

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

April 25, 1994

Mr. Richard Spiese
Site Coordinator
Sites Management Section
Hazardous Materials Management Division
103 South Main Street, West Building
Waterbury, VT 05671-0404

HAZARDOUS MATERIALS
MANAGEMENT DIVISION

Apr 27 9 21 AM '94

RE: Vermont Shopping Center, Berlin Vermont (Site #91-1203)

Dear Mr. Spiese:

We are writing to provide you with an update of our investigative and remediative work at the Vermont Shopping Center (VSC) since our last correspondence, and to establish a specific schedule of activities necessary to close this site.

WASTE-OIL CONTAMINATED SOILS

We last issued you a letter on October 28, 1993, that described our findings after an extensive exploratory drilling effort behind Goss Tire. In our letter we recommended excavation of accessible waste oil contaminated soils (on areas not covered by concrete slabs) behind the Goss Tire Facility. We proposed remediation by soil pile composting on VSC property. We further proposed collection of a composite sample of the soil pile, followed by quarterly sampling to assess the rate of biodegradation of the total petroleum hydrocarbons (TPH).

We received a letter from you dated November 15, 1993 (Attachment, pg. 1), approving our recommendations for excavation of all visibly stained waste oil contaminated soils and on-site stockpiling following the guidelines laid out in the Landfarm Policy. In your letter you closed by stating that the remaining environmental issue at VSC is the low level of tetrachloroethylene (PCE) contamination in groundwater in monitor well MW-2.

Attached to this letter (Attachment pgs 2-10) is a memorandum and supporting documents addressed to Scott Brabant, Springfield Institution for Savings, dated January 26, 1994 describing the excavation of waste oil contaminated soil from a 12' by 12' unpaved area (surrounded by concrete and a building) behind Goss Tire, and stockpiling of the soils behind the former Woolworth's store at VSC. Two composite soil samples of the stockpiled soils revealed TPH levels of 1370 ppm and 1250 ppm. We also checked one composite soil sample for volatile organic hydrocarbons (EPA Method 8020) and found low levels of ethylbenzene, toluene and xylenes, but no detectable benzene.

Mr. Richard Spiese

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TETRACHLOROETHYLENE IN GROUNDWATER

To investigate the degree and extent of groundwater contamination of tetrachloroethylene (PCE) in the vicinity of MW-2, we hired a backhoe and operator on January 7, 1994 to excavate test pits under our supervision, and to install 1" diameter vadose zone soil gas wells. All wells were hand-slotted and were installed to approximately 5' below ground surface, where the water table was encountered. Grab soil samples were collected at 2 feet and 4 feet below ground surface in each test pit, and screened for volatile organic compounds using a Photovac Microtip (10.6 eV lamp), calibrated to 100 ppm iso-butylene. All soil samples were collected in Ziploc plastic bags, and were warmed to approximately room temperature before headspace analyses were performed. PID levels ranged from a low of 0.7 to a high of 4.2.

To establish whether any spatial pattern exists in these PID levels, we have plotted them on a site sketch (Attachment, pg. 11). Slightly elevated PID levels are observed in MW-V-3, MW-V-5, and MW-V-9, especially in samples collected 2 feet below ground surface. All three wells are within 10 feet of MW-2.

On March 7, 1994, personnel from New England Air Quality Testing (NEAQT) used personal air monitoring pumps to withdraw soil gas from each of the ten vadose zone monitor wells, and Carbotrap tubes to collect any volatile organic compounds carried in the soil gas air stream. Air was withdrawn from each well at a rate of about 100 ml per minute for a duration of 60 minutes. The tubes were then desorbed at Endyne laboratory and analyzed for PCE. NEAQT then converted the total mass of PCE collected to a concentration in air in parts per billion, using the ideal gas law. All results have been summarized in a table in the Attachments (pg. 13); supporting laboratory reports and data sheets are provided (Attachments, pgs. 14-35). PCE levels are also plotted on a site map (Attachments, page 36).

At a detection level of approximately 0.25 ppb, no detectable PCE was detected in air samples collected from seven of the ten monitoring wells. Quantifiable concentrations of PCE were observed in MW-V-7 (0.664 ppb), MW-V-8 (0.387 ppb) and MW-V-10 (19.1 ppb). The concentrations observed in MW-V-7 and MW-V-8, although above the detection limit, are not sufficiently high to warrant concern or further investigation. However, the relatively elevated level of 19.1 ppb noted in MW-V-10 prompted further subsurface exploration in this area of the site (directly southeast of Woolworth's). Since there were no wells immediately adjacent to MW-V-10, we felt it necessary to install additional wells to evaluate subsurface conditions in this area, which is located approximately upgradient of the original groundwater well MW-2.

On March 29, 1994, we retained Adams Engineering to install five additional 1" diameter monitoring wells (MW-V-11 through MW-V-15) under WH&N supervision. We've also located these wells on the site map (Attachment, page 36). Using the same methodology employed in the earlier round of monitoring wells, NEAQT collected soil gas samples from each of the five new wells, as well as a repeat sample from MW-V-10. These results are

summarized in a table prepared by NEAQT with supporting laboratory reports (attachments, pages 37 - 56), and are plotted with the earlier results for wells MW-V-1 through MW-V-10 on page 36 of the Attachments. Well MW-V-14 was installed into the water table to permit collection of a groundwater sample at this location.

Soil gas concentrations of PCE in MW-V-1 through MW-V-15 vary from ND to 53 ppb. To put these values in perspective, we note that the 8-hour time-weighted average permissible exposure limit for PCE vapors in the work place is set by OSHA at 25 ppm, or about 500 times higher than the highest level observed in the vadose wells (53 ppb in MW-V-11). Therefore, there are no significant impacts to human health from airborne release of PCE from soil gas vapors at the site.

As an aside, we have also calculated the theoretical equilibrium aqueous concentration in groundwater derived from Henry's Law, using the highest air-phase concentration that was measured (53 ppb), (Attachment, page 57). Implicit in this analysis is the assumption that the PCE concentrations in the soil gas and groundwater are in equilibrium, which may not be valid. The Henry's Law theoretical concentration of PCE in groundwater at MW-V-11 is 1 ppb, just slightly ~~below~~ ^{above} the Vermont Chapter 12 Groundwater Enforcement Standard of 0.7 ppb.

To further screen the zone upgradient of MW-2, we collected a groundwater sample at MW-V-14, and performed a VOC screen (EPA Method 8240). No detectable PCE was observed in this sample. A recent groundwater sample from MW-2 obtained by the Johnson Company, was analyzed of EPA 8010 constituents. Results are provided below in Item #2.

CONCLUSIONS

Based on our review of earlier site assessments and other environmental investigations at the Vermont Shopping Center property, and our site investigations, data collecting, and remedial efforts at this site, we make the following conclusions on the environmental status of the VSC site:

1. Waste-oil-contaminated soils that were readily accessible to human contact behind the Goss Tire facility have been removed from this area and are actively being treated in a soil composting cell on VSC property. The excavation left from removal of the soil was backfilled with clean soil. A 12-inch diameter monitoring well was installed at this location to check for the presence of free product and, if necessary, to act as a groundwater recovery well. Although sheens were noted in this well the day after installation (December 17, 1993), no sheens were visible on January 7, 1994.
2. Monitoring well MW-2 was recently (March 9, 1994) sampled by The Johnson Company and analyzed for VOCs (laboratory report; Attachment, page 58). The following parameters were identified (EPA Method 8010):

MW-2 GROUNDWATER		
Parameter	Sample Result	Groundwater Enforcement Standards
cis-1,2-dichloroethylene	30 ppb	70 ppb
trans-1,2-dichloroethylene	7 ppb	70 ppb
tetrachloroethylene (PCE)	13 ppb	0.7 ppb
trichloroethylene	17 ppb	5 ppb
vinyl chloride	4 ppb	2 ppb

Vinyl chloride and the two dichloro-species are likely biodegradation products of the original solvents (tetrachloroethylene and trichloroethylene) that were released.

Levels of tetrachloroethylene as high as 70 ppb have been observed in this well in previous samples so biodegradation may be slowly breaking down the solvents.

3. Following two rounds of vadose zone well installations in the vicinity of and upgradient to MW-2, and two rounds of soil gas sampling and evaluation for tetrachloroethylene (PCE) at a detection limit of about 0.2 ppb (in air), we conclude that only very low levels of PCE reside in groundwater and soil. Soil gas concentrations are 500 or more times lower than the OSHA permissible exposure limit value of 25 ppm. While the level of PCE exceeds the Chapter 12 Groundwater Enforcement Standard in MW-2, a widespread plume is not substantiated by our recent data. No detectable PCE was found in MW-V-14, 120-foot upgradient of MW-2. Soil gas concentrations in the vicinity of, and upgradient to, MW-2 suggest PCE levels in groundwater of 1 ppb or less (assuming equilibrium between the soil gas and groundwater PCE). The high levels observed in MW-2 appear to reflect water quality degradation only within a relatively localized zone. The Stevens Branch is the only obvious sensitive receptor to this dissolved PCE. In our opinion, this surface water will not be measurably impacted by the PCE.
4. Six floor drains at automobile service bays in the Goss Tire facility are still in use. These drains are referenced in your August 19, 1993 letter to Brad Wheeler of The Johnson Company. According to personnel at Goss Tire, the drains alleviate extensive flooding of the building when the Stevens Branch overtops its banks.

RECOMMENDATIONS

We offer the following recommendations for continued monitoring of environmental conditions at the VSC property:

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1. The waste oil contaminated soil landfarm behind Woolworth's should continue to be monitored on a quarterly basis, including collection of a composite soil sample for TPH analysis, to track remediation effectiveness. Once TPH levels have declined to less than 10% of initial concentrations (established at about 1300 ppm), the soils may be thin spread on the access road behind the VSC facility. Further amendments with manure, addition of water, covering or uncovering the soil pile, and maintenance of fences will also be performed during the quarterly site visits, as needed. Results should be reported to the HMMD within 30 days.
2. The 12-inch well behind Goss Tire should be checked for free product on a quarterly basis for one year. Results should be reported to the HMMD within 30 days.
3. All six floor drains serving the service bays at the Goss Tire facility should be filled with non-shrink hydraulic cement. This work should be completed by May 15, 1994, and appropriate site grading improvements should be made to deter entry of floodwaters from the Stevens Branch into the Goss Tire facility. The HMMD should be notified when this work is completed.

We believe that this letter report with recommendations provides satisfactory documentation of the existing environmental conditions at the VSC site. On behalf of the Springfield Institute for Savings, we would appreciate a letter from your Division as soon as practicable, specifically stating whether you agree with our conclusions and recommendations, and whether any further environmental activities are necessary at this site. Having remediated the waste-oil-contaminated soils behind Goss Tire, and characterized the extent of PCE contamination around MW-2, we feel that this site can be removed from the Vermont Hazardous Waste Sites - Active Sites List.

Thanks for your ongoing assistance with this project.

Sincerely,



Dean A. Grover, P.E.
Chief Engineer, Environmental Division

DAG/ral

Attachments

cc: Scott Brabant, Vice President, Springfield Institution for Savings
Allen Lendway, Lendco, Ltd.
Brad Wheeler, The Johnson Company



State of Vermont

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
Natural Resources Conservation Council
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD>Voice
1-800-253-0195 Voice>TDD

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Hazardous Materials Management Division
103 South Main Street/West Building
Waterbury, Vermont 05671-0404
(802) 241-3888
fax (802) 244-5141

November 15, 1993

Mr. Dean Grover
Wagner, Heindel, and Noyes, Inc.
P.O. Box 1629
Burlington, VT 05402-1629

RE: Vermont Shopping Center, Berlin, Vermont (site #91-1203)

Dear Mr. Grover:

The Vermont Department of Environmental Conservation, Sites Management Section (SMS) has received and reviewed the October 28, 1993 Wagner, Heindel, and Noyes, Inc. report pertaining to the Vermont Shopping Center site in Berlin.

Based on the findings of this investigation, the SMS approves of the recommendations of this report. Specifically, this means the following:

- excavate and remove all visibly stained waste-oil contaminated soils to a depth of at least two feet (deeper if any visible staining is evident at greater depth) from the approximately 15 by 25 foot portion of the site that is surrounded by the concrete slab.
- do not disrupt the concrete slab near the contaminated soils located behind the Goss Tire Store.
- cap the excavated area with clean fill.
- stockpile all waste oil contaminated soil on site. This stockpile must be appropriately secured.
- landfarm these soils while they are stockpiled, following all guidelines laid out in the Landfarm Policy.

Once the soil pile has been adequately treated, the issue of the waste oil contaminated soils will have been resolved. The only issue left at that point will be the low levels of PCE contamination in the groundwater behind the Vermont Shopping Center. The SMS awaits a plan on how this issue will be dealt with.

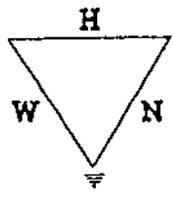
If you have any questions, please feel free to contact me at 241-3888.

Sincerely,

Richard Spiese

Richard Spiese, Site Coordinator
Sites Management Section

rfs/119311.1203
cc: Scott Brabant, Springfield Institute for Savings



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

MEMORANDUM

TO: Scott Brabant, Vice President, Springfield Institute for Savings
FR: Dean A. Grover *DAG*
DT: January 26, 1994
RE: Excavation of waste-oil-contaminated soil behind Goss Tire at Vermont Shopping Center, Berlin, Vermont (DEC Site #91-1203)

On December 16th and 17th, 1993, Wagner, Heindel, and Noyes, Inc. (WH&N) implemented the work plan described in our letter dated October 28, 1993, to Mr. Richard Spiese, Hazardous Materials Management Division, Vermont Agency of Natural Resources. In the plan we described our procedure for remediation of waste-oil-contaminated soils above the water table behind the Goss Tire service center. Richard Spiese approved the plan in a letter dated November 15, 1993.

WH&N subcontracted A. Marcelino and Company to provide a rubber-tired backhoe and tandem dump truck at the site on December 16, 1993. We excavated approximately 40 yards of waste-oil-contaminated soil from a 12' x 12' unpaved area surrounded by concrete behind the Goss Tire service center. During excavation, both the soils and the air breathing spaces of the workers were monitored with a flame ionization detector (FID). Excavated soils consisted of wet silty sands discolored to a grey cast with waste oil. FID levels at 0 to 3.5' below ground surface (bgs) were 200 ppm, increasing to 300 to 500 ppm at 4.5' to 5.0' bgs. Soils were removed to a depth of 6 feet bgs. At this depth, the water table was encountered, and sheens and thin layers of floating oil were noted on the water table. Consequently, a 12-inch diameter groundwater recovery well was installed to a depth of 8 feet bgs to permit recovery of groundwater, if necessary, at a future date. The 12-inch diameter SDR 35 plastic pipe was hand-slotted, wrapped with filter fabric, and backfilled with 1-inch minus crushed stone.

All excavated waste-oil-contaminated soils were moved by dump truck to a previously prepared soil pile site, located southeast of the Woolworth's building on the shopping center property. This paved parking area was prepared by constructing a bermed area approximately 30' x 30' in size with clean fill material, and covering the area with two layers of 6 mil clear polyethylene plastic. During the soil stockpiling operation, contaminated soils were mixed with two truck loads of cow manure to enhance biologic degradation of the petroleum contaminant. Two composite samples from the soil pile were collected and submitted to the laboratory for analysis. The entire soil pile was then covered with one layer of 6 mil polyethylene plastic, and a 4-foot high 6 mil poly plastic fence (safety fencing) was erected around the soil stockpile to discourage unauthorized access.

Both composite soil samples were evaluated for total petroleum hydrocarbons (TPH; EPA Method 418.1). Results are attached and show TPH levels of 1370 ppm (soil composite #1), and 1250 ppm (soil composite #2). Since we noted the storage of gasoline tanks in the vicinity of the area where waste-oil-contaminated soils were removed, we also analyzed the soil pile samples for purgeable aromatic hydrocarbons (EPA Method 8020 compounds, by EPA Method 8240). These results revealed low levels of ethylbenzene, toluene and xylenes, but no detectable benzene.

The excavated area was backfilled to original topography with clean fill obtained from an undeveloped portion of the site near the river bank.

On December 17, 1993, the groundwater recovery well was checked for free product. No measurable free product was observed, although a slight petroleum odor and thin sheen were evident in the recovery well. This well was checked again on January 7, 1994, and no measurable free product or sheens were evident. A slight petroleum odor was noted.

Consistent with our work plan, we will collect composite soil samples of the soil pile on a quarterly basis, and ensure that any necessary maintenance of the fencing and plastic be performed. We have scheduled to collect the first composite soil sample in mid-March 1994.

Consistent with the guidelines established by the Sites Management Section, the remediation goal for the waste-oil-contaminated soil is a 90% reduction in concentrations of total petroleum hydrocarbons. Therefore, our remediation goal is a reduction in TPH to less than 130 ppm.

DAG/wp

[m-abrabant/DAG 01/01/94]



ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: Wagner, Heindel & Noyes, Inc.
PROJECT NAME: VT. Shopping Ctr./Waste Oil
DATE REPORTED: January 4, 1994
DATE SAMPLED: December 16, 1993

PROJECT CODE: HNVW1591
REF. #: 55,292 - 55,293

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

Chain of custody indicated no 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.

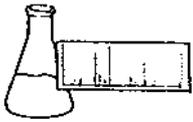
Blank contamination was not observed at levels affecting the analytical results.

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

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Williston, Vermont 05495
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FAX 879-7103

LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1 (SOIL)

CLIENT: Wagner, Heindel & Noyes, Inc.
REPORT DATE: January 4, 1994
PROJECT NAME: VT. Shopping Ctr./Waste Oil
PROJECT CODE: HNVW1591
DATE SAMPLED: December 16, 1993
DATE RECEIVED: December 17, 1993
DATE ANALYZED: January 3, 1994
SAMPLER: M.K. Sparks

<u>Reference #:</u>	<u>Station ID:</u>	<u>Concentration (mg/kg)¹</u>
55,292	Soil Composite #1	1370.
55,293	Soil Composite #2	1250.

Notes:

- 1 Method detection limit is 6.1 ppm
- 2 None detected



32 James Brown Drive
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(802) 879-4333

09740

CHAIN-OF-CUSTODY RECORD

55,292 - 55,295

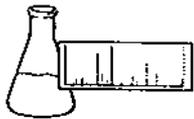
Project Name: Vermont Shopping Center / Waste Oil	Reporting Address: WHEN	Billing Address: WHEN
Site Location: Berlin, VT		
Endyne Project Number: HNVW1591	Company: WHEN Contact Name/Phone #: Dean Grover	Sampler Name: MK Sparks Phone #: 658-0820

Lab #	Sample Location	Matrix	GRA B	COMP	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
55,292	Soil Composite #1	Soil			12-16-93	1	250ml		418.1	No	No
						L	amber glass		8020		
55,293	Soil Composite #2					1	250ml		418.1		
						L	amber glass		8020		

Relinquished by: Signature	Received by: Signature	Date/Time 12/17/93 12:30
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):										



ENDYNE, INC.

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REPORT OF LABORATORY ANALYSIS

CLIENT: Wagner, Heindel & Noyes, Inc.
PROJECT NAME: Vermont Shopping Center
DATE REPORTED: December 30, 1993
DATE SAMPLED: December 16, 1993

PROJECT CODE: HNVW1592
REF. #: 55,294 - 55,295

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

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.

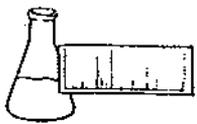
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

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



LABORATORY REPORT

EPA METHOD 8020 COMPOUNDS BY EPA METHOD 8240

CLIENT: Wagner, Heindel & Noyes, Inc.
PROJECT NAME: Vermont Shopping Ctr.
REPORT DATE: December 30, 1993
SAMPLER: M. Sparks
DATE SAMPLED: December 16, 1993
DATE RECEIVED: December 17, 1993

PROJECT CODE: HNVW1592
ANALYSIS DATE: December 27, 1993
STATION: Soil Composite #1
REF.#: 55,294
TIME SAMPLED: Not Indicated

<u>Parameter</u>	<u>Detection Limit (ug/kg)</u>	<u>Concentration As Received (ug/kg)</u>
Benzene	10	ND ¹
Chlorobenzene	20	ND
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	10	ND
Toluene	10	ND
Xylene	30	58.0
MTBE	30	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

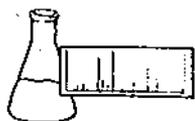
ANALYTICAL SURROGATE RECOVERY:

1,2 Dichloroethane-d4: 107%
Toluene-d8: 112%
4-Bromofluorobenzene: 97%

PERCENT SOLIDS: 82%

NOTES:

1 None detected



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 8020 COMPOUNDS BY EPA METHOD 8240

CLIENT: Wagner, Heindel & Noyes, Inc.
PROJECT NAME: Vermont Shopping Ctr.
REPORT DATE: December 30, 1993
SAMPLER: M. Sparks
DATE SAMPLED: December 16, 1993
DATE RECEIVED: December 17, 1993

PROJECT CODE: HNVW1592
ANALYSIS DATE: December 27, 1993
STATION: Soil Composite #2
REF.#: 55,295
TIME SAMPLED: Not Indicated

<u>Parameter</u>	<u>Detection Limit (ug/kg)</u>	<u>Concentration As Received (ug/kg)</u>
Benzene	10	ND ¹
Chlorobenzene	20	ND
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	10	18.9
Toluene	10	16.1
Xylene	30	43.4
MTBE	30	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

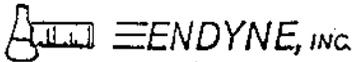
ANALYTICAL SURROGATE RECOVERY:

1,2 Dichloroethane-d4: 105%
Toluene-d8: 113%
4-Bromofluorobenzene: 94%

PERCENT SOLIDS: 85%

NOTES:

1 None detected



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

CHAIN-OF-CUSTODY RECORD

09740

Project Name: <i>Vermont Shopping Center / Waste Oil</i>	Reporting Address: <i>WHEN</i>	Billing Address: <i>WHEN</i>
Site Location: <i>Berlin, VT</i>		
Endyne Project Number: <i>HMW 1592</i>	Company: <i>WHEN</i>	Sampler Name: <i>MK Sparks</i>
	Contact Name/Phone #: <i>Dean Grover</i>	Phone #: <i>658-0820</i>

Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
55,294	Soil Composite #1	Soil			12-16-93	1	250ml amber glass		418.1	No	No
						L			8020		
55,295	Soil Composite #2					1	250ml amber glass		418.1		
						L			8020		

Relinquished by: Signature	Received by: Signature <i>Tom M. Chambers</i>	Date/Time <i>12/17/95</i>
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):										

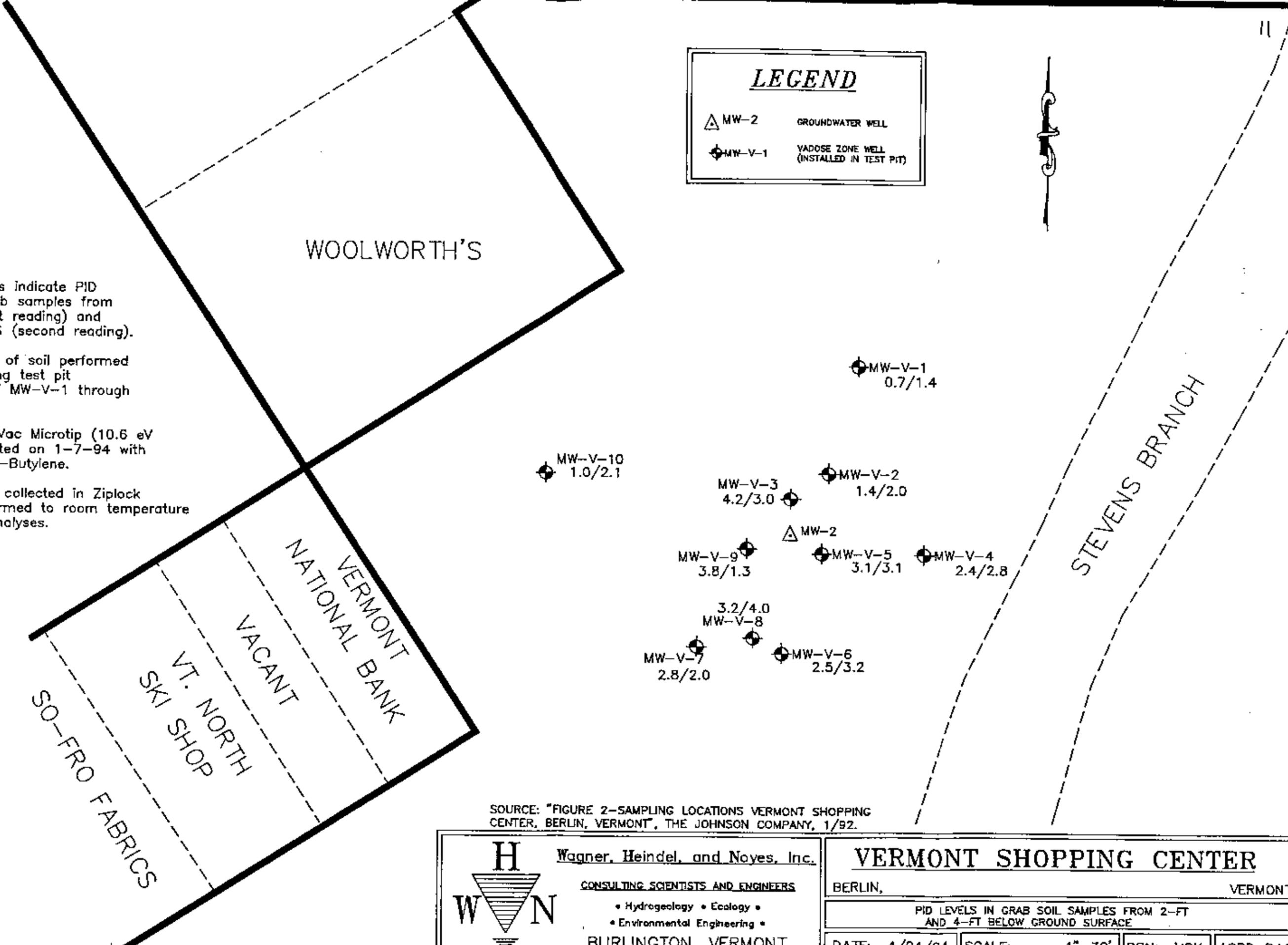
NOTES:

- Paired results indicate PID levels on grab samples from 2ft BGS (first reading) and from 4ft BGS (second reading).
- PID analyses of soil performed 1/7/94 during test pit installation of MW-V-1 through MW-V-10.
- PID = PhotoVac Microtip (10.6 eV lamp) calibrated on 1-7-94 with 100 ppm Iso-Butylene.
- Soil samples collected in Ziplock bags and warmed to room temperature before PID analyses.

LEGEND

△ MW-2 GROUNDWATER WELL

⊕ MW-V-1 VADOSE ZONE WELL (INSTALLED IN TEST PIT)



SOURCE: "FIGURE 2-SAMPLING LOCATIONS VERMONT SHOPPING CENTER, BERLIN, VERMONT", THE JOHNSON COMPANY, 1/92.

H
Wagner, Heindel, and Noyes, Inc.
W **N**

CONSULTING SCIENTISTS AND ENGINEERS

- Hydrogeology • Ecology •
- Environmental Engineering •

BURLINGTON, VERMONT

VERMONT SHOPPING CENTER

BERLIN, VERMONT

PID LEVELS IN GRAB SOIL SAMPLES FROM 2-FT AND 4-FT BELOW GROUND SURFACE

DATE: 4/04/94 SCALE: 1"=30' DRN: MDK APPD: DAG



NEW ENGLAND AIR QUALITY TESTING

- Source Emissions Testing
 - Source Permitting
 - Ambient Air Sampling
 - Fugitive Emissions Measurement
 - Indoor Air Sampling and Analysis
 - Consulting/Engineering Services
-

MEMORANDUM

TO: Dean Grover
FR: David Adams
DT: March 18, 1994
RE: Vermont Shopping Center, Perchloroethylene air sampling results

Enclosed please find the following:

- Table of results for air sampling conducted on March 7, 1994 at the Vermont Shopping Center in Berlin, Vermont. Sampling was conducted on MW-1 through MW-10 via EPA Method TO2 to determine concentrations of tetrachloroethylene in each monitor well. Detectable concentrations were measured in MW-7 (0.6 ppb), MW-8 (0.4 ppb), and MW-10 (19.1 ppb). Perchloroethylene was not detected in any of the remaining monitoring wells. The method detection limit is 10 ng, which corresponds to approximately 0.2 ppb for a 6-liter sample.
- Endyne laboratory reports.
- Sample collection data sheets and computations for each sample collected.

Please give me a call if you have any questions about the enclosed results.

DA/ral

[M-GROVER/DA 3-4-94]

Vermont Shopping Center - Tetrachlorethylene Sampling Results

Sampling performed on March 7, 1994

Tetrachloroethylene concentrations corrected to standard conditions (P=760 mmHg, T=293 K)

	Location	Sample ID	Temp. (C)	Press. (mm Hg)	Duration (min)	Flowrate (cc/min)	Volume (L)	Mass (ug)	Conc. (mg/m3)	Conc. (ppb)
1	MW - 1	A601	7	757	60	91.83	5.5	< 0.010	< 0.002	< 0.253
2	MW - 2	A602	7	757	60	95.61	5.7	< 0.010	< 0.0017	< 0.243
3	MW - 3	A603	7	757	60	103.8	6.2	< 0.010	< 0.0015	< 0.224
4	MW - 4	A604	7	757	60	105.0	6.3	< 0.010	< 0.0015	< 0.221
5	MW - 5	A605	7	757	60	105.8	6.3	< 0.010	< 0.0015	< 0.219
6	MW - 6	A606	7	757	60	93.23	5.6	< 0.010	< 0.0017	< 0.249
7	MW - 7	A607	7	757	60	96.78	5.8	0.028	0.0046	0.664
8	MW - 8	A608	7	757	60	94.07	5.6	0.016	0.0027	0.387
9	MW - 9	A609	7	757	60	101.7	6.1	< 0.010	< 0.0016	< 0.228
10	MW - 10	A610	7	757	60	109.9	6.6	0.905	0.132	19.1



ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: NEAQT
PROJECT NAME: VT Shopping Center
DATE REPORTED: March 15, 1994
DATE SAMPLED: MArch 7, 1994

PROJECT CODE: NQVT1982
REF. #: 57,040 - 57,049

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

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

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FAX 879-7103

LABORATORY REPORTTETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT

PROJECT NAME: VT Shopping Center

REPORT DATE: March 15, 1994

SAMPLER: DA/GL

DATE SAMPLED: March 7, 1994

DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982

ANALYSIS DATE: March 11, 1994

STATION: A601

REF.#: 57,040

TIME SAMPLED: Not Indicated

ParameterConcentration (ng)¹

Tetrachloroethylene

ND²

NOTES:

1 Method detection limit is 10 ng.

2 None detected.



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Laboratory Services

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LABORATORY REPORT

TETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT
PROJECT NAME: VT Shopping Center
REPORT DATE: March 15, 1994
SAMPLER: DA/GL
DATE SAMPLED: March 7, 1994
DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982
ANALYSIS DATE: March 11, 1994
STATION: A602
REF.#: 57,041
TIME SAMPLED: Not Indicated

Parameter

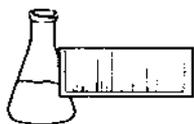
Concentration (ng)¹

Tetrachloroethylene

ND²

NOTES:

- 1 Method detection limit is 10 ng.
- 2 None detected.

**ENDYNE, INC.**

Laboratory Services

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LABORATORY REPORTTETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT

PROJECT NAME: VT Shopping Center

REPORT DATE: March 15, 1994

SAMPLER: DA/GL

DATE SAMPLED: March 7, 1994

DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982

ANALYSIS DATE: March 11, 1994

STATION: A603

REF.#: 57,042

TIME SAMPLED: Not Indicated

ParameterConcentration (ng)¹

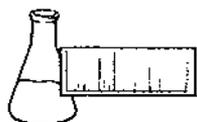
Tetrachloroethylene

ND²

NOTES:

1 Method detection limit is 10 ng.

2 None detected.

**ENDYNE, INC.**Laboratory Services

32 James Brown Drive
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FAX 879-7103

LABORATORY REPORTTETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT

PROJECT NAME: VT Shopping Center

REPORT DATE: March 15, 1994

SAMPLER: DA/GL

DATE SAMPLED: March 7, 1994

DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982

ANALYSIS DATE: March 11, 1994

STATION: A604

REF.#: 57,043

TIME SAMPLED: Not Indicated

ParameterConcentration (ng)¹

Tetrachloroethylene

ND²

NOTES:

1 Method detection limit is 10 ng.

2 None detected.


ENDYNE, INC.

 Laboratory Services

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 FAX 879-7103

LABORATORY REPORT
TETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

 CLIENT: NEAQT
 PROJECT NAME: VT Shopping Center
 REPORT DATE: March 15, 1994
 SAMPLER: DA/GL
 DATE SAMPLED: March 7, 1994
 DATE RECEIVED: March 8, 1994

 PROJECT CODE: NQVT1982
 ANALYSIS DATE: March 11, 1994
 STATION: A605
 REF.#: 57,044
 TIME SAMPLED: Not Indicated

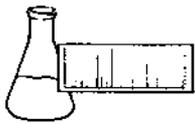
Parameter
Concentration (ng)¹

Tetrachloroethylene

 ND²

NOTES:

- 1 Method detection limit is 10 ng.
- 2 None detected.



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

TETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT
PROJECT NAME: VT Shopping Center
REPORT DATE: March 15, 1994
SAMPLER: DA/GL
DATE SAMPLED: March 7, 1994
DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982
ANALYSIS DATE: March 11, 1994
STATION: A606
REF.#: 57,045
TIME SAMPLED: Not Indicated

Parameter

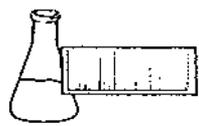
Concentration (ng)¹

Tetrachloroethylene

TBQ²

NOTES:

- 1 Method detection limit is 10 ng.
- 2 Trace below quantitation limit.



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

TETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT
PROJECT NAME: VT Shopping Center
REPORT DATE: March 15, 1994
SAMPLER: DA/GL
DATE SAMPLED: March 7, 1994
DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982
ANALYSIS DATE: March 11, 1994
STATION: A607
REF.#: 57,046
TIME SAMPLED: Not Indicated

Parameter

Concentration (ng)¹

Tetrachloroethylene

27.7

NOTES:

1 Method detection limit is 10 ng.

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32 James Brown Drive
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FAX 879-7103

LABORATORY REPORTTETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT

PROJECT NAME: VT Shopping Center

REPORT DATE: March 15, 1994

SAMPLER: DA/GL

DATE SAMPLED: March 7, 1994

DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982

ANALYSIS DATE: March 11, 1994

STATION: A608

REF.#: 57,047

TIME SAMPLED: Not Indicated

ParameterConcentration (ng)¹

Tetrachloroethylene

15.7

NOTES:

1 Method detection limit is 10 ng.



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Laboratory Services

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LABORATORY REPORT

TETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT
PROJECT NAME: VT Shopping Center
REPORT DATE: March 15, 1994
SAMPLER: DA/GL
DATE SAMPLED: March 7, 1994
DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982
ANALYSIS DATE: March 11, 1994
STATION: A609
REF.#: 57,048
TIME SAMPLED: Not Indicated

Parameter

Concentration (ng)¹

Tetrachloroethylene

TBQ²

NOTES:

- 1 Method detection limit is 10 ng.
- 2 Trace below quantitation limit.

**ENDYNE, INC.**Laboratory Services

32 James Brown Drive
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FAX 879-7103

LABORATORY REPORTTETRACHLOROETHYLENE BY EPA METHOD 8240 (AIR)

CLIENT: NEAQT

PROJECT NAME: VT Shopping Center

REPORT DATE: March 15, 1994

SAMPLER: DA/GL

DATE SAMPLED: March 7, 1994

DATE RECEIVED: March 8, 1994

PROJECT CODE: NQVT1982

ANALYSIS DATE: March 14, 1994

STATION: A610

REF.#: 57,049

TIME SAMPLED: Not Indicated

ParameterConcentration (ng)¹

Tetrachloroethylene

905.

NOTES:

1 Method detection limit is 10 ng.



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

CHAIN-OF-CUSTODY RECORD

09832

Project Name: Vt. Shopping Center-Perc	Reporting Address: NEAQT	Billing Address: WH#N
Site Location: Berlin, VT		
Endyne Project Number: NQVT1982	Company: NEAQT	Sampler Name: DA/GL
	Contact Name/Phone #: David Adams/Dean Grover	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				
57040	A601	Air	-	-	3/7/94	1	tube	MW#1	Bichloroethylene ONLY	-	ZWKS
57041	A602		-	-				MW#2		-	
57042	A603		-	-				MW#3		-	
57043	A604		-	-				MW#4		-	
57044	A605		-	-				MW#5		-	
57045	A606		-	-				MW#6		-	
57046	A607		-	-				MW#7		-	
57047	A608		-	-				MW#8		-	
57048	A609		-	-				MW#9		-	
57049	A610		-	-				MW#10		-	

Relinquished by: Signature <i>David E. Adams</i>	Received by: Signature <i>Tonia M. Grover</i>	Date/Time 8 Mar 94 12:30
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	Nitric 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):										



NEW ENGLAND AIR QUALITY TESTING

- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <u>Vt. Shopping Center</u>		Sampler: <u>DA/GL</u>	
Location: <u>MN 1</u>		Date: <u>3/7/94</u>	
NEAQT Sample Number: <u>A601</u>		Media: <u>Carbotrap 300</u>	
Analyte: <u>Perchloroethylene</u>		Lot Number: <u>1052-13 (Supelco)</u>	
Site Conditions: <u>winter</u>		Method (NIOSH/OSHA/Other): <u>EPA T02</u>	
Pump Type: <u>SKC</u>	Serial #: <u>1</u>	Laboratory: <u>Endyne</u>	
Target flow rate: <u>100cc/min</u>		Actual flow rate: <u>91.83 cc/min</u>	
Target run time: <u>1 HOUR</u>		Actual run time: <u>1 HOUR</u>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	90.57	91.99	
2	92.02	91.71	
3	90.80	93.89	
Avg.	# 91.13	92.53	91.83
Barometric Pressure (In Hg)	757 mm Hg	757 mm Hg	757 mm Hg
Ambient Temp. (°C)	7°C	7°C	7°C
Notes:			
<u>Gregory M. Leach</u> Sampler Signature		<u>3/7/94</u> Date	
<u>David E. Edwards</u> Checked by			
* Complete one form for each sample collected (including blanks).			
[TB-DATA\NEAQT 7-1-92]			

NEW ENGLAND AIR QUALITY TESTING



- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <u>Vt. Shopping Center</u>		Sampler: <u>DA/GL</u>	
Location: <u>MW 2</u>		Date: <u>3/7/94</u>	
NEAQT Sample Number: <u>A602</u>		Media: <u>Carbotrap 300</u>	
Analyte: <u>Perchloroethylene</u>		Lot Number: <u>1052-13 (Supelco)</u>	
Site Conditions: <u>winter</u>		Method (NIOSH/OSHA/Other): <u>EPA T02</u>	
Pump Type: <u>SKC</u>	Serial #: <u>5</u>	Laboratory: <u>Endvar</u>	
Target flow rate: <u>100 cc/min</u>		Actual flow rate: <u>95.61^{95.605} cc/min</u>	
Target run time: <u>1 HOUR</u>		Actual run time: <u>1 HOUR</u>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	94.43	96.60	
2	93.57	99.63	
3	95.02	94.39	
Avg.	94.34	96.87	^{95.61} 95.605
Barometric Pressure (in Hg)	757 mm Hg	757 mm Hg	757 mm Hg
Ambient Temp. (°C)	7°C	7°C	7°C
Notes:			
<u>Jerry M. Fish</u> Sampler Signature		<u>3/7/94</u> Date	
<u>David E. Adams</u> Checked by			
* Complete one form for each sample collected (including blanks).			
			(TB-DATA/NEAQT 7-1-92)

NEW ENGLAND AIR QUALITY TESTING



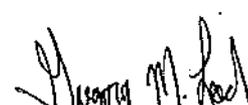
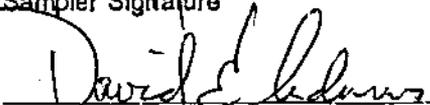
- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <i>Vt. Shopping Center</i>		Sampler: <i>DA/GA</i>	
Location: <i>PROBE MW3</i>		Date: <i>3/7/94</i>	
NEAQT Sample Number: <i>A603</i>		Media: <i>Carbotrap 300</i>	
Analyte: <i>Perchloroethylene</i>		Lot Number: <i>1052-13 (Supelco)</i>	
Site Conditions: <i>winter</i>		Method (NIOSH/OSHA/Other): <i>EPA T02</i>	
Pump Type: <i>SKC</i>	Serial #: <i>3</i>	Laboratory: <i>Endyne</i>	
Target flow rate: <i>100 cc/min</i>		Actual flow rate: <i>103.8 cc/min</i>	
Target run time: <i>1 HR</i>		Actual run time: <i>1 HOUR</i>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
<i>1</i>	<i>99.44</i>	<i>108.5</i>	
<i>2</i>	<i>98.62</i>	<i>109.6</i>	
<i>3</i>	<i>98.22</i>	<i>108.4</i>	
<i>Avg.</i>	<i>98.76</i>	<i>108.8</i>	<i>103.8</i>
Barometric Pressure (in Hg)	<i>757 mmHg</i>	<i>757 mmHg</i>	<i>757 mmHg</i>
Ambient Temp. (°C)	<i>757 mmHg 7°</i>	<i>7°C</i>	<i>7°C</i>
Notes:			
Sampler Signature: <i>Harry M. Cook</i>		Date: <i>3/7/94</i>	
Checked by: <i>David E. Ludens</i>			
* Complete one form for each sample collected (including blanks).			
[TB-DATA/NEAQT 7-1-82]			



NEW ENGLAND AIR QUALITY TESTING

- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <i>Vt. Shopping Center</i>		Sampler: <i>DA/GA</i>	
Location: <i>MW4</i>		Date: <i>3/7/94</i>	
NEAQT Sample Number: <i>A604</i>		Media: <i>Carbotrap 300</i>	
Analyte: <i>Perchloroethylene</i>		Lot Number: <i>1052-13 (Supelco)</i>	
Site Conditions: <i>winter</i>		Method (NIOSH/OSHA/Other): <i>EPA TO2</i>	
Pump Type: <i>SKC</i>	Serial #: <i>6</i>	Laboratory: <i>Endyne 1050</i> ^{DA}	
Target flow rate: <i>100cc/min</i>		Actual flow rate: <i>104.949 cc/min</i>	
Target run time: <i>1 HR</i>		Actual run time: <i>1 HR</i>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	107.7	105.3	
2	102.3	106.2	
3	103.3	104.9	
Avg.	104.43 104.4 ^{DA}	105.5 105.46 ^{DA}	104.949 105.0 ^{DA}
Barometric Pressure (in Hg)	757 mm Hg	757 mm Hg	757 mm Hg
Ambient Temp. (°C)	7°C	7°C	7°C
Notes:			
 Sampler Signature		<i>3/7/94</i> Date	
 Checked by			
<small>Complete one form for each sample collected (including blanks).</small>			
<small>[TB-DATA/NEAQT 7-1-92]</small>			

NEW ENGLAND AIR QUALITY TESTING



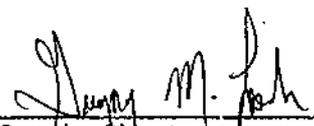
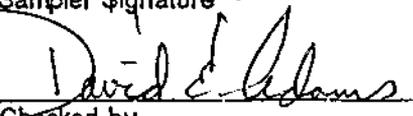
- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <i>Vt. Shopping Center</i>		Sampler: <i>DA/GL</i>	
Location: <i>MW 5</i>		Date: <i>3/7/94</i>	
NEAQT Sample Number: <i>A605</i>		Media: <i>Carbotrap 300</i>	
Analyte: <i>Perchloroethylene</i>		Lot Number: <i>1052-13 (Supelco)</i>	
Site Conditions: <i>winter</i>		Method (NIOSH/OSHA/Other): <i>EPA TO2</i>	
Pump Type: <i>SKC</i>	Serial #: <i>7</i>	Laboratory: <i>Endyne 105.8^{DA}</i>	
Target flow rate: <i>100 cc/min</i>		Actual flow rate: <i>105.75 cc/min</i>	
Target run time: <i>1 HR</i>		Actual run time: <i>1 HR</i>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
<i>1</i>	<i>104.2</i>	<i>108.8</i>	
<i>2</i>	<i>106.1</i>	<i>102.9</i>	
<i>3</i>	<i>103.8</i>	<i>108.7</i>	
<i>Avg.</i>	<i>104.7</i>	<i>106.8</i>	<i>105.8^{DA}</i> <i>105.75</i>
Barometric Pressure (in Hg)	<i>757 mm Hg</i>	<i>757 mm Hg</i>	<i>757 mm Hg</i>
Ambient Temp. (°C)	<i>7°C</i>	<i>7°C</i>	<i>7°C</i>
Notes:			
Sampler Signature <i>Gregory M. Jacob</i>		Date <i>3/7/94</i>	
Checked by <i>David E. Roberts</i>			
* Complete one form for each sample collected (including blanks).			
[TB-DATA/NEAQT 7-1-92]			



NEW ENGLAND AIR QUALITY TESTING

- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
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- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <u>Vt. Shopping Center</u>		Sampler: <u>DA/GH</u>	
Location: <u>MW6</u>		Date: <u>3/7/94</u>	
NEAQT Sample Number: <u>A606</u>		Media: <u>Carbotrap 300</u>	
Analyte: <u>Perchloroethylene</u>		Lot Number: <u>1052-13 (Supelco)</u>	
Site Conditions: <u>winter</u>		Method (NIOSH/OSHA/Other): <u>EPA T02</u>	
Pump Type: <u>ALPHA 1</u>	Serial #: <u>15110</u>	Laboratory: <u>Endyne</u>	
Target flow rate: <u>100 cc/min</u>		Actual flow rate: <u>93.23 cc/min</u>	
Target run time: <u>1 HR</u>		Actual run time: <u>1 HOUR</u>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	92.23	91.19	
2	92.89	92.46	
3	98.70	91.90	
Avg.	94.607 94.61 ⁽⁹⁴⁾	91.85	93.23
Barometric Pressure (in Hg)	757 mmHg	757 mmHg	757 mmHg
Ambient Temp. (°C)	7°C	7°C	7°C
Notes:			
 _____ Sampler Signature		<u>3/7/94</u> _____ Date	
 _____ Checked by			
* Complete one form for each sample collected (including blanks).			
			[TB-DATA\NEAQT 7-1-92]

NEW ENGLAND AIR QUALITY TESTING



- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <u>Vt. Shopping Center</u>		Sampler: <u>DA/GL</u>	
Location: <u>MW 7</u>		Date: <u>3/7/94</u>	
NEAQT Sample Number: <u>A607</u>		Media: <u>Carbotrap 300</u>	
Analyte: <u>Perchloroethylene</u>		Lot Number: <u>1052-13 (Supelco)</u>	
Site Conditions: <u>winter</u>		Method (NIOSH/OSHA/Other): <u>EPA T02</u>	
Pump Type: <u>ALPHA 1</u>	Serial #: <u>15111</u>	Laboratory: <u>Endyne 9678</u> ^(DA)	
Target flow rate: <u>100 cc/min</u>		Actual flow rate: <u>95.775</u> cc/min	
Target run time: <u>1 HOUR</u>		Actual run time: <u>1 HOUR</u>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	96.15	98.31	
2	97.46	90.41	
3	97.80	100.5	
Avg.	97.14	94.9 96.41 ^(DA)	95.775 96.78 ^(DA)
Barometric Pressure (in Hg)	757 mm Hg	757 mm Hg	757 mm Hg
Ambient Temp. (°C)	7°C	7°C	7°C
Notes:			
<u>[Signature]</u> Sampler Signature		<u>3/7/94</u> Date	
<u>[Signature]</u> Checked by			
* Complete one form for each sample collected (including blanks).			
[TB-DATA-NEAQT 7-1-92]			



NEW ENGLAND AIR QUALITY TESTING

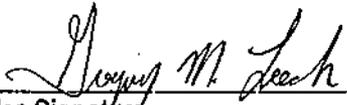
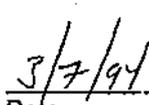
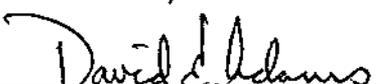
- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <u>Vt. Shopping Center</u>		Sampler: <u>DA/GL</u>	
Location: <u>MW-8</u>		Date: <u>3/7/94</u>	
NEAQT Sample Number: <u>A608</u>		Media: <u>Carbotrap 300</u>	
Analyte: <u>Perchloroethylene</u>		Lot Number: <u>1052-13 (Supelco)</u>	
Site Conditions: <u>winter</u>		Method (NIOSH/OSHA/Other): <u>EPA T02</u>	
Pump Type: <u>ALPHA 1</u>	Serial #: <u>14597</u>	Laboratory: <u>Endyne</u>	
Target flow rate: <u>100 cc/min</u>		Actual flow rate: ^{94.07} 94.065 <u>cc/min</u>	
Target run time: <u>1 HOUR</u>		Actual run time: <u>1 HOUR</u>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	94.43	92.57	
2	94.0	93.77	
3	94.89	94.72	
Avg.	94.44	93.69	94.065 94.07
Barometric Pressure (In Hg)	757 mmHg	757 mmHg	757 mmHg
Ambient Temp. (°C)	7°C	7°C	7°C
Notes:			
<u>Sue M. Leach</u> Sampler Signature		<u>3/7/94</u> Date	
<u>David Adams</u> Checked by			
* Complete one form for each sample collected (including blanks).			
[TB-DATA/NEAQT 7-1-92]			



NEW ENGLAND AIR QUALITY TESTING

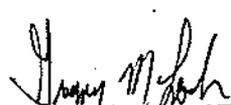
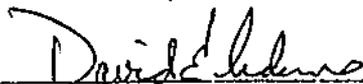
- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <i>Vt. Shopping Center</i>		Sampler: <i>DA/GAL</i>	
Location: <i>MW 9</i>		Date: <i>3/7/94</i>	
NEAQT Sample Number: <i>A609</i>		Media: <i>Carbotrap 300</i>	
Analyte: <i>Perchloroethylene</i>		Lot Number: <i>1052-13 (Supelco)</i>	
Site Conditions: <i>winter</i>		Method (NIOSH/OSHA/Other): <i>EPA T02</i>	
Pump Type: <i>ALPHA 1</i>	Serial #: <i>14592</i>	Laboratory: <i>Endyne</i> <i>101.7</i>	
Target flow rate: <i>100 cc/min</i>		Actual flow rate: <i>101.635 cc/min</i>	
Target run time: <i>1 HR</i>		Actual run time: <i>1 HR</i>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	101.1	102.7	
2	102.1	100.9	
3	102.1	100.9	
Avg.	101.767 <i>101.8</i> ^{DA}	101.5	101.635 <i>101.7</i> ^{DA}
Barometric Pressure (In Hg)	101.757 <i>757 mmHg</i>	757 mmHg	757 mmHg
Ambient Temp. (°C)	7°C	7°C	7°C
Notes:			
 Sampler Signature		 Date	
 Checked by			
* Complete one form for each sample collected (including blanks). [TB-DATA\NEAQT 7-1-92]			

NEW ENGLAND AIR QUALITY TESTING



- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: <i>Vt. Shopping Center</i>		Sampler: <i>DA/GL</i>	
Location: <i>MW-10</i>		Date: <i>3/7/94</i>	
NEAQT Sample Number: <i>A610</i>		Media: <i>Carbotrap 300</i>	
Analyte: <i>Perchloroethylene</i>		Lot Number: <i>1052-13 (Supelco)</i>	
Site Conditions: <i>winter</i>		Method (NIOSH/OSHA/Other): <i>EPA TO2</i>	
Pump Type: <i>ALPHA-1</i>	Serial #: <i>15113</i>	Laboratory: <i>Endyne</i>	
Target flow rate: <i>100 cc/min</i>		Actual flow rate: <i>109.885 109.9 cc/min</i> ^(DA)	
Target run time: <i>1 HR</i>		Actual run time: <i>1 HR</i>	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	109.2	110.3	
2	109.3	111.1	
3	109.7	109.7	
Avg.	109.4	110.37 110.4 ^(DA)	109.885 109.9 ^(DA)
Barometric Pressure (In Hg)	757 mmHg	757 mmHg	757 mmHg
Ambient Temp. (°C)	7°C	7°C	7°C
Notes:			
 Sampler Signature		<i>3/7/94</i> Date	
 Checked by			
* Complete one form for each sample collected (including blanks).			[TB-DATANEAQT 7-1-92]

LEGEND

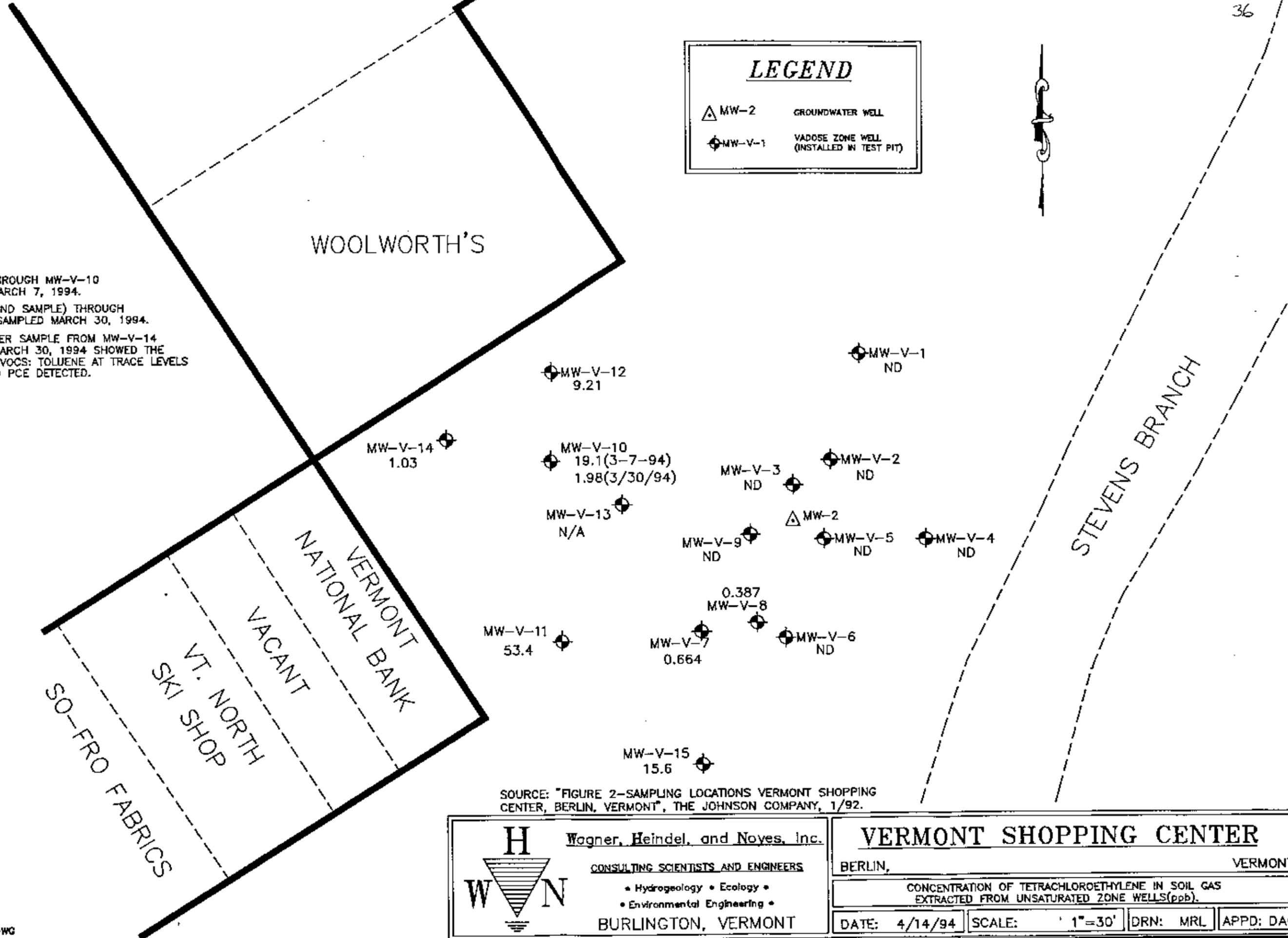
△ MW-2 GROUNDWATER WELL

⊕ MW-V-1 VAPOSE ZONE WELL (INSTALLED IN TEST PIT)



NOTES:

- MW-V-1 THROUGH MW-V-10 SAMPLED MARCH 7, 1994.
- MW-V-10(2ND SAMPLE) THROUGH MW-V-16 SAMPLED MARCH 30, 1994.
- GROUNDWATER SAMPLE FROM MW-V-14 OBTAINED MARCH 30, 1994 SHOWED THE FOLLOWING VOCS: TOLUENE AT TRACE LEVELS (<2ppb) NO PCE DETECTED.



SOURCE: "FIGURE 2-SAMPLING LOCATIONS VERMONT SHOPPING CENTER, BERLIN, VERMONT", THE JOHNSON COMPANY, 1/92.

H
Wagner, Heindel, and Noyes, Inc.
CONSULTING SCIENTISTS AND ENGINEERS

- Hydrogeology • Ecology •
- Environmental Engineering •

BURLINGTON, VERMONT

VERMONT SHOPPING CENTER
BERLIN, VERMONT

CONCENTRATION OF TETRACHLOROETHYLENE IN SOIL GAS EXTRACTED FROM UNSATURATED ZONE WELLS(ppb).

DATE: 4/14/94 SCALE: 1"=30' DRN: MRL APPD: DAG



NEW ENGLAND AIR QUALITY TESTING

- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

MEMORANDUM

TO: Dean Grover
FR: Steve Clark
DT: April 11, 1994
RE: Vermont Shopping Center, Perchloroethylene air sampling results

Enclosed please find the following:

- Table of results for air sampling conducted on March 30, 1994 at the Vermont Shopping Center in Berlin, Vermont. Sampling was conducted on MW-10 through MW-15 via EPA Method TO2 to determine concentrations of tetrachloroethylene in each monitor well. Detectable concentrations were measured in all wells except MW-13. The Sample C Carbotrap from MW-13 was damaged during monitoring and could not be analyzed. The method detection limit is 10 ng, which corresponds to approximately 0.2 ppb for a 6-liter sample.
- Endyne laboratory report.
- Sample collection data sheets for each sample collected.

Upon receipt of the water analysis, laboratory report, a follow-up letter will be provided detailing the results for samples H and I (A653) taken from MW-14.

Please give me a call if you have any questions about the enclosed results.

[M-VTSHOPPING/SC 1-1-94]

Vermont Shopping Center - Tetrachlorethylene Sampling Results

Sampling performed on March 30, 1994

Tetrachloroethylene concentrations corrected to standard conditions (P=760 mmHg, T=293 K)

	Location	Sample ID	Temp.(C)	Press.(mm Hg)	Duration(min)	Flowrate(cc/min)	Volume (L)	Mass (ug)	Conc. (mg/m3)	Conc. (ppb)
1	MW-V-10	A649	4.5	753	60	105.9	6.4	0.091	0.014	1.98
2	MW-V-11	A650	4.5	753	60	98.78	5.9	2.280	0.3677	53.4
3	MW-V-12	A647	4.5	753	60	117.7	7.1	0.469	0.0635	9.21
4	MW-V-13	A648	4.5	753	60	115.2	6.9		0.0000	0.000 *
5	MW-V-14	A646	4.5	753	60	106.3	6.4	0.048	0.0071	1.03
6	MW-V-15	A651	4.5	753	60	106.3	6.4	0.716	0.1073	15.6

* Not ANALYZED



ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: NEAQT
PROJECT NAME: VT. Shopping Ctr./#94044
DATE REPORTED: April 6, 1994
DATE SAMPLED: March 30, 1994

PROJECT CODE: NEVS1155
REF. #: 57,669 - 57,670
57,672 - 57,675

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

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times. Sample C, (Ref. #57,671), was received broken. Hence, there is no data available for that site. No duplicate sample was available for analysis.

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

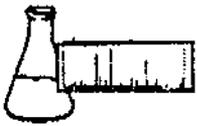
Blank contamination was not observed at levels affecting the analytical results.

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

PERCHLOROETHYLENE BY 8240 AIR

CLIENT: NEAQT
PROJECT NAME: VT. Shopping Ctr./#94044
REPORT DATE: April 6, 1994
SAMPLER: SHC
DATE SAMPLED: March 30, 1994
DATE RECEIVED: March 30, 1994

PROJECT CODE: NEVS1155
ANALYSIS DATE: April 5, 1994
STATION: A (HW-V-14)
REF.#: 57,669
TIME SAMPLED: 10:43

Parameter

Amount (ng)¹

Perchloroethylene

47.5

NOTES:

1 Method detection limit is 10 ng.

**ENDYNE, INC.**Laboratory Services

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

LABORATORY REPORTPERCHLOROETHYLENE BY 8240 AIR

CLIENT: NEAQT
PROJECT NAME: VT. Shopping Ctr./#94044
REPORT DATE: April 6, 1994
SAMPLER: SHC
DATE SAMPLED: March 30, 1994
DATE RECEIVED: March 30, 1994

PROJECT CODE: NEVS1155
ANALYSIS DATE: April 5, 1994
STATION: B (MW-V-12)
REF.#: 57,670
TIME SAMPLED: 10:50

ParameterAmount (ng)¹

Perchloroethylene

469.

NOTES:

1 Method detection limit is 10 ng.

**ENDYNE, INC.****Laboratory Services**

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

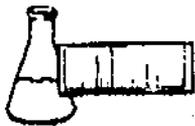
LABORATORY REPORT**PERCHLOROETHYLENE BY 8240 AIR**

CLIENT: NEAQT
PROJECT NAME: VT. Shopping Ctr./#94044
REPORT DATE: April 6, 1994
SAMPLER: SHC
DATE SAMPLED: March 30, 1994
DATE RECEIVED: March 30, 1994

PROJECT CODE: NEVS1155
ANALYSIS DATE: April 5, 1994
STATION: D (MW-V-10)
REF.#: 57,672
TIME SAMPLED: 11:00

Parameter**Amount (ng)¹****Perchloroethylene****90.6****NOTES:**

1 Method detection limit is 10 ng.



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

PERCHLOROETHYLENE BY 8240 AIR

CLIENT: NEAQT
PROJECT NAME: VT. Shopping Ctr./#94044
REPORT DATE: April 6, 1994
SAMPLER: SHC
DATE SAMPLED: March 30, 1994
DATE RECEIVED: March 30, 1994

PROJECT CODE: NEVS1155
ANALYSIS DATE: April 5, 1994
STATION: E (NW-V-11)
REF.#: 57,673
TIME SAMPLED: 11:03

Parameter

Amount (ng)¹

Perchloroethylene

2,280.

NOTES:

1 Method detection limit is 10 ng.

**ENDYNE, INC.****Laboratory Services**

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

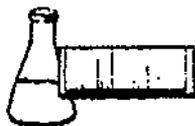
LABORATORY REPORT**PERCHLOROETHYLENE BY S240 AIR**

CLIENT: NEAQT
PROJECT NAME: VT. Shopping Ctr./#94044
REPORT DATE: April 6, 1994
SAMPLER: SHC
DATE SAMPLED: March 30, 1994
DATE RECEIVED: March 30, 1994

PROJECT CODE: NEVS1155
ANALYSIS DATE: April 6, 1994
STATION: F (MW-V-15)
REF.#: 57,674
TIME SAMPLED: 11:10

Parameter**Amount (ng)¹****Perchloroethylene****716.****NOTES:**

1 Method detection limit is 10 ng.

**ENDYNE, INC.****Laboratory Services**

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 878-7103

LABORATORY REPORT**PERCHLOROETHYLENE BY 8240 AIR**

CLIENT: NEAQT
PROJECT NAME: VT. Shopping Ctr./#94044
REPORT DATE: April 6, 1994
SAMPLER: SHC
DATE SAMPLED: March 30, 1994
DATE RECEIVED: March 30, 1994

PROJECT CODE: NEVS1155
ANALYSIS DATE: April 6, 1994
STATION: G (BLANK)
REF.#: 57,675
TIME SAMPLED: Not Indicated

Parameter**Amount (ng)¹****Perchloroethylene****ND²****NOTES:**

- 1 Method detection limit is 10 ng.
- 2 None detected.

**ENDYNE, INC.****Laboratory Services**

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

REPORT OF LABORATORY ANALYSIS

RECEIVED
APR 07 1994

Wagner, Heindel

CLIENT: NEAQT
PROJECT NAME: VT Shop Cntr/Perc/#94044
DATE REPORTED: April 4, 1994
DATE SAMPLED: March 30, 1994

PROJECT CODE: NEVS1156
REF. #: 57,676

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

Chain of custody indicated sample preservation with sodium azide.

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 05496
 (802) 879-4333
 FAX 879-7103

LABORATORY REPORT
EPA METHOD 8240 WATER MATRIX

 CLIENT: NEAQT
 PROJECT NAME: VT Shop CNTR/Perc/#94044
 REPORT DATE: April 4, 1994
 DATE SAMPLED: March 30, 1994
 DATE RECEIVED: March 30, 1994
 ANALYSIS DATE: March 31, 1994

 PROJECT CODE: NEVS1156
 REF #: 57,676
 STATION: H (NW-V-14)
 TIME SAMPLED: 12:20
 SAMPLER: SHC

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Dichlorodifluoromethane	10	ND ¹
Chloromethane	10	ND
Vinyl Chloride	10	ND
Bromomethane	5	ND
Chloroethane	5	ND
Trichlorofluoromethane	2	ND
Acetone	50	ND
1,1-Dichloroethene	2	ND
Methylene Chloride	20	ND
Carbon Disulfide	7	ND
MTBE	3	ND
trans-1,2-Dichloroethene	2	ND
1,1-Dichloroethane	2	ND
2-Butanone	20	ND
Chloroform	10	ND
1,1,1-Trichloroethane	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloroethene	1	ND
Benzene	1	ND
Trichloroethene	1	ND
1,2-Dichloropropane	1	ND
Bromodichloromethane	1	ND


ENDYNE, INC.
Laboratory Services

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

REF #: 57,676

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	1	ND
Toluene	2	TBQ ²
trans-1,3-Dichloropropene	1	ND
1,1,2-Trichloroethane	2	ND
2-Hexanone	10	ND
Tetrachloroethene	2	ND
Dibromochloromethane	2	ND
Chlorobenzene	2	ND
Ethyl Benzene	1	ND
Total Xylenes	3	ND
Styrene	1	ND
Bromoform	5	ND
1,1,2,2-Tetrachloroethane	1	ND
1,3 Dichlorobenzene	2	ND
1,4 Dichlorobenzene	2	ND
1,2 Dichlorobenzene	2	ND

NUMBER OF UNIDENTIFIED PEAKS: 0

ANALYTICAL SURROGATE RECOVERY:

1,2-Dichloroethene-d4: 116.%

Toluene-d8: 100.%

4-Bromofluorobenzene: 94.%

Notes:

1 None detected

2 Trace below quantitation limit



32 James Brown Drive
Woburn, Vermont 05485
(802) 879-4333

CHAIN-OF-CUSTODY RECORD

09830

Project Name: VT SHOP CNTR/PERC Site Location: 9464	Reporting Address: NE AGT WINDYBROOK	Billing Address: WINDYBROOK
Endyne Project Number:	Company: Contact Name/Phone #:	Sampler Name: JIC Phone #: 802-3-4132

NEARBY SAMPLE ID	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				
AG46	MW-V-14	A	Air			3/30/94 10:45	1	Can		PERC		5 day
AG47	MW-V-12	D	Air			" 10:50	1	"		"		"
AG48	MW-V-13	C	Air			" 10:55	1	"		"		"
AG49	MW-V-10	D	Air			" 11:00	1	"		"		"
AG50	MW-V-11	E	Air			" 11:05	1	"		"		"
AG51	MW-V-15	F	Air			" 11:10	1	"		"		"
AG52	Blank	G	Air			"	1	"		"		"
*AG53	MW-V-14	H	Water			" 12:30	1	40ml		240	Exhibit	"
		I	Water			" 12:35	1	40ml		240	"	"

Relinquished by: Signature <i>J. H. Ch...</i>	Received by: Signature <i>[Signature]</i>	Date/Time: 3/30/94 2:31 PM
Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>[Signature]</i>	Date/Time: 3/30/94 5:07 PM

Requested Analyses

1. pH	6. TSN	11. Total Solids	16. Metals (Specify)	21. EPA 604	26. EPA 8270 B/N or Acid
2. Chloride	7. Total P	12. TSS	17. Coliform (Specify)	22. EPA 615 B/N or A	27. EPA 8010/8020
3. Ammonia N	8. Total Diss. P	13. TDS	18. COD	23. EPA 418.1	28. EPA 8080 Pests/PCB
4. Nitrite N	9. BOD ₅	14. Turbidity	19. BTEX	24. EPA 608 Pests/PCB	
5. Nitrate N	10. Alkalinity	15. Conductivity	20. EPA 601/602	25. EPA 8240	
29. TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)					
30. Other (Specify):					

APR-19-94 TUE 7:45 WAGNER, HEINZEL & NOYES P. 01



NEW ENGLAND AIR QUALITY TESTING

- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET

Job Name: VT SHOP CNTR/PERC		Sampler: SHC
Location:		Date: 3/30/94
NEAQT Sample Number: AG49	D	Media: Carbotrap
Analyte: PERC	Lot Number: 0322A03A.D MLF	
Site Conditions: outdoors	Method (NIOSH/OSHA/Other): EPA TO-2	
Pump Type: SKC	Serial #: 5	Laboratory: ENDYNE
Target flow rate: 100 ^{cm} /min	Actual flow rate: 105.8 105.9 (2)	
Target run time: 60 min	Actual run time: 60 min	

CALIBRATION DATA

Run	Pre-test	Post-test	Average
1	106.5	104.9	
2	107.5	105.2	
3	105.5	105.4	
Avg.	106.5 ✓	105.2 ✓	105.8 105.9 (2)
Barometric Pressure (in Hg)	29.65		
Ambient Temp. (°C)	4.5		

Notes: MW-V-10 (per FAX)

4/11/94

 Sampler Signature Date

Checked by

• Complete one form for each sample collected (including blanks). (TB-DATA/NEAQT 7-1-92)

NEW ENGLAND AIR QUALITY TESTING



- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: VT SHO PCNTR / PERC		Sampler: SHC	
Location:		Date: 3/30/94	
NEAQT Sample Number: A650		Media: Carbotrap	
Analyte: PERC		Lot Number: 0322A06A.D MLF	
Site Conditions: outdoors		Method (NIOSH/OSHA/Other): EPA TO-2	
Pump Type: SKC		Laboratory: Endyne	
Serial #: 3		Target flow rate: 100 cc/min	
Target run time: 60 min		Actual flow rate: 98.78 ✓	
		Actual run time: 60 min	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	98.30	97.04	
2	99.05	98.91	
3	100.9	98.44	
Avg.	99.42 ✓	98.13 ✓	98.78 ✓
Barometric Pressure (in Hg)		29.65	
Ambient Temp. (°C)		4.5	
Notes: MW - U - 11			
J. Z. LLL Sampler Signature		4/11/94 Date	
Checked by			
* Complete one form for each sample collected (including blanks).			

(TB-DATA/NEAQT 7-1-92)

NEW ENGLAND AIR QUALITY TESTING



- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

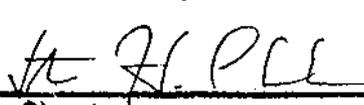
SAMPLE COLLECTION DATA SHEET

Job Name: VT SHOP CNTR/PERC		Sampler: SHC	
Location:		Date: 3/30/94	
NEAQT Sample Number: A647	B	Media: Carbotrap	
Analyte: PERC		Lot Number: 0322A05A.D	
Site Conditions: outdoors		Method (NIOSH/OSHA/Other): EPA TO-2	
Pump Type: SKC	Serial #: 2	Laboratory: Endyne	
Target flow rate: 100 cc/min.		Actual flow rate: 117.7	
Target run time: 60 min		Actual run time: 60 min	

CALIBRATION DATA

Run	Pre-test	Post-test	Average
1	118.6	118.3	
2	116.7	116.9	
3	119.5	116.2	
Avg.	118.3 ✓	117.1 ✓	117.7 ✓
Barometric Pressure (in Hg)	29.65		
Ambient Temp. (°C)	4.5		

Notes: MW-V-12


 Sampler Signature _____ Date 4/11/94 _____


 Checked by _____

• Complete one form for each sample collected (including blanks). (TB-DATA/NEAQT 7-1-93)



NEW ENGLAND AIR QUALITY TESTING

- Source Emissions Testing*
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET			
Job Name: VT SHOP CNTR PERC		Sampler: SHC	
Location:		Date: 3/30/94	
NEAQT Sample Number: A648 C		Media: Carbotrap	
Analyte: PERC		Lot Number: 0323A07A.D	
Site Conditions: outdoors well full of water		Method (NIOSH/OSHA/Other): EPA TO-2	
Pump Type: SKC	Serial #: 7	Laboratory: Endevco Endvne	
Target flow rate: 100 cc/min		Actual flow rate: 115.1 115.2 pf	
Target run time: 60 min		Actual run time: 60 min	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	116.7	114.8	
2	115.1	114.0	
3	115.2	115.0	
Avg.	115.7 ✓	114.6 ✓	115.1 115.2 pf
Barometric Pressure (In Hg)	29.65		
Ambient Temp. (°C)	4.5		
Notes: MW-V-13 flush			
Sampler Signature: <u>JA ZI. PLL</u>		Date: <u>4/11/94</u>	
Checked by: <u>[Signature]</u>			
* Complete one form for each sample collected (including blanks). [TB-DATA/NEAQT 7-1-92]			

NEW ENGLAND AIR QUALITY TESTING



- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
- Fugitive Emissions Measurement
- Indoor Air Sampling and Analysis
- Consulting/Engineering Services

SAMPLE COLLECTION DATA SHEET

Job Name: VT VT SHOP CNTR/PERC		Sampler: Steve Clark
Location:		Date: 3/30/94
NEAQT Sample Number: A646	A	Media: Carbotrap
Analyte: PERC	Lot Number: 0321A12A.D	
Site Conditions: outdoors	Method (NIOSH/OSHA/Other): EPA TO-2	
Pump Type: SKC	Serial #: 1	Laboratory: Endyne
Target flow rate: 100 cc/min	Actual flow rate: 106.3 ✓	
Target run time: 60 min	Actual run time: 60 min	

CALIBRATION DATA

Run	Pre-test	Post-test	Average
1	109.1	101.1	
2	105.4	107.0	
3	106.7	108.1	
Avg.	107.1 ✓	105.4 ✓	106.3 ✓
Barometric Pressure (in Hg)	29.65		
Ambient Temp. (°C)	4.5		

Notes: MW-V-14' 2"

SA. ZI. PLL
Sampler Signature

4/11/94
Date

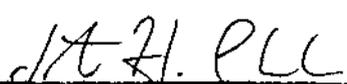
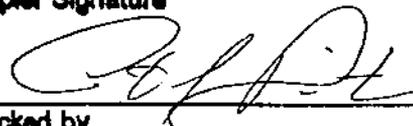
[Signature]
Checked by

• Complete one form for each sample collected (including blanks).

NEW ENGLAND AIR QUALITY TESTING



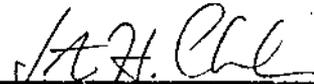
- Source Emissions Testing
- Source Permitting
- Ambient Air Sampling
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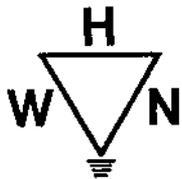
SAMPLE COLLECTION DATA SHEET			
Job Name: VT SHOP CNTR PERC		Sampler: SHC	
Location:		Date: 3/30/94	
NEAQT Sample Number: A651 F		Media: Carbotrap	
Analyte: PERC		Lot Number: 0323A06A.D M.L.F.	
Site Conditions: outdoors		Method (NIOSH/OSHA/Other): EPA TO-2	
Pump Type: SKC	Serial #: 6	Laboratory: Endyne	
Target flow rate: 100 cc/min		Actual flow rate: 106.3 ✓	
Target run time: 60 min.		Actual run time: 60 min	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1	102.6	106.8	
2	106.4	106.4	
3	107.0	108.5	
Avg.	105.3 ✓	107.2 ✓	106.3 ✓
Barometric Pressure (in Hg)	29.65		
Ambient Temp. (°C)	4.5		
Notes: MW - v - 15			
 Sampler Signature		4/11/94 Date	
 Checked by			
* Complete one form for each sample collected (including blanks).			
(TB-DATA-NEAQT 7-1-92)			



NEW ENGLAND AIR QUALITY TESTING

- Source Emissions Testing
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- Indoor Air Sampling and Analysis
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SAMPLE COLLECTION DATA SHEET			
Job Name: VT SHOP CNTRY PERC		Sampler: SHC	
Location:		Date: 3/30/94	
NEAQT Sample Number: A652 G Blank		Media: Carbotrap	
Analyte: PERC		Lot Number: 0324A05A.D MLF	
Site Conditions: outdoors		Method (NIOSH/OSHA/Other): EPA T0-2	
Pump Type: —	Serial #: —	Laboratory: Endyne	
Target flow rate: —		Actual flow rate: —	
Target run time: —		Actual run time: —	
CALIBRATION DATA			
Run	Pre-test	Post-test	Average
1			
2			
3			
Avg.			
Barometric Pressure (In Hg)	29.65		
Ambient Temp. (°C)	4.5		
Notes:			
 Sampler Signature		4/11/94 Date	
 Checked by			
<small>* Complete one form for each sample collected (including blanks).</small>			
<small>(TB-DATANEAQT 7-1-92)</small>			



Wagner, Heindel, and Noyes, Inc.

Consulting Geologists

Burlington, Vermont

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Page No.

PAGE ____ OF ____

PROJECT: _____

DATE: _____

CALCULATION OF EQUILIBRIUM CONCENTRATION OF PCE
IN AQUEOUS PHASE FROM AIR PHASE DATA AND
HENRY'S LAW

GIVEN:

- HENRY'S LAW: $C_{AQ} \text{ (moles/m}^3\text{)} = \frac{C_{air} \text{ (moles/m}^3\text{)}}{H_{cc} \text{ (unitless)}}$
- FOR PCE @ STP $H_{cc} = 0.34$
- 1 ppm PCE (air) = 6.89 mg/m³
- M.W. OF PCE = 2(12) + 4(35.45) = 165.8 g
- C_{air} IN MW-V-11 = 53 ppb = 0.053 ppm = 0.3677 mg/m³
 $C_{air} = 0.3677 \text{ mg/m}^3 \times \frac{1 \text{ mole}}{165.8 \times 10^3 \text{ mg}} = 2.22 (10^{-6}) \text{ moles/m}^3$

CALCULATE C_{AQ}

$$C_{AQ} = \frac{2.22(10^{-6}) \text{ moles/m}^3}{0.34} = 6.52(10^{-6}) \text{ moles/m}^3$$

$$6.52(10^{-6}) \text{ moles/m}^3 \times \frac{165.8 \text{ g}}{\text{mole}} \times \frac{10^6 \text{ ug}}{\text{g}} \times \frac{1 \text{ m}^3}{10^3 \text{ L}} = 1.08 \text{ ug/L}$$

$$\underline{C_{AQ} = 1.08 \text{ ppb}}$$

Post-It™ brand fax transmittal memo 7671		# of pages = 2
To: Dean Grover	From: Brad Wheeler	
Co.	Co. The Johnson Co.	
Dept.	Phone # 229-4600	
Fax # 860-1014 (700)	Fax # 229-5876	

MICROASSAYS

P03



LABORATORY REPORT

EPA METHOD 8010 ANALYTES with GC/MS Confirmation

CLIENT NAME:	Pomerleau Real Estate	PROJECT CODE:	Johnson Co. 1-1650-1
PROJECT NAME:	VT Shopping Center	REF.#:	8,409
REPORT DATE:	March 11, 1994	STATION:	MW-2
DATE SAMPLED:	March 9, 1994	TIME SAMPLED:	17:00
DATE RECEIVED:	March 9, 1994	SAMPLER:	Bradley A. Wheeler
ANALYSIS DATE:	March 10, 1994	SAMPLE TYPE:	Water

Concentration units = µg/L

PARAMETER	MW-2	PQL	PARAMETER	MW-2	PQL
Benzyl Chloride	BPQL	1	1,1-Dichloroethane	BPQL	1
Bromobenzene	BPQL	1	1,2-Dichloroethane	BPQL	1
Bromodichloromethane	BPQL	1	1,1-Dichloroethylene	BPQL	1
Bromoform	BPQL	1	cis-1,2-Dichloroethylene	30	1 70/3
Bromomethane	BPQL	1	trans-1,2-Dichloroethylene	7	1 70/3
Carbon tetrachloride	BPQL	1	Dichloromethane	BPQL	1
Chlorobenzene	BPQL	1	1,2-Dichloropropane	BPQL	1
Chloroethane	BPQL	1	1,3-Dichloropropane	BPQL	1
Chloroform	BPQL	1	1,1,2,2-Tetrachloroethane	BPQL	1
Chloromethane	BPQL	1	1,1,1,2-Tetrachloroethane	BPQL	1
2-Chloro vinyl ether	BPQL	1	Tetrachloroethylene	13	1 0-7/
Dibromochloromethane	BPQL	1	1,1,1-Trichloroethane	BPQL	1
Dibromomethane	BPQL	1	1,1,2-Trichloroethane	BPQL	1
1,2-Dichlorobenzene	BPQL	1	Trichloroethylene	17	1 5/0.5
1,3-Dichlorobenzene	BPQL	1	Trichlorofluoromethane	BPQL	1
1,4-Dichlorobenzene	BPQL	1	1,2,3-Trichloropropane	BPQL	1
Dichlorodifluoromethane	BPQL	1	Vinyl Chloride	4	1 2/0.5

Surrogate % Recovery: 100%

BPQL = Below Practical Quantitation Limit (PQL).