Wagner, Heindel, and Noyes, Inc.

• Consulting Hydrogeologists
• Engineers
• Environmental Scientists

P.O. Box 1629 Burlington, Vermont 05402-1629 802-658-0820
FAX: 802-860-1014

June 28, 1995

Mr. Richard Spiese
Hazardous Materials Management Division
Agency of Natural Resources
103 South Main Street
Waterbury, VT 05671-0404

Dear Richard:

Enclosed please find our Petroleum Storage Tank Site Investigation Report for the F.W. Bailey Warehouse located in Barre, Vermont.

If you have any questions on this information, please do not hesitate to contact our office.

Best regards,

Jeff Noyes

Jeffrey E. Noyes
Chief Hydrogeologist

JEN/ral

Enclosure

cc: Craig Gable

[U:\JNOYES\WPDOCS\SPIESE.L8]

Wagner, Heindel, and Noyes, Inc.
• Consulting Hydrogeologists
• Engineers
• Environmental Scientists
P.O. Box 1629 Burlington, Vermont 05402-1629
802-658-0820
FAX: 802-860-1014

F.W. Bailey Warehouse
Route 14 North
Barre, Vermont

PETROLEUM STORAGE TANK SITE INVESTIGATION REPORT

Prepared by:

David J. Reese
Staff Engineer

Reviewed and Approved by:

Jeffrey E. Noyes
Chief Hydrogeologist

June 13, 1995

F.W. BAILEY WAREHOUSE
Route 14 North
Barre, Vermont

PETROLEUM STORAGE TANK SITE INVESTIGATION REPORT

TABLE OF CONTENTS

H
W N
Wagner, Heindel, and Noyes, Inc.
• Consulting Hydrogeologists
• Engineers
• Environmental Scientists
P.O. Box 1629 Burlington, Vermont 05402-1629
802-658-0820
FAX: 802-860-1014

F.W. BAILEY WAREHOUSE
Route 14 North
Barre, Vermont

PETROLEUM STORAGE TANK SITE INVESTIGATION REPORT

EXECUTIVE SUMMARY

- On November 14, 1994, two abandoned, partially buried, petroleum storage tanks were moved from the F.W. Bailey Warehouse property. This property is located on Route 14 in Barre, Vermont.
- It is not known how long these tanks have been out of service. Since acquisition of the property in 1981 by Bailey Warehouse, these tanks have been empty and out of service.
- Wagner, Heindel & Noyes, Inc. (WH&N) applied for further site investigation through expressway notification procedure to determine the degree and extent of contamination encountered during tank removal.
- On April 11 and 12, 1995, WH&N oversaw installation of five monitor wells by M&W Soils Engineering, Inc.
- Soil samples obtained during drilling of MW-5 exhibited diesel fuel contamination with maximum total petroleum hydrocarbon concentration of 11,200 mg/kg. Groundwater analysis of MW-5 determined 21 ppb of ethylbenzene and 63.8 ppb of xylenes. All other wells tested negative for BTEX compounds.
- Groundwater analytical results and sensitive receptor survey showed residual contamination of groundwater in a localized area of the tank site. WH&N recommends implementation of a semi-annual groundwater sampling program to monitor water quality for a period of one year. No active remediation is suggested at this time.

H
W N

Wagner, Heindel, and Noyes, Inc.

• Consulting Hydrogeologists
• Engineers
• Environmental Scientists

P.O. Box 1629 Burlington, Vermont 05402-1629 802-658-0820
FAX: 802-860-1014

F.W. BAILEY WAREHOUSE
Route 14 North
Barre, Vermont

PETROLEUM STORAGE TANK SITE INVESTIGATION REPORT

1.0 OVERVIEW

Company performing work:	Wagner, Heindel, and Noyes, Inc.
Company address:	P.O. Box 64709
	Burlington, VT 05406-4709
Company telephone:	(802) 658-0820
Company fax number:	(802) 860-1014

Site owner: Mr. F.W. Bailey
Contact: Mr. Craig Gable
Address: 54 Apple Blossom Road
Barre, VT 05641
(Phone) 802-476-7988
Tank owner/operator: F.W. Bailey Warehouse (petroleum storage tanks)

2.0 SCOPE

This report documents the site investigation performed by WH&N for Mr. F. W. Bailey of Barre, Vermont. The purpose of the investigation was to determine the degree and extent of contamination to groundwater and subsurface soils observed during the removal of two 20,000-gallon petroleum storage tanks.

This investigation involved the installation of five monitoring wells, three soil borings, and the preliminary risk assessment to nearby receptors. The summary report also includes well logs, laboratory and soil screening results, a site map with groundwater contours, conclusions, and recommendations.

3.0 SITE LOCATION AND HISTORY

The two storage tanks were located as shown on the attached parcel map (see Appendix 1, page 4). The parcel which housed these tanks changed ownership several times until final acquisition by F.W. Bailey Warehouse in 1981. From that time until their recent removal the tanks remained empty and out of service.

WH&N oversaw the removal of the tanks by McIntyre Fuels of Middlebury on February 14, 1995. During the tank pull, soil screened with a photoionization detector (PID) measured peak concentrations of 52 ppm; however, degree and extent of contamination were not determined. Consequently, WH&N made application to proceed with a site investigation according to Department's expressway notification. On April 11 and 12, 1995, WH&N contracted M&W Soils Engineering, Inc. and implemented a drilling program to determine subsurface contamination extent. Appendix 1, pages 1-5, and orthophoto in the map pocket present site maps depicting the location of the former AST site, the location of the newly installed monitoring wells MW-1, 2, 3, 4 and 5; and three soil borings transecting the contaminated area. Also depicted on these maps are the direction of groundwater flow; contaminant distribution as determined by this investigation, and location of downgradient features.

Appendix 1, page 2, presents a USGS topographic map for the region. The study area slopes to the west through a series of downward-stepping terraces. Water levels collected from monitoring wells also show groundwater flow to the west toward Gunner's Brook. Soil Conservation Service (SCS) Washington County Soil Map for the area describes the soils as primarily Adams loamy fine sands. These soils are characterized as very deep, gently sloping, and excessively drained (see Appendix 1, pages 6-7).

Soil boring logs for the five monitoring wells installed on the property are found in Appendix 2, pages 1-9. These logs confirm the soils consist primarily of fine silty sands. Well-sorted to medium to fine quartz sand with extensive silt cross bedding was observed in all borings. The stratigraphy is consistent with a stream depositional environment. Granite slag was used to partially fill the northern tank site perimeter.

A reconnaissance of the site was conducted with a PID. All volatile organic compounds (VOCs) concentrations were found to be at background levels for features and structures bordering the site. These include areas around the concrete and wooden spring boxes, seep, bog areas to the south, and terrace slopes. Domestic water supplies are fed by upgradient wells offsite.

4.0 INITIAL SAMPLING AND SCREENING OF SOILS IN GROUNDWATER FOR PETROLEUM HYDROCARBONS

WH&N designed a groundwater and soils testing program to determine the degree and extent of contamination at the F. W. Bailey warehouse site. Representative samples were acquired during the drilling program and subsequent well sampling event. In addition, one of two abandoned spring boxes and a seep upgradient of Gunner's Brook were sampled (Appendix 1, page 3).

Soil samples were recovered using a split spoon device and screened with a PID equipped with a 10.2 eV probe. During well installation, no substantial PID soil readings above background were obtained for MW-1, 2, and 3. Elevated readings for MW-4 were at a maximum of 16.4 ppm in the upper 10 feet bgs and falling off rapidly with depth. This well was drilled to refusal depth of 25 feet bgs. MW-5 was drilled near the tank site and displayed consistently high PID readings to depth. The maximum reading was 54 ppm at the phreatic surface. Samples were composited and sent to the laboratory for EPA method 8020 and TPH by EPA Method 8100. Results of soil samples obtained from MW-5 indicated TPH analyses were 6,000 mg/kg at 25 feet below ground surface (bgs) and 1,000 mg/kg at 35 feet bgs (see Appendix 3 for soil and groundwater analyses). Three soil borings transecting the suspected plume of contamination were performed from southwest to northeast. No apparent contamination was encountered in the southwest quadrant. PID screenings decreased substantially to the northeast (see Appendix 2 for soil boring logs).

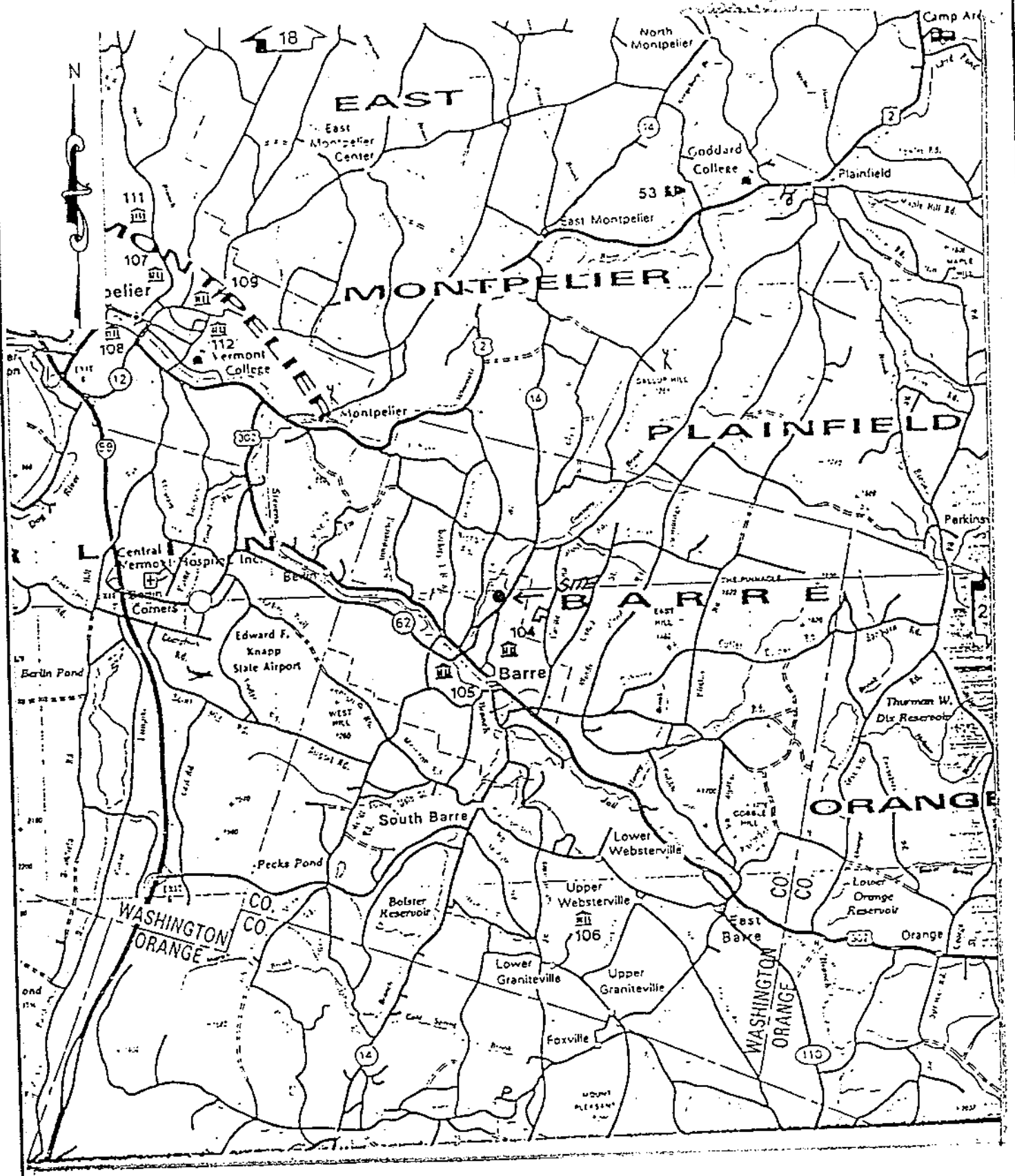
Groundwater samples from all five wells were taken April 17, 1995. Laboratory analyses were via EPA Method 602. These results were at non-detect levels with no unidentified peaks observed for samples from MW-1, 2, 3, the seep, and wood spring box. MW-4 was dry so no samples were taken. The concrete spring box was frozen and could not be sampled. MW-5 groundwater samples contained 84.8 ppb total BTEX compounds with greater than 10 unidentified peaks observed.

As noted on the logs, monitor wells were equipped with 0.02" factory slotted and threaded scheduled 40 riser 2" PVC pipe, filter sock, endcaps and locking caps with locks. Well completion incorporated sand pack above screen, bentonite seal and with native soils backfilled to the ground surface.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Analytical results and sensitive receptor survey indicate that the diesel fuel contamination of subsurface soils exists in the immediate area of the former ASTs. With the exception of MW-5, groundwater in the vicinity of newly installed perimeter monitoring wells has not yet been impacted as a result of abandoned ASTs. Testing of the abandoned wooden spring box and downgradient seep suggests this plume is localized at the former tank site. WH&N suggests a semi-annual groundwater sampling event be initiated to monitor water quality for a one-year period.

(U:\dreese\wpdocs\bailey.r1)



Wagner, Heindel, and Noyes

CONSULTING SCIENTISTS AND ENGINEERS

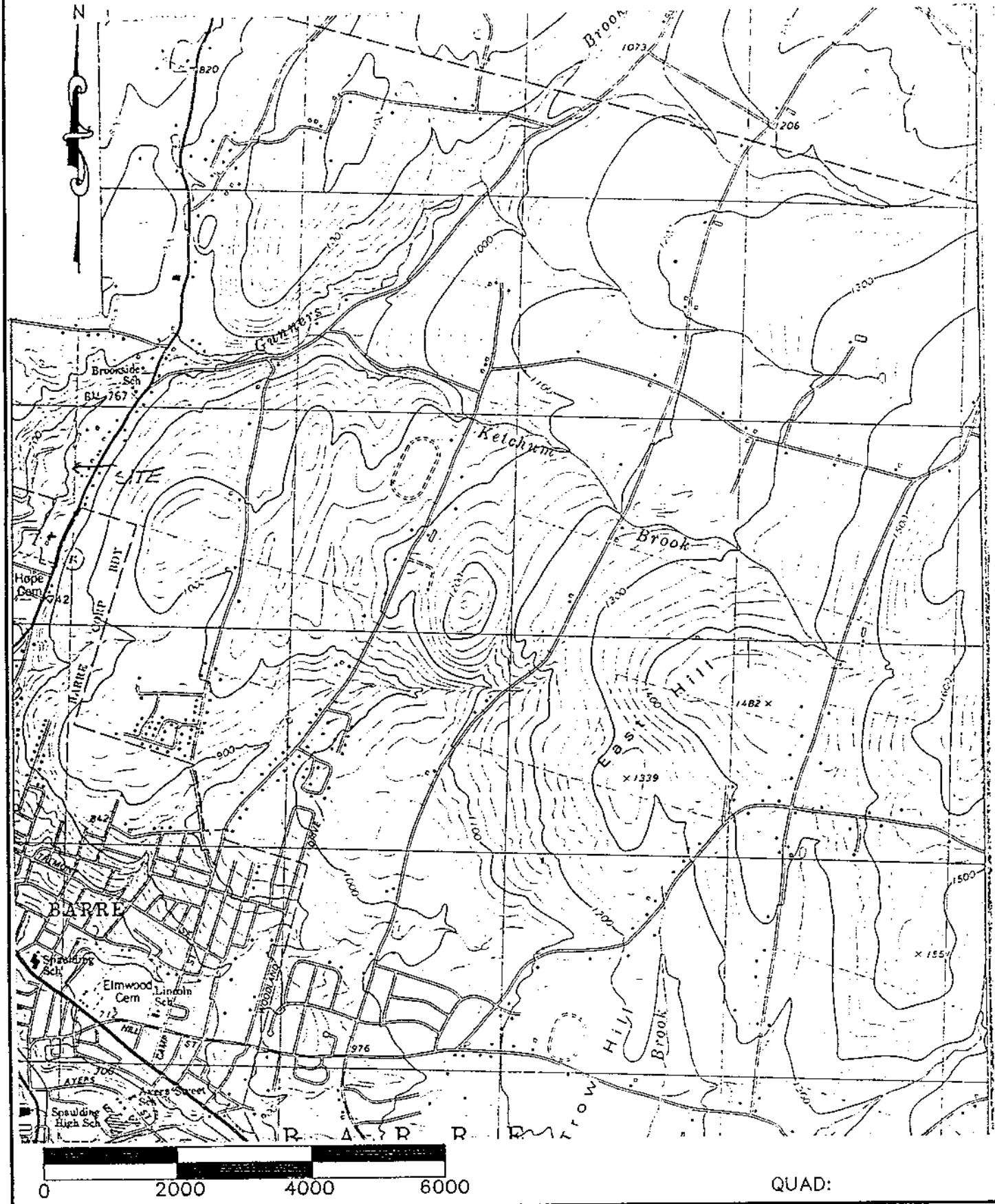
• Hydrogeology • Ecology •

• Environmental Engineering •

BURLINGTON, VERMONT

F.W. BAILEY WAREHOUSE

DATE: 6-6-85 | SCALE: | DRN: DTR | APPD:



QUAD:

Wagner, Heindel, and Noyes

CONSULTING SCIENTISTS AND ENGINEERS

• Hydrogeology • Ecology •

• Environmental Engineering •

BURLINGTON, VERMONT

F. W. BAILEY WAREHOUSE

USGS TOPOGRAPHIC MAP

DATE: 5-22-95	SCALE: 1:24000	DRN:	APPD:

QUAD:

Wagner, Heindel, and Noyes

CONSULTING SCIENTISTS AND ENGINEERS

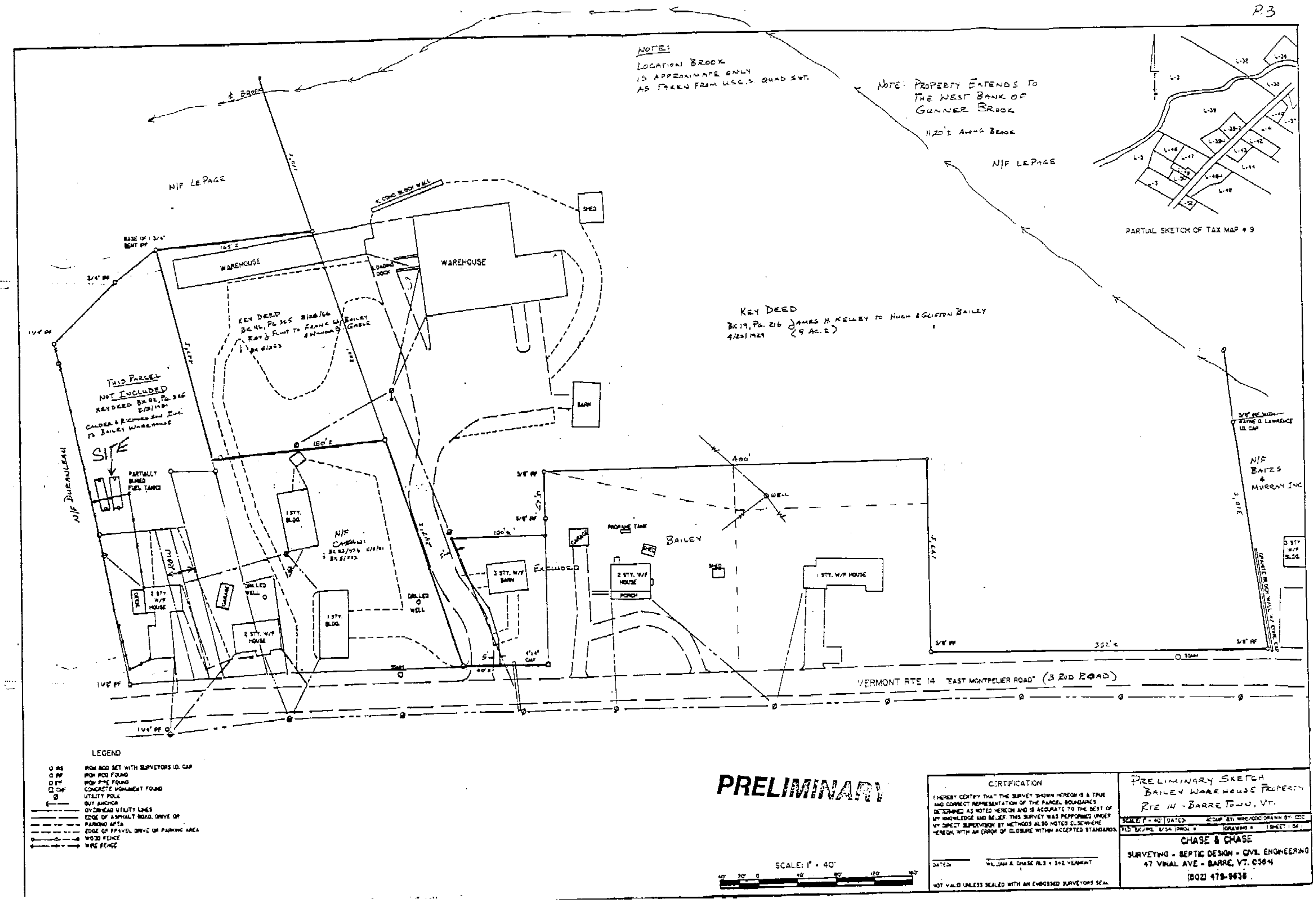
• Hydrogeology • Ecology •
• Environmental Engineering •

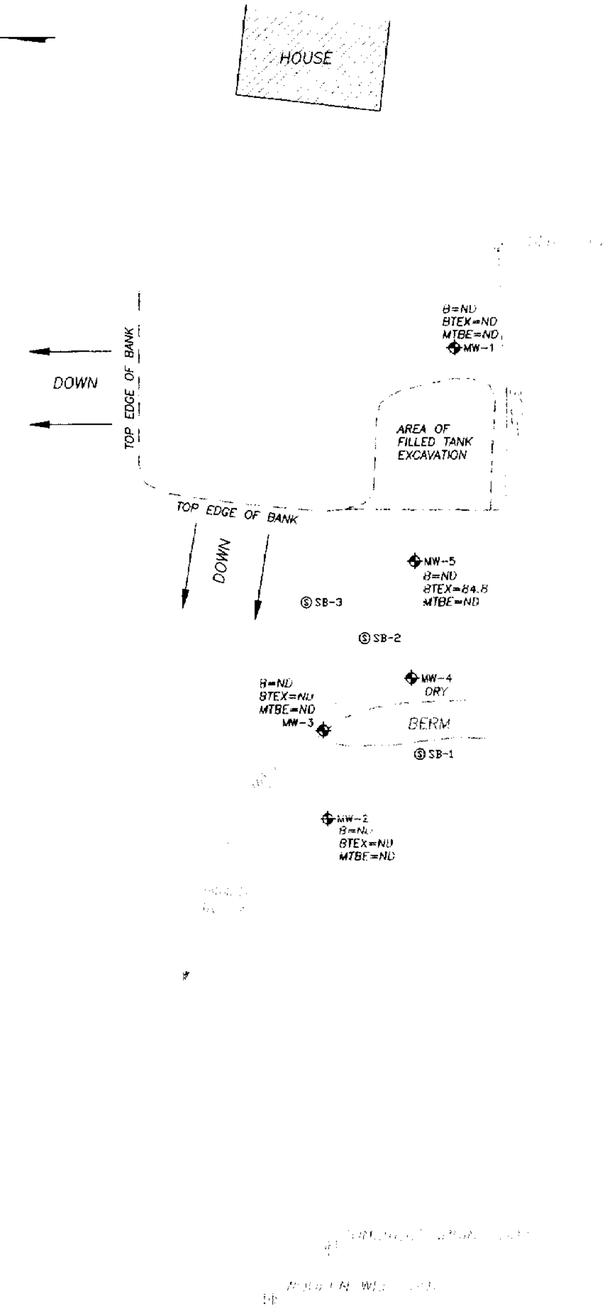
BURLINGTON, VERMONT

F.W. BAILEY WAREHOUSE

USGS TOPOGRAPHIC MAP

DATE: 6-6-95	SCALE: 1:24000	DRN: DJR	APPD:


P.3
NOTE:
LOCATION BROOK
IS APPROXIMATE ONLY
AS TAKEN FROM U.S.G.S. QUAD SHT.
NOTE: PROPERTY EXTENDS TO
THE WEST BANK OF
GUNNER BROOK
1120'± ALONG BROOK
N/F LEPAGE
N/F LE PAGE
℄ BROOK
PARTIAL SKETCH OF TAX MAP # 9
WAREHOUSE
WAREHOUSE
LOADING DOCK
SHED
BARN
KEY DEED
BK 46, PG 365 8/28/66
RAY J. FLINT TO FRANK W. BAILEY
& WINONA G. GABLE
KEY DEED
BK 19, PG. 216 JAMES H. KELLEY TO HUGH & CLIFTON BAILEY
4/23/1929 (9 AC.±)
THIS PARCEL
NOT INCLUDED
KEY DEED BK 82, PG. 346
CALDER & RICHARDSON INC.
TO BAILEY WAREHOUSE
SITE
PARTIALLY BURIED FUEL TANKS
N/F DURANLEAU
N/F CASSANI
1 STY. BLDG.
2 STY. W/F HOUSE
DRILLED WELL
EXCLUDED
3 STY. W/F BARN
PROPANE TANK
BAILEY
2 STY. W/F HOUSE
PORCH
1 STY. W/F HOUSE
WELL
N/F BATES & MURRAY INC
5/8" RF WITH WAYNE D. LAWRENCE I.D. CAP
GRANITE BLOCK WALL W/ CONC. CAP
VERMONT RTE 14 "EAST MONTPELIER ROAD" (3 ROD ROAD)
180'±
165'±
100'±
400'
352'±
LEGEND
IRS IRON ROD SET WITH SURVEYORS I.D. CAP
RF IRON ROD FOUND
PF IRON PIPE FOUND
CMF CONCRETE MONUMENT FOUND
UTILITY POLE
GUY ANCHOR
OVERHEAD UTILITY LINES
EDGE OF ASPHALT ROAD, DRIVE OR PARKING AREA
EDGE OF GRAVEL DRIVE OR PARKING AREA
WOOD FENCE
WIRE FENCE
PRELIMINARY
SCALE: 1" = 40'
CERTIFICATION
I HEREBY CERTIFY THAT THE SURVEY SHOWN HEREON IS A TRUE AND CORRECT REPRESENTATION OF THE PARCEL BOUNDARIES DETERMINED AS NOTED HEREON AND IS ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION BY METHODS ALSO NOTED ELSEWHERE HEREON, WITH AN ERROR OF CLOSURE WITHIN ACCEPTED STANDARDS.
DATED:
WILLIAM A. CHASE RLS # 342 VERMONT
NOT VALID UNLESS SEALED WITH AN EMBOSSED SURVEYORS SEAL
PRELIMINARY SKETCH
BAILEY WAREHOUSE PROPERTY
RTE 14 - BARRE TOWN, VT.
CHASE & CHASE
SURVEYING - SEPTIC DESIGN - CIVIL ENGINEERING
47 VINAL AVE - BARRE, VT. 05641
(802) 479-9636



LEGEND

MW-4 MONITOR WELL

SB-3 SOILBORING

NOTE:
SURVEYED BY M. MILLER, D. REESE (WH&N) APRIL 25, 1995.

GABLE/BARRE SITE INVESTIGATION

BARRE, VERMONT

CONTAMINANT DISTRIBUTION MAP (PPB) – APRIL 17, 1995

SCALE: 1"=50'

DATE: MAY 10, 1995

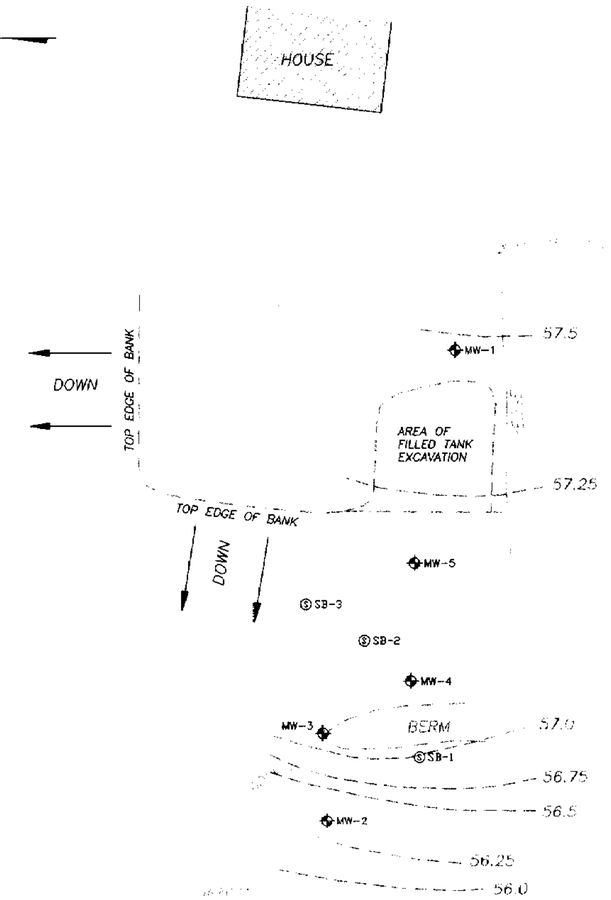
PROJECT NO. 95059

FILE: C:\GABLE\SITEPLAN

DRAWN BY: M. Luman

APPROVED: J. Noyes

Warzyn Windel and Noyes Inc.
CONSULTING SCIENTISTS AND ENGINEERS
• Hydrogeology • Ecology •
• Environmental Engineering •
P.O. BOX 94703 BURLINGTON, VERMONT 05405-4703



WELL #	T.O.P. ELEV. (FT)	WATER B.T.O.P.(FT)	WATER TABLE ELEV. (FT)
MW-1	100.00	42.52	57.48
MW-2	89.315	32.92	56.40
MW-3	91.39	34.27	57.12
MW-4	89.44	DRY	---
MW-5	91.70	34.56	57.14

ASSUMED MW-1 ELEV. = 100.00

LEGEND

- MW-4 MONITOR WELL
- SB-3 SOILBORING
- WATER TABLE CONTOUR (FEET)

NOTE:
SURVEYED BY M. MILLER, D. REESE (WH&N) APRIL 25, 1995.

GABLE/BARRE SITE INVESTIGATION

BARRE, VERMONT

WATER TABLE CONTOUR MAP (FEET) – APRIL 17, 1995

SCALE: 1"=30'

DATE: MAY 18, 1995

PROJECT NO. 95059

FILE: C:\GABLE\SITEPLAN

DRAWN BY: M. Luman

APPROVED: J. Noyes

Wagner, Heindel, and Noyes, Inc.
CONSULTING SCIENTISTS AND ENGINEERS
• Hydrogeology • Ecology •
• Environmental Engineering •
P.O. BOX 64709 BURLINGTON, VERMONT 05406-4709

26B Adams loamy fine sand, 3 to 8 percent slopes. This soil is very deep, gently sloping and somewhat excessively drained to excessively drained. It is on stream terraces. Slopes typically are smooth.

Typically the Adams soils are covered by a thin layer of undecomposed needles and twigs. Under that layer the typical sequence, depth and composition of the layers are as follows:

Surface layer: surface to 3 inches, gray loamy fine sand

Subsoil: 3 to 8 inches, dark reddish brown loamy fine sand
8 to 16 inches, olive brown loamy fine sand

Substratum: 16 to 26 inches, light olive brown gravelly coarse sand
26 to 65 inches, light olive brown coarse sand

Many units have yellowish brown colors in the upper part of the subsoil. Some units have fine sandy loam textures in the upper part of the solum. Other units have more than 20 percent rock fragments in the substratum.

Included with this soil in mapping are small areas of somewhat poorly drained Nasmith soils and moderately well drained sandy textured soils. Nasmith soils and the sandy textured soils are in depressions. These soils make up about 10 percent of this unit. Also included are small areas of excessively drained Colton and well drained Salmon soils. Colton and Salmon soils are on small knolls. These soils make up about 5 percent of this unit.

SOIL BORING LOG

WAGNER, HEINDEL & NOYES, INC. P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: GABLE BARRE SITE INVESTIGATION	Boring Number: 1, 2, 3 Sheet: 1 Project Number: 95059.00

Boring Company: M & W Soils Engineering Inc., Charlestown, NH
Foreman: Myron Domingue
WH&N Staff: David Reese
Rig and drill stem: Bombardier drill rig, 9" hollow stem augers, 4.5" solid stem augers
H-Nu #2 calibrated background 0.1 ppm

Boring Location: See below for each boring
Ground Elevation: _____
Date Started: April 11, 1995 Date Ended: April 13, 1995

Casing
Size: _____ Type: _____
Hammer: _____
Fall: _____

Sampler
Other: _____
Hammer: _____
Fall: _____

Groundwater Readings

Date	Depth	Casing	Stabil. Time

Sample No.	Recovery	Depth	Blows	PID	Description
			Soil Boring 1 Location: West/southwest of MW-4		
		0 - 10'	Cuttings	0.1	Brown fine to medium silty sands
		10' - 20'	Cuttings	0.1	Same
		20' - 25'	Cuttings	0.1	Same
			Soil Boring 2 Location: North of MW-4		
		0 - 5'	Cuttings	0.1	Brown fine to medium silty sands
		5' - 10'	Cuttings	1.8	Same
		10' - 15'	Cuttings	18.2	Same with odor
			Soil Boring 3 Location: North of SB-2		
		0 - 5'	Cuttings	2.4	Brown fine to medium silty sands
		5' - 15'	Cuttings	3.6	Same
		15' - 25'	Cuttings	6.2	Same

Proportions Used
Trace: 0 to 10 %
Little: 10 to 20%
Some: 20 to 35%
And: 35 to 50%

Penetration Resistance
140lb wt falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50+	Very Dense	16-30	Very Stiff
		31+	Hard

Well Construction Legend

Concrete	Bentonite
Grout	Silica Sand
Backfill	Bedrock

[U:\DREESE\WPDOCS\GABLE.SB1]

WAGNER, HEINDEL & NOYES, INC. P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: GABLE BARRE SITE INVESTIGATION	Boring Number: MW-1 Sheet: 2 OF 2 Project Number: 95059.00

Boring Company: M & W Soils Engineering Inc., Charlestown, NH
Foreman: Myron Domingue
WH&N Staff: David Reese
Boring Location: Upgradient east of tank site
Ground Elevation: _____
Date Started: April 11, 1995 Date Ended: April 13, 1995
Rig and drill stem: Bombardier drill rig, 9" hollow stem augers, 4.5" solid stem augers
H-Nu #2 calibrated background 0.1 ppm

Proportions Used

Trace: 0 to 10 %
Little: 10 to 20%
Some: 20 to 35%
And: 35 to 50%

Penetration Resistance

140lb wt falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50+	Very Dense	16-30	Very Stiff
		31+	Hard

Well Construction Legend

Concrete	Bentonite
Grout	Silica Sand
Backfill	Bedrock

[U:\DREESE\WPDOCS\GABLE.SL1]

SOIL BORING LOG

WAGNER, HEINDEL & NOYES, INC. P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: GABLE BARRE SITE INVESTIGATION	Boring Number: MW-3 Sheet: 1 Project Number: 95059.00

Boring Company: M & W Soils Engineering Inc., Charlestown, NH
Foreman: Myron Domingue
WH&N Staff: David Reese
Rig and drill stem: Bombardier drill rig, 9" hollow stem augers, 4.5" solid stem augers
H-Nu #2 calibrated background 0.1 ppm

Boring Location: Northwest of tank site
Ground Elevation: _____
Date Started: April 11, 1995 Date Ended: April 13, 1995

Casing
Size: _____ Type: _____
Hammer: _____
Fall: _____

Sampler
Other: _____
Hammer: _____
Fall: _____

Groundwater Readings

Date	Depth	Casing	Stabil. Time

Sample No.	Recovery	Depth	Blows	PID	Description
1	20"	0 - 2'	1,2,2,2	0.2	Dark brown sandy topsoil
2	None	4' - 6'	2,3,3,6	None	Cobble
2 (second try)	24"	4' - 6'	7,7,7,9	0.2	Brown fine to medium quartz silty sand, moist, loose
3	18"	9' - 11'	38,17,5,5,5	0.2	Brown to tan, well sorted, fine to medium silty sand with silt lenses
4	18"	14' - 16'	17,6,6,6	0.5	1' brown fine silty sand; 2" moist silt; 4" tan fine quartz sand, some silt
5	18"	19' - 21'	16,14,13,10	0.3	Tan to gray fine to medium silty sand
None	None	24' - 25'	25,0	0	Rock stuck in drill bit
6	18"	29' - 31'	7,12,11,12	0.2	Brown fine to medium silty sand, 4" of wet silty sand
7	18"	31' - 33'	4,13,6,7	0.2	Brown, wet, fine to coarse silty sand, some rock fragments
8	24"	39' - 41'	7,26,75,0	0.1	Wet, brown, fine to coarse silty sand; 1½" of rock, refusal to spoon at 40'

2" Schedule 40 Threaded PVC Monitoring Well Installation:

Screen:	40.0' - 30.0' bgs; 0.02" factory slotted, with filter sock
Sand Pack:	40.0' - 28.0' bgs
Bentonite:	28.0' - 27.5' bgs
Fill:	to surface
Cement:	N//A
Well guard:	N/A
Stick up:	2.7'
Total Depth:	38.26' top of casing
Depth to water:	34.32' top of casing, well developed

Proportions Used
Trace: 0 to 10 %
Little: 10 to 20%
Some: 20 to 35%
And: 35 to 50%

Penetration Resistance
140lb wt falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50+	Very Dense	16-30	Very Stiff
		31+	Hard

Well Construction Legend

Concrete	Bentonite
Grout	Silica Sand
Backfill	Bedrock

WAGNER, HEINDEL & NOYES, INC. P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: GABLE BARRE SITE INVESTIGATION	Boring Number: MW-4 Sheet: 2 OF 2 Project Number: 95059.00

Boring Company: M & W Soils Engineering Inc., Charlestown, NH
Foreman: Myron Domingue
WH&N Staff: David Reese
Boring Location: West of tank site
Ground Elevation: _____
Date Started: April 11, 1995 Date Ended: April 13, 1995
Rig and drill stem: Bombardier drill rig, 9" hollow stem augers, 4.5" solid stem augers
H-Nu #2 calibrated background 0.1 ppm

Proportions Used
Trace: 0 to 10 %
Little: 10 to 20%
Some: 20 to 35%
And: 35 to 50%

Penetration Resistance
140lb wt falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50+	Very Dense	16-30	Very Stiff
		31+	Hard

Well Construction Legend

Concrete	Bentonite
Grout	Silica Sand
Backfill	Bedrock

[U:\DREESE\WPDOCS\GABLE.SL4]

WAGNER, HEINDEL & NOYES, INC. P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: GABLE BARRE SITE INVESTIGATION	Boring Number: MW-5 Sheet: 2 OF 2 Project Number: 95059.00

Boring Company: M & W Soils Engineering Inc., Charlestown, NH
Foreman: Myron Domingue
WH&N Staff: David Reese
Boring Location: Tank site
Ground Elevation: _____
Date Started: April 11, 1995 Date Ended: April 13, 1995
Rig and drill stem: Bombardier drill rig, 9" hollow stem augers, 4.5" solid stem augers
H-Nu #2 calibrated background 0.1 ppm

2" Schedule 40 Threaded PVC Monitoring Well Installation:

Screen:	39.0' - 29.9' bgs; 0.02" factory slotted, with filter sock
Sand Pack:	39.0' - 27.5' bgs
Bentonite:	27.5' - 26.0' bgs
Fill:	to surface
Cement:	N//A
Well guard:	N/A
Stick up:	1.8'
Total Depth:	39.76' top of casing
Depth to water:	34.64' top of casing, well developed

Proportions Used
Trace: 0 to 10 %
Little: 10 to 20%
Some: 20 to 35%
And: 35 to 50%

Penetration Resistance
140lb wt falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50+	Very Dense	16-30	Very Stiff
		31+	Hard

Well Construction Legend

Concrete	Bentonite
Grout	Silica Sand
Backfill	Bedrock

[U:\DREESE\WPDOCS\GABLE.SL5]

ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Invest'n
DATE REPORTED: April 27, 1995
DATE SAMPLED: April 12, 1995

PROJECT CODE: HNGB1721
REF. #: 73,132 - 73,133

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

Chain of custody indicated correct sample preservation.

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 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.

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

GC/FID PETROLEUM FINGERPRINT

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Invest'n
REPORT DATE: April 27, 1995
SAMPLER: D. Reese
DATE SAMPLED: April 12, 1995
DATE RECEIVED: April 14, 1995

PROJECT CODE: HNGB1721
ANALYSIS DATE: April 25, 1995
STATION: MW-5 S-17
REF.#: 73,132
TIME SAMPLED: 1630

The chromatographic fingerprint of this sample shows a significant correlation with the chromatographic fingerprint of Diesel Fuel. The Total Petroleum Hydrocarbon value for this sample is 11,200. ppm.

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

GC/FID PETROLEUM FINGERPRINT

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Invest'n
REPORT DATE: April 27, 1995
SAMPLER: D. Reese
DATE SAMPLED: April 12, 1995
DATE RECEIVED: April 14, 1995

PROJECT CODE: HNGB1721
ANALYSIS DATE: April 25, 1995
STATION: MW-5 S-13
REF.#: 73,133
TIME SAMPLED: 1530

The chromatographic fingerprint of this sample shows a significant correlation with the chromatographic fingerprint of Diesel Fuel. The Total Petroleum Hydrocarbon value for this sample is 6,240. ppm.

P.4

ENDYNE, INC.

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

CHAIN-OF-CUSTODY RECORD

12941

Project Name: GABLE BARRE SITE INVESTN
Site Location: BARRE, VT

Reporting Address:

Billing Address:

Endyne Project Number: HNGB172.1

Company: WHN
Contact Name/Phone #: D. REESE

Sampler Name: D. REESE
Phone #: WHN

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 4-12-95	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
73,132	MW5 S-17	SOIL	X		1630	1	250 ml G		27, 30	COLD	
73,133	MW5 S-13	↓	↓		1530	1	↓		↓	↓	

Relinquished by: Signature [signature]
Received by: Signature Tonia M. Chalmers
Date/Time 4-14-95 12:50

Relinquished by: Signature
Received by: Signature
Date/Time

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): EPA 8100 PETROLEUM T.D.										

ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site
DATE REPORTED: May 3, 1995
DATE SAMPLED: April 12, 1995

PROJECT CODE: HNGB1720
REF. #: 73,130 - 73,131

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

Chain of custody indicated correct sample preservation.

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 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 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 8020 COMPOUNDS -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site
REPORT DATE: May 3, 1995
SAMPLER: D. Reese
DATE SAMPLED: April 12, 1995
DATE RECEIVED: April 14, 1995

PROJECT CODE: HNGB1720
ANALYSIS DATE: April 25, 1995
STATION: MW 5 S-17
REF.#: 73,130
TIME SAMPLED: 1630

Parameter	Detection Limit (ug/kg)[1]	Concentration As Received (ug/kg)
Benzene	1000	ND[2]
Chlorobenzene	1000	ND
1,2-Dichlorobenzene	1000	ND
1,3-Dichlorobenzene	1000	ND
1,4-Dichlorobenzene	1000	ND
Ethylbenzene	1000	1,960.
Toluene	1000	ND
Total Xylenes	1000	7,290.
MTBE	10,000	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

BROMOBENZENE SURROGATE RECOVERY: 101.%

PERCENT SOLIDS: 79.%

NOTES:

1 Detection limit was raised due to high levels of contaminants. Sample was run at 2% dilution.
2 None detected

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 8020 COMPOUNDS -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site
REPORT DATE: May 3, 1995
SAMPLER: D. Reese
DATE SAMPLED: April 12, 1995
DATE RECEIVED: April 14, 1995

PROJECT CODE: HNGB1720
ANALYSIS DATE: April 25, 1995
STATION: MW 5 S-13
REF.#: 73,131
TIME SAMPLED: 1530

Parameter	Detection Limit (ug/kg)[1]	Concentration As Received (ug/kg)
Benzene	500	ND[2]
Chlorobenzene	500	ND
1,2-Dichlorobenzene	500	ND
1,3-Dichlorobenzene	500	ND
1,4-Dichlorobenzene	500	ND
Ethylbenzene	500	ND
Toluene	500	ND
Total Xylenes	500	3,450.
MTBE	5,000	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

BROMOBENZENE SURROGATE RECOVERY: 109.%

PERCENT SOLIDS: 77.%

NOTES:

1 Detection limit was raised due to high levels of contaminants. Sample was run at 4% dilution.

2 None detected

P.8

ENDYNE, INC.

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

73,130- 73,133

CHAIN-OF-CUSTODY RECORD

12941

Project Name: GABLE BARRE SITE INVEST'N Site Location: BARRE, VT	Reporting Address:	Billing Address:
Endyne Project Number: HNGB1720	Company: WHN Contact Name/Phone #: D. REESE	Sampler Name: D. Reese Phone #: WHN

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 4-12-95	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
73,130	MW5 S-17	SOIL	X		1630	1	250 ml C		27, 30	COLD	
73,131	MW5 S-13	↓	↓		1530	1	↓		↓	↓	

Relinquished by: Signature	Received by: Signature Tonia M. Chadwick	Date/Time 4-14-95 12:50
Relinquished by: Signature	Received by: Signature	Date/Time

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): EPA 8100 PETROLEUM T.D.										

ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Inv'n
REPORT DATE: May 1, 1995
DATE SAMPLED: April 17, 1995

PROJECT CODE: HNGB1758
REF.#: 73,218 - 73,223

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated preservation with NaN_3.

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: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Inv'n
REPORT DATE: May 1, 1995
DATE SAMPLED: April 17, 1995
DATE RECEIVED: April 18, 1995
DATE ANALYZED: April 25, 1995

PROJECT CODE: HNGB1758
REF.#: 73,218
STATION: MW1
TIME SAMPLED: 15:00
SAMPLER: D. Reese

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: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Inv'n
REPORT DATE: May 1, 1995
DATE SAMPLED: April 17, 1995
DATE RECEIVED: April 18, 1995
DATE ANALYZED: April 25, 1995

PROJECT CODE: HNGB1758
REF.#: 73,219
STATION: MW2
TIME SAMPLED: 15:30
SAMPLER: D. Reese

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: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Inv'n
REPORT DATE: May 1, 1995
DATE SAMPLED: April 17, 1995
DATE RECEIVED: April 18, 1995
DATE ANALYZED: April 25, 1995

PROJECT CODE: HNGB1758
REF.#: 73,220
STATION: MW3
TIME SAMPLED: 16:00
SAMPLER: D. Reese

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: 98%

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: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Inv'n
REPORT DATE: May 1, 1995
DATE SAMPLED: April 17, 1995
DATE RECEIVED: April 18, 1995
DATE ANALYZED: April 26, 1995

PROJECT CODE: HNGB1758
REF.#: 73,221
STATION: MW5
TIME SAMPLED: 16:30
SAMPLER: D. Reese

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	5	ND[2]
Chlorobenzene	5	ND
1,2-Dichlorobenzene	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
Ethylbenzene	5	21.0
Toluene	5	ND
Xylenes	5	63.8
MTBE	50	ND

Bromobenzene Surrogate Recovery: 105%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 20% dilution.

2 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: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Inv'n
REPORT DATE: May 1, 1995
DATE SAMPLED: April 17, 1995
DATE RECEIVED: April 18, 1995
DATE ANALYZED: April 26, 1995

PROJECT CODE: HNGB1758
REF.#: 73,222
STATION: WW (Wood Well)
TIME SAMPLED: 17:00
SAMPLER: D. Reese

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: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Inv'n
REPORT DATE: May 1, 1995
DATE SAMPLED: April 17, 1995
DATE RECEIVED: April 18, 1995
DATE ANALYZED: April 27, 1995

PROJECT CODE: HNGB1758
REF.#: 73,223
STATION: Seep
TIME SAMPLED: 17:30
SAMPLER: D. Reese

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: 98%

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

EPA METHOD 602 LABORATORY REPORT

MATRIX SPIKE AND DUPLICATE LABORATORY CONTROL DATA

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Gable Barre Site Inv'n
REPORT DATE: May 1, 1995
DATE SAMPLED: April 17, 1995
DATE RECEIVED: April 18, 1995
DATE ANALYZED: April 26, 1995

PROJECT CODE: HNGB1758
REF.#: 73,222
STATION: WW (Wood Well)
TIME SAMPLED: 17:00
SAMPLER: D. Reese

Parameter	Sample(ug/L)	Spike(ug/L)	Dup1(ug/L)	Dup2(ug/L)	Avg % Rec
Benzene	ND[1]	10	8.2	8.2	82%
Toluene	ND	10	8.4	8.4	84%
Ethylbenzene	ND	10	8.8	8.8	88%
Xylenes	ND	30	26.2	26.0	87%

NOTES:
1 None detected

P.17

ENDYNE, INC.

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

CHAIN-OF-CUSTODY RECORD

008626

Project Name: GABLE BARRE SITE INV'N Site Location: BARRE, VT	Reporting Address:	Billing Address:
Endyne Project Number: HNGB1758	Company: WHN Contact Name/Phone #: D. REESE	Sampler Name: P. REESE Phone #: WHN

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 4-17-95	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
13218	MW 1	WATER	X		1500	2	40 ml		602	NaN_3	
13219	2				1530						
13220	3				1600						
13221	5				1630						
13222	WW (WOOD WELL)				1700						
13223	SEEP				1730	1		only 140ml available			

Relinquished by: Signature	Received by: Signature	Date/Time 4/18/95 8am
Relinquished by: Signature	Received by: Signature	Date/Time

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):										