

Wagner, Heindel, and Noyes, Inc. consulting geologists

P.O. Box 1629 Burlington, Vermont 05402-1629 802-658-0820

January 18, 1993

Cindy Woods, Environmental Engineer
Sites Management Section
Hazardous Materials Management Division
Department of Environmental Conservation
103 South Main Street / West Building
Waterbury, VT 05671-0404

RE: S.T. Griswold/Berlin (Site #91-1132) Water Quality Report

Dear Cindy:

Enclosed for your review are the quarterly groundwater quality monitoring results for the S.T. Griswold Ready-Mix Plant site in Berlin, Vermont (Site #91-1132). Groundwater samples were collected from three available groundwater monitoring wells (MW-5, MW-7 and MW-9) on December 15, 1992. Water samples were also obtained from the onsite water supply and an adjacent private water supply. The water samples were analyzed by Endyne, Inc. according to EPA Method 8020. Water samples from the groundwater monitoring wells were also analyzed according to EPA Method 418.1. Individual laboratory reports are included in Appendix 1.

Table 1 summarizes the analytical results from three available monitoring wells, the S.T. Griswold water supply, and the Dufresne residence water supply. The owner of a second adjacent water supply, Mr. Smith, refused to grant permission to test his water supply. The locations of the monitoring wells and water supplies that were tested are shown on the site map in Appendix 1.

The results of the groundwater and water supply testing indicate that groundwater contamination is confined to a zone that extends approximately 40 feet northeast of the former leaking underground storage tank (LUST) location, as indicated on the site map in Appendix 1. The presence of BTEX compounds in MW-5, and at much lower levels in MW-9, indicate that the contaminant plume has spread northeastward from the former LUST location. The traces of benzene and ethylbenzene at concentrations below the quantification limits in MW-9 indicates that this monitoring location is near the outer limit of the groundwater contamination zone. The 25+ and 24 unidentified peaks in the MW-5 and MW-9 groundwater samples suggest that *in situ* decomposition of the fuel oil is occurring, with long hydrocarbon chains breaking down into shorter-chain compounds.

TABLE 1 GROUNDWATER QUALITY SUMMARY					
December 15, 1992					
Parameter	Hydrocarbon Concentrations (ppb)				
	MW-5	MW-7	MW-9	S.T. Griswold Water Supply	Dufresne Water Supply
Benzene	TBQ	ND	TBQ	ND	ND
Toluene	ND	ND	ND	ND	ND
Ethylbenzene	12.9	ND	TBQ	ND	ND
Xylene	8.4	ND	ND	ND	ND
MTBE	ND	ND	ND	ND	ND
Unidentified Peaks	>25	0	24	ND	ND
Total Hydrocarbons	1,800	ND	ND	NA	NA

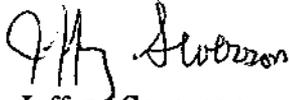
Purgeable hydrocarbons were not detected in the water samples from MW-7, the Dufresne water supply, or the S.T. Griswold water supply, demonstrating that onsite and offsite private water supplies have, as yet, not been impacted by shallow groundwater contamination. Based in the existing array of wells, the contaminant plume is confined to a zone to the northwest of the former LUST location as indicated by the absence of hydrocarbons in the MW-7 and Dufresne water supply samples, to the north and northwest. Contaminants were also absent from the water sample obtained from the onsite water supply for the S.T. Griswold plant. The plant is supplied by two bedrock water wells located upgradient (south) of the former LUST, as shown on the site plan.

Per the request of the Sites Management Section, we will schedule quarterly groundwater quality monitoring for the site.

Ms. Cindy Woods
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If you have any questions or comments, please do not hesitate to call me or Jeffrey Noyes at 658-0820.

Sincerely,



Jeffrey Severson
Enclosure

JES/ral

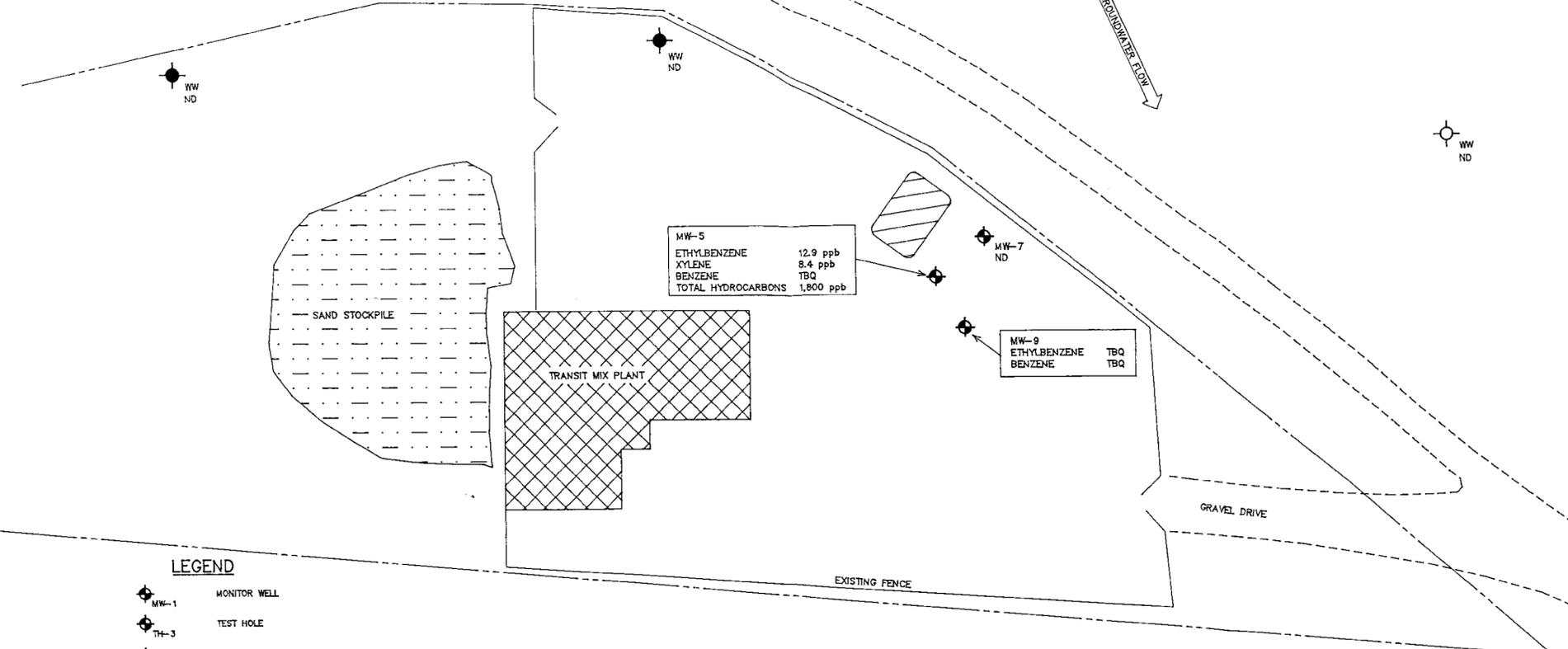
Enclosures

cc: Jim Stillman

[L-GRIJIAN/JES 1-1-93]

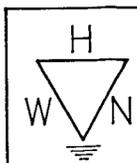


GENERAL DIRECTION OF GROUNDWATER FLOW



LEGEND

- MONITOR WELL
- TEST HOLE
- APPROXIMATE LOCATION OF WATER WELL
- APPROXIMATE LOCATION OF DUFRESNE RESIDENCE WELL
- ND NONE DETECTED
- LIMITS OF EXCAVATION FOR UST REMOVAL
- - - - - PROPERTY LINE



Wagner, Heindel, and Noyes
 CONSULTING SCIENTISTS AND ENGINEERS
 • Hydrogeology • Ecology •
 • Environmental Engineering •
 BURLINGTON, VERMONT

S.T. GRISWOLD

BERLIN, VERMONT
 SUBSURFACE CONTAMINATION ZONE WITH
 MONITOR WELL/WATER SUPPLY LOCATIONS

DATE: 1/13/93	SCALE: 1"=40'	DRN.: SJB	APP.: JS
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MW-5
 ETHYLBENZENE 12.9 ppb
 XYLENE 8.4 ppb
 BENZENE TBQ
 TOTAL HYDROCARBONS 1,800 ppb

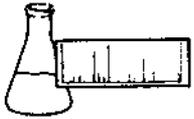
MW-9
 ETHYLBENZENE TBQ
 BENZENE TBQ

SAND STOCKPILE

TRANSIT MIX PLANT

GRAVEL DRIVE

EXISTING FENCE



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: S.T. Griswold
REPORT DATE: December 29, 1992
DATE SAMPLED: December 15, 1992

PROJECT CODE: HNST1702
REF.#: 39,976 - 39,982

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

Chain of custody indicated samples were preserved with sodium azide.

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.

Reviewed by,

Harry Locker, Ph.D.
Laboratory Director

enclosures



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LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1 (WATER)

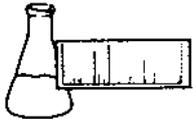
CLIENT: Wagner, Heindel, and Noyes, Inc.
REPORT DATE: December 29, 1992
PROJECT NAME: S.T. Griswold
PROJECT CODE: HNST1703
DATE SAMPLED: December 15, 1992
DATE RECEIVED: December 16, 1992
DATE ANALYZED: December 28, 1992
SAMPLER: Jim Meenan

<u>Reference #</u>	<u>Sample ID</u>	<u>Conc. (mg/L)¹</u>
39,983	MW-5; 12:36	1.8
39,984	MW-7; 1:18	ND ²
39,985	MW-9; 1:56	ND

Notes:

- 1 Method detection limit is 0.8 ppm
- 2 None detected

Reviewed by _____



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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: S.T. Griswold
REPORT DATE: December 29, 1992
DATE SAMPLED: December 15, 1992
DATE RECEIVED: December 16, 1992
ANALYSIS DATE: December 29, 1992

PROJECT CODE: HNST1702
REF.#: 39,976
STATION: MW-5
TIME SAMPLED: 12:36
SAMPLER: J. Meenan

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	TBQ ²
Chlorobenzene	1	ND ¹
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	12.9
Toluene	1	ND
Xylenes	1	8.4
MTBE	5	ND

Bromobenzene Surrogate Recovery: 96%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >25

NOTES:

- 1 None detected
- 2 Trace below quantitation limit



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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: S.T. Griswold
REPORT DATE: December 29, 1992
DATE SAMPLED: December 15, 1992
DATE RECEIVED: December 16, 1992
ANALYSIS DATE: December 29, 1992

PROJECT CODE: HNST1702
REF.#: 39,977
STATION: MW-7
TIME SAMPLED: 1:18
SAMPLER: J. Meenan

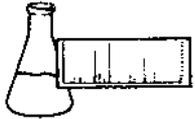
<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	5	ND

Bromobenzene Surrogate Recovery: 96%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: S.T. Griswold
REPORT DATE: December 29, 1992
DATE SAMPLED: December 15, 1992
DATE RECEIVED: December 16, 1992
ANALYSIS DATE: December 29, 1992

PROJECT CODE: HNST1702
REF.#: 39,978
STATION: MW-9
TIME SAMPLED: 1:56
SAMPLER: J. Meenan

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	TBQ ²
Chlorobenzene	1	ND ¹
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	TBQ
Toluene	1	ND
Xylenes	1	ND
MTBE	5	ND

Bromobenzene Surrogate Recovery: 102%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 24

NOTES:

- 1 None detected
- 2 Trace below quantitation limit



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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: S.T. Griswold
REPORT DATE: December 29, 1992
DATE SAMPLED: December 15, 1992
DATE RECEIVED: December 16, 1992
ANALYSIS DATE: December 29, 1992

PROJECT CODE: HNST1702
REF.#: 39,979
STATION: Tap Onsite
TIME SAMPLED: 2:15
SAMPLER: J. Meenan

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
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	5	ND

Bromobenzene Surrogate Recovery: 96%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: S.T. Griswold
REPORT DATE: December 29, 1992
DATE SAMPLED: December 15, 1992
DATE RECEIVED: December 16, 1992
ANALYSIS DATE: December 29, 1992

PROJECT CODE: HNST1702
REF.#: 39,980
STATION: Dufresne
TIME SAMPLED: 2:35
SAMPLER: J. Meenan

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
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	5	ND

Bromobenzene Surrogate Recovery: 91%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: S.T. Griswold
REPORT DATE: December 29, 1992
DATE SAMPLED: December 15, 1992
DATE RECEIVED: December 16, 1992
ANALYSIS DATE: December 29, 1992

PROJECT CODE: HNST1702
REF.#: 39,981
STATION: Trip Blank
TIME SAMPLED: 9:31
SAMPLER: J. Meenan

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
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	5	ND

Bromobenzene Surrogate Recovery: 92%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: S.T. Griswold
REPORT DATE: December 29, 1992
DATE SAMPLED: December 15, 1992
DATE RECEIVED: December 16, 1992
ANALYSIS DATE: December 29, 1992

PROJECT CODE: HNST1702
REF.#: 39,982
STATION: Field Blank
TIME SAMPLED: 1:36
SAMPLER: J. Meenan

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
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	5	ND

Bromobenzene Surrogate Recovery: 105%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected