the VT GES of 5.0 ppb. Ethylbenzene was detected in concentration of 2.8 ppb which is below the enforcement standard for the compound of 700 ppb. Toluene was detected in concentration of 5.0 ppb, which is below the VT GES of 1000 ppb. Xylenes were detected in concentration of 133 ppb, which is below the enforcement standard for these compounds of 400 ppb. MTBE was detected in concentration of 37.6 ppb, which is below the VT GES for the compound of 40 ppb.

The data suggests that the dissolved contaminant plume lies between MW-1 and MW-2. If the groundwater flow direction varies slightly to the west or east of north the dissolved contaminant plume may be skewed in that direction. However were this the case one would likely expect to find dissolved contamination in MW-2.

All samples were collected according to Griffin's groundwater sampling protocol which complies with industry and state standards. Results from the analyses of the duplicate, trip blank and equipment blank samples indicate that adequate quality assurance and control (QA/QC) were maintained during sample collection and analysis.

D. Soil Screening Along the Former Piping Run

As the former piping run had been closed in place, it was necessary to screen soils in its vicinity to complete its assessment requirements. Soils were collected from eight locations in the vicinity of the former piping; with the exception of two, all were collected at or below the soil water interface. These soils were screened for volatile organic compounds (VOCs) by an HNu HW 101 photoionization device (PID) by Griffin on the day of groundwater sample collection. All samples were collected with the use of a hand auger and placed in clean plastic re-sealable bags. Each soil sample was screened in accordance with Griffin's Jar/ Polyethylene Bag Headspace Analysis Protocol, which complies with state and industry standards.

The results of the soil screening indicate that four of the samples were above background VOC concentrations, with the highest concentration being 0.6 parts per million (ppm). Each of the samples with detectable VOC concentrations was collected at or below the soil water interface.

E. Sensitive Receptor Risk Assessment

A receptor risk assessment was conducted to identify known and potential receptors of the contamination detected at the Champlain Marina. A visual survey was conducted at the time of sample collection and during the UST removal inspection. Based on these observations, a determination of the potential risk to identified receptors was conducted based on proximity, groundwater flow direction, and contaminant concentration levels.

Water Supplies

Based on the fact that the area is served by the municipal water system, and that there are no water supplies located downgradient from the site, it does not appear likely that any water supplies in the vicinity of the Champlain Marina are at significant risk of petroleum contamination from the site. In addition, the level of dissolved petroleum contamination detected at the site is relatively low.

Surface Waters

Lake Champlain lies approximately 120 feet downgradient from the former UST, and the piping run extends out over the lake to a fueling point. The lake was inspected during the UST removal, and at the time of sample collection, for evidence of petroleum contamination impact. None of the area downgradient of the site showed signs of staining, sheens, or stressed vegetation. No petroleum odors were detected.

Due to the low levels of petroleum contamination detected in the groundwater in the vicinity of the former UST, it does not appear likely that the surface water of Lake Champlain could be significantly impacted with petroleum contamination from the UST.

Buildings in the Vicinity

There are two buildings on site, the marina and the garage building, neither of which have basements. No complaints have been reported of petroleum odors within the buildings. A residence is located approximately 100 feet to the east, cross-gradient and at a higher elevation than the UST system. This building has not been screened for VOC vapors.

Neither of the two buildings in the closest proximity to the UST pit appear to be at significant risk of petroleum vapor impact from petroleum contamination in soils in the vicinity of the UST pit. This determination is based on proximity to the area of detected subsurface contamination, and the relatively low levels of petroleum contamination detected in the subsurface. In addition, it is not likely that the neighboring residence is at significant risk of petroleum contamination as it would be highly improbable that the low levels of contamination would migrate cross gradient.

IV. CONCLUSIONS

Based on the data collected from the Champlain Marina and vicinity in Colchester, Vermont, the following conclusions are made:

1) Low levels of petroleum contamination exists in the soils (adsorbed) and in the groundwater (dissolved) in the vicinity of the existing 10,000 gallon UST. The source of the contamination is residual contamination from gasoline that leaked from the former 10,000 gallon UST.

2) The contaminant plume is concentrated in the vicinity of the existing UST. The two wells located downgradient (MWs 2 & 3) contain no petroleum compounds targeted in the analysis.

2) Based on a survey of known potential sensitive receptors in the vicinity of the site. There are no receptors in the area that appear to be at significant risk of petroleum contamination from the subsurface petroleum contamination detected at the site.

3) Over time, the natural processes of dilution, dispersion, volatilization, and biodegradation will reduce dissolved and expected contaminant concentrations present in the subsurface at the Champlain Marina.

4) According to a soil screening analysis conducted with a PID during hand augering, soils around the former piping run, do not exhibit VOCs. These soils likely were not impacted by petroleum contamination.

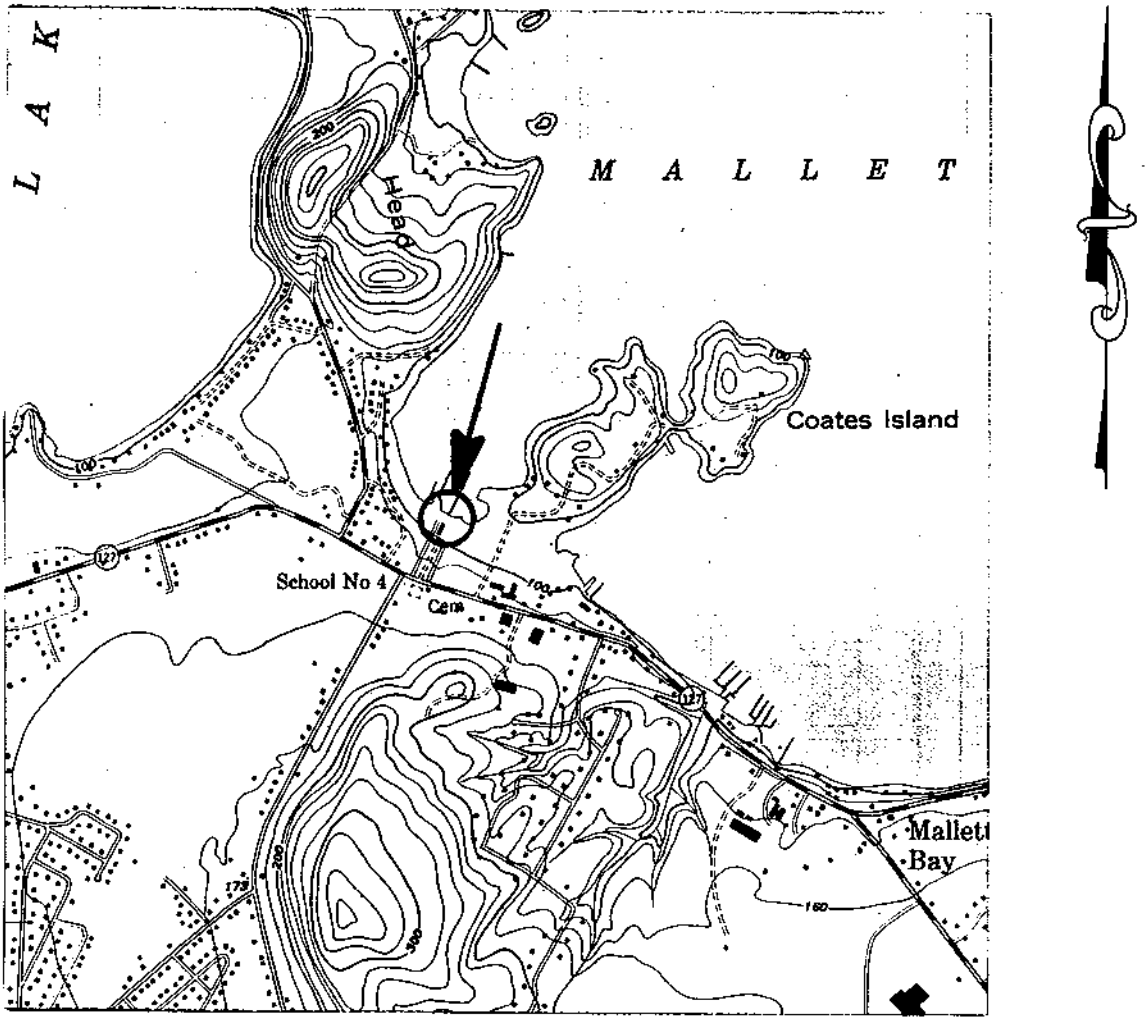
V. RECOMMENDATIONS

Based on the above conclusions, the following recommendations are made concerning petroleum contamination detected in the subsurface at the Champlain Marina located in Colchester, Vermont:

1) Due to the low levels of petroleum contamination, the lack of known receptor impact, and the fact that there is no longer a a continuing source, closure of this site is recommended.

APPENDIX A

Maps



JOB #: 10954762
SOURCE: USGS– COLCHESTER, VERMONT QUADRANGLE

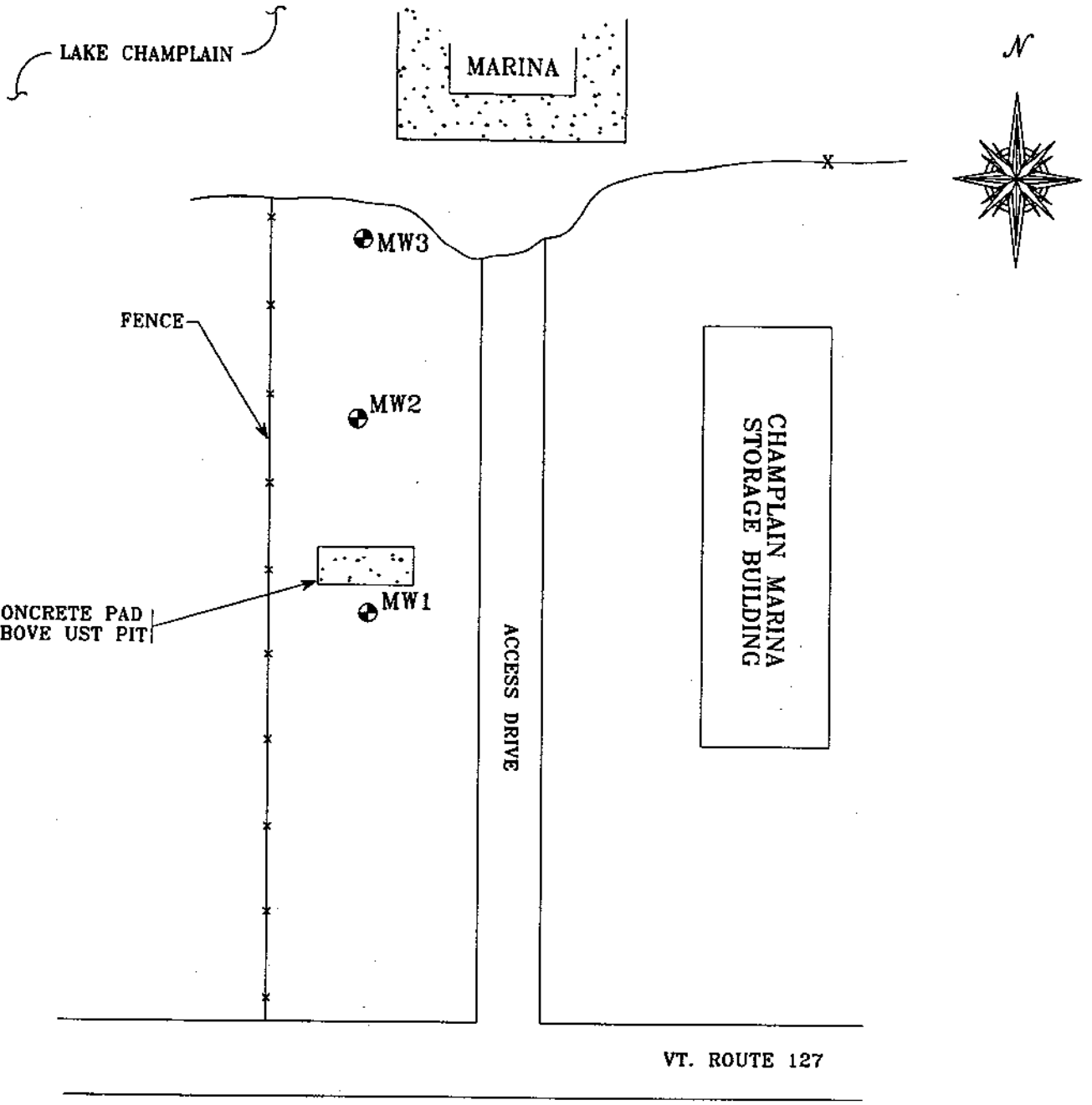
GRIFFIN INTERNATIONAL INC

CHAMPLAIN MARINA

COLCHESTER, VERMONT

SITE LOCATION MAP

DATE: 6/11/96	DWG.#:1	SCALE: 1:24000	DRN.:SB	APP.:RH



LEGEND

MW2 — MONITORING WELL

X — HIGH WATER MARK

JOB #: 10954762

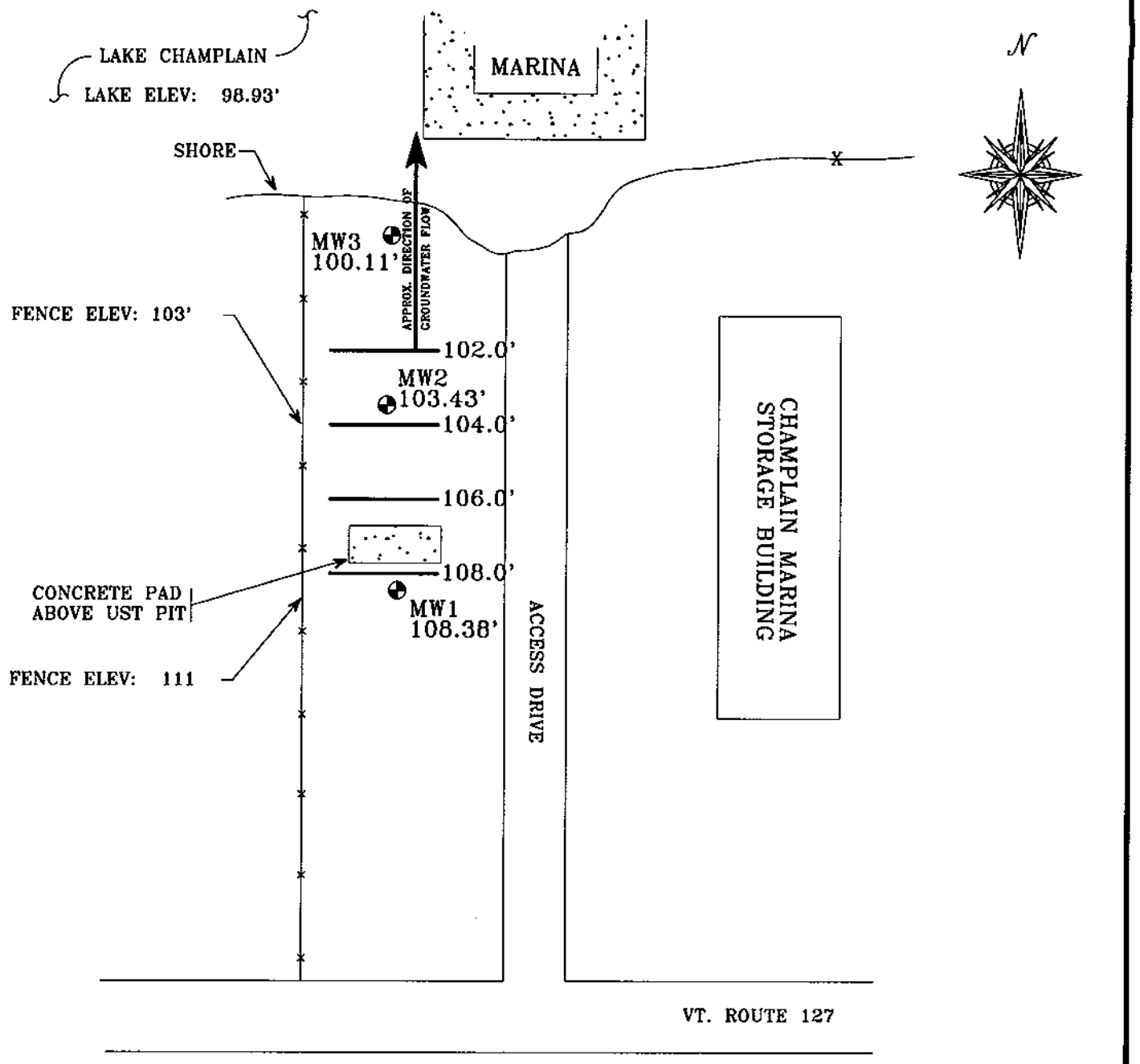
GRIFFIN INTERNATIONAL INC

CHAMPLAIN MARINA

COLCHESTER, VERMONT

SITE MAP

DATE: 6/10/96	DWG.#: 2	SCALE: ~ 1"=50'	DRN.:SB	APP.:RH



LEGEND

MW2 103.43' — MONITORING WELL AND WATER TABLE ELEVATION IN FEET

104.0' — GROUNDWATER CONTOUR IN FEET (DASHED WHERE INFERRED)

X — HIGH WATER MARK

JOB #: 10954762
MEASUREMENT DATE: 5/21/96

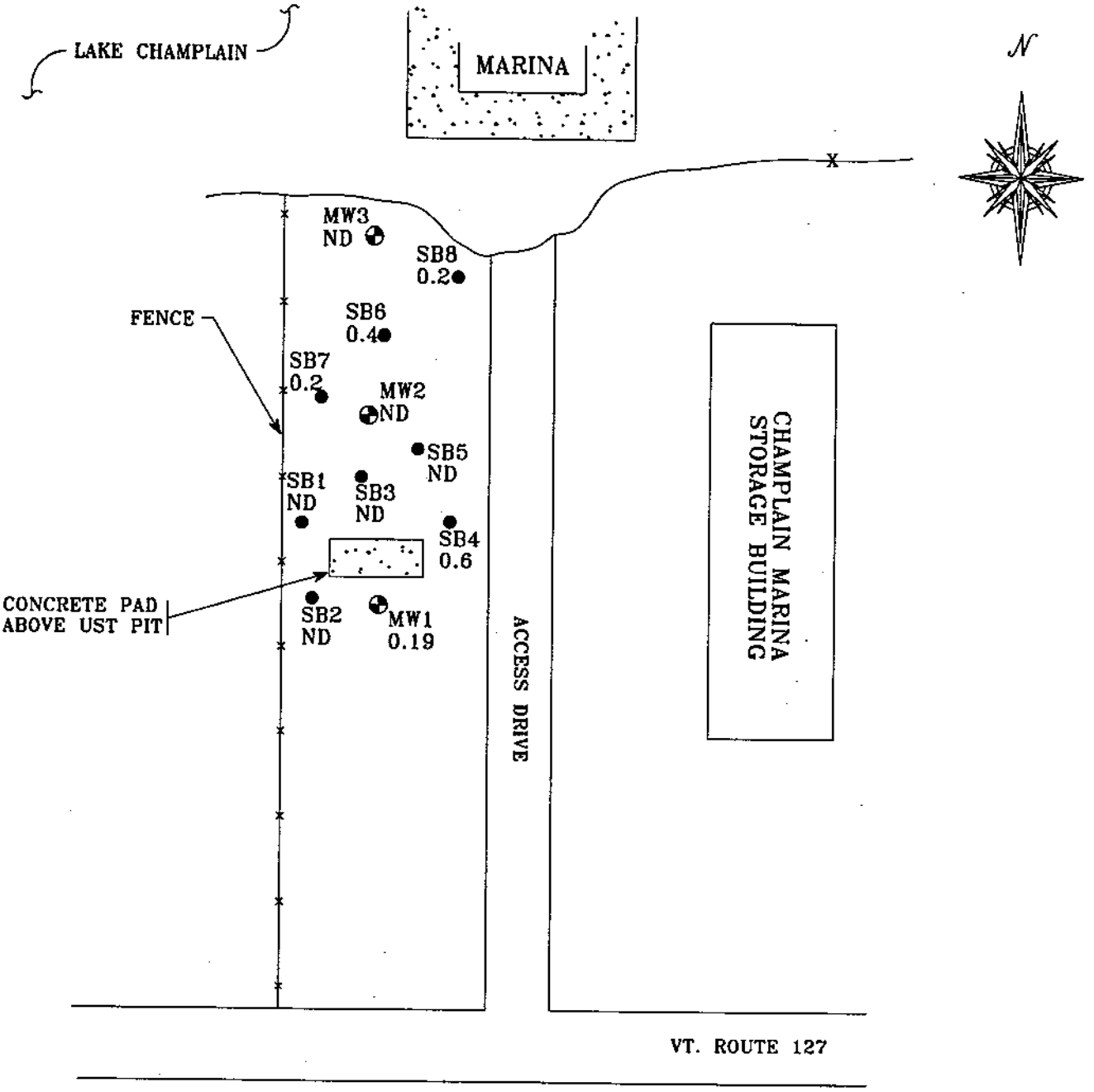
GRIFFIN INTERNATIONAL INC

CHAMPLAIN MARINA

COLCHESTER, VERMONT

GROUNDWATER CONTOUR MAP

DATE: 6/10/96	DWG.#: 3	SCALE: ~ 1"=50'	DRN.:SB	APP.:RH



LEGEND

MW1 0.19	MONITORING WELL AND TOTAL BTEX AND MTBE CONCENTRATION (ppm)
SB4 0.6	SOIL BORING AND SOIL SAMPLE LOCATION VOC CONCENTRATION BY PID (ppm)
ND	NONE DETECTED
X	HIGH WATER MARK

JOB #: 10954762
SAMPLE DATE: 5/21/96

GRIFFIN INTERNATIONAL INC

CHAMPLAIN MARINA

COLCHESTER, VERMONT

CONTAMINANT CONCENTRATION MAP

DATE: 6/10/96	DWG.#: 4	SCALE: ~ 1"=50'	DRN.:SB	APP.:RH

APPENDIX B

Well Logs

PROJECT CHAMPLAIN MARINA

LOCATION COLCHESTER, VERMONT

DATE DRILLED 4/5/96 TOTAL DEPTH OF HOLE 7.0'

DIAMETER

SCREEN DIA. 2" LENGTH 5.0' SLOT SIZE 0.010"

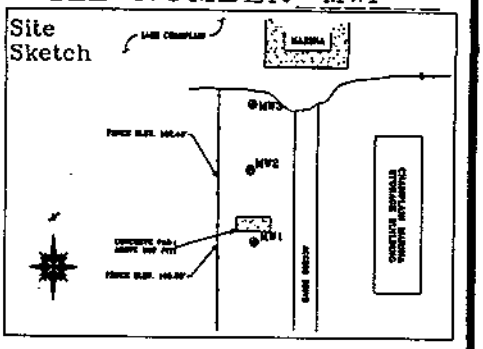
CASING DIA. 2" LENGTH 1.5' TYPE sch 40 pvc

DRILLING CO. MACINTYRE DRILLING METHOD BACKHOE

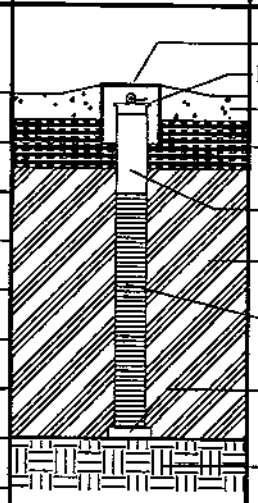
DRILLER CLIFF LOG BY R. HIGGINS

WELL NUMBER MW1

Site Sketch



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		Moist to wet SAND, SILT and GRAVEL fill. slight petroleum odor.	1
2		WELL RISER			2
3		NATIVE BACKFILL			3
4				4.0' WATER TABLE ▼	4
5		WELL SCREEN			5
6		BOTTOM CAP			6
7		UNDISTURBED NATIVE SOIL		BASE OF WELL AT 7' END OF EXPLORATION AT 7'	7
8					8
9					9
10					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

PROJECT CHAMPLAIN MARINA

LOCATION COLCHESTER, VERMONT

DATE DRILLED 4/5/96 TOTAL DEPTH OF HOLE 8.0'

DIAMETER

SCREEN DIA. 2" LENGTH 5.0' SLOT SIZE 0.010"

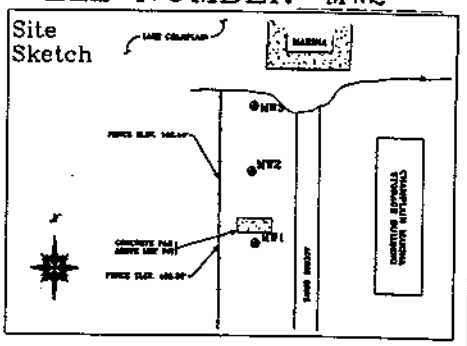
CASING DIA. 2" LENGTH 2.5' TYPE sch 40 pvc

DRILLING CO. MACINTYRE DRILLING METHOD BACKHOE

DRILLER CLIFF LOG BY R. HIGGINS

WELL NUMBER MW2

Site Sketch



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		SAND, SILT and GRAVEL FILL	1
2					2
3		WELL RISER			3
4		NATIVE BACKFILL		4.0' WATER TABLE	4
5					5
6		WELL SCREEN		Moist, gray, wet, silty medium SAND, little gravel, no odor.	6
7		BOTTOM CAP			7
8		UNDISTURBED NATIVE SOIL		BASE OF WELL AT 8' END OF EXPLORATION AT 8'	8
9					9
10					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

PROJECT CHAMPLAIN MARINA

LOCATION COLCHESTER, VERMONT

DATE DRILLED 4/5/96 TOTAL DEPTH OF HOLE 7.0'

DIAMETER

SCREEN DIA. 2" LENGTH 5.0' SLOT SIZE 0.010"

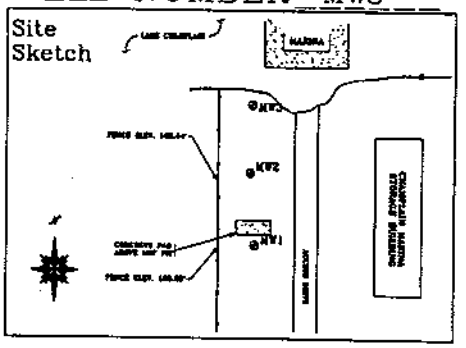
CASING DIA. 2" LENGTH 1.5' TYPE sch 40 pvc

DRILLING CO. MACINTYRE DRILLING METHOD BACKHOE

DRILLER CLIFF LOG BY R. HIGGINS

WELL NUMBER MW3

Site Sketch



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
1		LOCKING WELL CAP			1
2		CONCRETE		Gray, moist, fine SAND, some silt, no odor.	2
3		BENTONITE			3
4		WELL RISER		Moist, SAND, SILT, ORGANICS, no odor.	4
5		NATIVE BACKFILL		4.0' WATER TABLE	5
6		WELL SCREEN		Brown, moist to wet, fine SAND and SILT.	6
7		BOTTOM CAP		BASE OF WELL AT 7'	7
8		UNDISTURBED NATIVE SOIL		END OF EXPLORATION AT 7'	8
9					9
10					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

Groundwater Liquid Level Data

Liquid Level Monitoring Data
Champlain Marina
Colchester, VT

Monitoring Date: 5/21/96

Well I.D.	Well Depth (ft < Grade)	Top of Casing Elevation	Depth To Product	Depth To Water	Product Thickness	Specific Gravity Of Product	Hydro Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	7.00	110.55	-	2.17	-	-	-	2.17	108.38
MW-2	8.00	104.97	-	1.54	-	-	-	1.54	103.43
MW-3	7.00	100.00	-	+0.11	-	-	-	+0.11	100.11

Elevations Based on Arbitrary Datum With Top of MW3 Casing Set at 100.00 ft.
All Values Reported in feet

APPENDIX D

Groundwater Quality Summary

Groundwater Quality Summary
Champlain Marina
Colchester, VT

Monitoring Date: May 21, 1996

All Values Reported in ug/L (ppb)

PARAMETER	MW1	MW2	MW3	Enforcement Standard
Benzene	**7.4**	ND	ND	5.0*
Chlorobenzene	ND	ND	ND	100*
1,2-DCB	ND	ND	ND	600*
1,3-DCB	ND	ND	ND	600**
1,4-DCB	ND	ND	ND	75*
Ethylbenzene	**2.8**	ND	ND	700***
Toluene	**5.0**	ND	ND	1,000*
Xylenes	**133.0**	ND	ND	400***
Total BTEX	**148.2**			-
MTBE	**37.6**	ND	ND	40**
BTEX + MTBE	**185.8**			-

* - EPA Maximum Contaminant Level

** - VT Health Advisory Level

*** - VT Groundwater Enforcement Standard

ANALYSIS BY EPA METHOD 602

APPENDIX E

Laboratory Analysis Reports

ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Champlain Marina
REPORT DATE: May 29, 1996
DATE SAMPLED: May 21, 1996

PROJECT CODE: GICM1821
REF.#: 89,203 - 89,208

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

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Champlain Marina
REPORT DATE: May 29, 1996
DATE SAMPLED: May 21, 1996
DATE RECEIVED: May 21, 1996
DATE ANALYZED: May 28, 1996

PROJECT CODE: GICM1821
REF.#: 89,203
STATION: Trip Blank
TIME SAMPLED: 8:59
SAMPLER: R. Higgins

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 100%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Champlain Marina
REPORT DATE: May 29, 1996
DATE SAMPLED: May 21, 1996
DATE RECEIVED: May 21, 1996
DATE ANALYZED: May 25, 1996

PROJECT CODE: GICM1821
REF.#: 89,204
STATION: MW1
TIME SAMPLED: 10:21
SAMPLER: R. Higgins

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	7.4
Chlorobenzene	1	ND[1]
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	2.8
Toluene	1	5.0
Xylenes	1	133.
MTBE	10	37.6

Bromobenzene Surrogate Recovery: 97%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Champlain Marina
REPORT DATE: May 29, 1996
DATE SAMPLED: May 21, 1996
DATE RECEIVED: May 21, 1996
DATE ANALYZED: May 28, 1996

PROJECT CODE: GICM1821
REF.#: 89,205
STATION: MW2
TIME SAMPLED: 10:43
SAMPLER: R. Higgins

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 119%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Champlain Marina
REPORT DATE: May 29, 1996
DATE SAMPLED: May 21, 1996
DATE RECEIVED: May 21, 1996
DATE ANALYZED: May 28, 1996

PROJECT CODE: GICM1821
REF.#: 89,206
STATION: Duplicate MW2
TIME SAMPLED: 10:43
SAMPLER: R. Higgins

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 97%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Champlain Marina
REPORT DATE: May 29, 1996
DATE SAMPLED: May 21, 1996
DATE RECEIVED: May 21, 1996
DATE ANALYZED: May 28, 1996

PROJECT CODE: GICM1821
REF.#: 89,207
STATION: MW3
TIME SAMPLED: 12:01
SAMPLER: R. Higgins

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 93%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

ENDYNE, INC.

Laboratory Services

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Williston, Vermont 05495
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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Champlain Marina
REPORT DATE: May 29, 1996
DATE SAMPLED: May 21, 1996
DATE RECEIVED: May 21, 1996
DATE ANALYZED: May 28, 1996

PROJECT CODE: GICM1821
REF.#: 89,208
STATION: Equipment Blank
TIME SAMPLED: 12:12
SAMPLER: R. Higgins

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 93%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

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FAX 879-7103

EPA METHOD 602 LABORATORY REPORT

MATRIX SPIKE AND DUPLICATE LABORATORY CONTROL DATA

CLIENT: Griffin International
PROJECT NAME: Champlain Marina
REPORT DATE: May 29, 1996
DATE SAMPLED: May 21, 1996
DATE RECEIVED: May 21, 1996
DATE ANALYZED: May 28, 1996

PROJECT CODE: GICM1821
REF.#: 89,207
STATION: MW3
TIME SAMPLED: 12:01
SAMPLER: R. Higgins

Parameter	Sample(ug/L)	Spike(ug/L)	Dup1(ug/L)	Dup2(ug/L)	Avg % Rec
Benzene	ND[1]	10	10.3	10.1	102%
Toluene	ND	10	10.4	10.2	103%
Ethylbenzene	ND	10	10.2	10.0	101%
Xylenes	ND	30	29.6	29.3	98%

NOTES:
1 None detected

ENDYNE, Inc.

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

10954762

16859

CHAIN-OF-CUSTODY RECORD

Project Name: Champlain Mall Site Location: Colchester, VT	Reporting Address: Griffin	Billing Address:
Endyne Project Number: GICM1821	Company: Contact Name/Phone #: R. Higgins	Sampler Name: R. Higgins Phone #:

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 5/21/96	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
89,203	TRIP BLANK	H2O	✓		9:59	2	40ml		602	HCl	
89,204	MW1				10:21						
89,205	MW2				10:43						
89,206	DUPLICATE MW2				10:43						
89,207	MW3				12:01						
89,208	EQUIPMENT BLANK				12:12						

Relinquished by: Signature Robert Higgins	Received by: Signature John Smith	Date/Time 5/21/96 1:45pm
Relinquished by: Signature	Received by: Signature	Date/Time

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 608 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):										