OFFICE COPY #147

Wagner, Heindel, and Noyes, Inc. consulting geologists
P.O. Box 1629 Burlington, Vermont 05402-1629 802-658-0820

November 10, 1992

Dial B.
343-8554

Ms. Allison Bell, Esquire
Langrock, Sperry, Parker and Wool
275 College Street
Burlington, VT 05401

Re: Ladd Research
Phase II Environmental Site Assessment Report

Dear Allison:

Please find enclosed for your review the Phase II Environmental Site Assessment report for the Ladd Research property on River Road in Colchester, Vermont.

As detailed in our report, we did not find any significant contamination in soils or groundwater at the site. Low levels of volatile organic compounds and elevated concentrations of cadmium and zinc were detected in one of the septic system's pump tanks indicating that hazardous wastes have been disposed into the onsite septic system at one time. We recommend cleaning of the septic tanks to prevent discharge of the contaminants to the environment.

Although the chemical testing conducted at the site found no conclusive evidence that past or present activities at the site have had an adverse impact on the environment, the reports of onsite disposal of organic solvents remains a concern. Because chlorinated solvents tend not to breakdown or degrade in an oxygen-rich environment (loose sandy soils in the unsaturated zone above the water table tend to be well oxygenated), it is unlikely that solvents dumped at the site would self-remediate.

Our experience with chlorinated organic compounds at sites with similar soil conditions has found that high molecular weight compounds tend to move through the unsaturated zone in discrete pods, the size of which depends on the amount of product released or injected into the subsurface. Therefore, it is possible that the soil borings and test pit investigations simply missed intercepting one of the pods of contamination originating from the waste disposal sites.

We have endeavored to followed up leads and investigate suspect areas to the fullest practical extent, given the time and budget constraints of this Phase II Environmental Site Assessment. However, chasing down pods of contamination in the unsaturated zone can be somewhat like looking for a needle in a haystack. In this instance periodic monitoring (on an annual or bi-annual basis) of groundwater conditions at the site would be the most

appropriate and cost effective method of confirming that the onsite waste disposal activities have not had a lasting impact on soil and water quality at the site.

We feel that the current management at Ladd Research has made a real effort to improve site conditions and handle their wastes in conformance with Federal and State environmental regulations. However, given the inherent difficulty in controlling the actions of individuals within the company and the continued use of hazardous materials at the site, we strongly recommend abandoning the use of onsite septic waste disposal fields. If connection to the municipal wastewater disposal system is not practical or feasible, then some type of effluent pre-treatment or filtration should be considered.

Should you have any questions, please contact me or Jeff Noyes at 658-0820. Thank you for the opportunity to be of service.

Sincerely,

Michael K. Sparks, CEA
Hydrogeologist

Enclosure

[L2-BELL/MKS 10-29-92]

LADD RESEARCH
River Road
Colchester, Vermont

PHASE II ENVIRONMENTAL SITE ASSESSMENT

November 10, 1992

WAGNER, HEINDEL, AND NOYES, INC. WH&N

Consulting Hydrogeologists, Engineers, and Environmental Scientists

Wagner, Heindel, and Noyes, Inc. consulting geologists
P.O. Box 1629 Burlington, Vermont 05402-1629 802-658-0820

LADD RESEARCH
River Road
Colchester, Vermont

PHASE II ENVIRONMENTAL SITE ASSESSMENT

Prepared by:

Michael K. Sparks, CEA
Hydrogeologist

Reviewed and Approved by:

Jeffrey E. Noyes
Chief Hydrogeologist

November 10, 1992

LADD RESEARCH
River Road
Colchester, Vermont

PHASE II ENVIRONMENTAL SITE ASSESSMENT

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Wagner, Heindel, and Noyes, Inc. consulting geologists
P.O. Box 1629 Burlington, Vermont 05402-1629 802-658-0820

LADD RESEARCH
River Road
Colchester, Vermont

PHASE II ENVIRONMENTAL SITE ASSESSMENT

SUMMARY

Ladd Research is a light industrial and commercial facility which manufactures, assembles, and packages support equipment and supplies for electron microscopes. The facility is located at a 7-acre site at the end of River Road in the Town of Colchester, Vermont. The site is served by municipal water but utilizes onsite septic waste disposal. Building heat and hot water utilizes both electricity and No. 2 fuel oil, which is stored in an underground storage tank (UST). The UST is registered with the Vermont Department of Environmental Conservation.

The facility, which has resided on River Road since 1958, was constructed on previously undeveloped woodlands. The site is surrounded by residential properties. The Vermont Agency of Natural Resources records indicate that there are no hazardous sites (RCRA and CERCLA sites), spill sites or registered USTs in the vicinity of the Ladd Research facility.

The facility currently uses, stores and disposes of hazardous materials and is a State listed Small Quantity Generator. The recent facility inspection and interviews with Ladd Research employees, waste disposal contractors and State Hazardous Materials Management Division personnel found that Ladd Research is currently handling their hazardous materials in an environmentally responsible manner and in conformance to State and Federal hazardous waste regulations. However previous land use practices reportedly involved the onsite disposal of hazardous wastes.

A program of field testing and laboratory analyses found no evidence of significant contamination in soil or groundwater at the site. However, testing of sludge in one of the septic tanks found elevated concentrations of cadmium and zinc. As the presence of toxic metals in the septic waste disposal system represents a potential threat to soil and groundwater, cleaning and proper disposal of the contents of the septic tanks is strongly recommended.

Wagner, Heindel, and Noyes, Inc. consulting geologists
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LADD RESEARCH
River Road
Colchester, Vermont

PHASE II ENVIRONMENTAL SITE ASSESSMENT

1.0 INTRODUCTION

The Ladd Research facility on River Road in the Town of Colchester, Vermont manufactures, packages and distributes support equipment for electron microscopes. The property, which is zoned industrial, encompasses approximately 7 acres along the northern bank of the Winooski River (see USGS topographic section map, Appendix 1, page 1).

In September 1992 Wagner, Heindel & Noyes, Inc. (WH&N) initiated a Phase I Environmental Site Assessment of the Ladd Research property. During this preliminary investigation of the property, research of land use practices found that quantities of hazardous substances have been used and are currently used at the site. This information, together with anecdotal reports of onsite hazardous waste disposal practices prompted a more detailed investigation of subsurface conditions on the property. A supplementary investigation (Phase II Environmental Site Assessment) was also conducted by WH&N in October of 1992.

Investigation of subsurface conditions at the site consisted of visual examination and field screening of soils samples with a photoionization detector (PID). The soil samples were recovered through test pit excavations and hollow-stem auger drilling techniques. Concurrent with the soil boring program, monitoring wells were installed at the site to facilitate the collection of groundwater samples. Groundwater samples, select soil samples, and a sample of sludge from the onsite septic waste disposal system were collected for analysis at a Vermont-certified environmental testing laboratory.

A site orientation and facilities inspection was led by Ladd Research's chief chemist and hazardous waste coordinator, Charles Duvick. In addition to the physical inspection, this investigation involved compiling information on past and present land usage via interviews with persons familiar with the site (including present and former employees, local municipal officials), research into historical documents and a review of State of Vermont Hazardous Materials Management Division records.

2.0 SITE LOCATION AND PHYSIOGRAPHY

The Ladd Research site is located at the western end of River Road and is surrounded by residential properties. According to Town of Colchester property maps, the site is bordered to the east by land owned by Chicoine and Raymond and to the north by landowners Charles McGinley and Arthur Barret. The western margin of the site is bounded by Windermere Way (a roadway) and property owners John Hong and Barry Fritzer. The southern margin of the Ladd Research site is bounded by the Winooski River and property owned by John Murray.

Topographically, the site is essentially flat-lying (see topographic map, Appendix 1, page 1); it is situated on a broad terrace of deltaic sands which forms the western bank of the Winooski River. The elevation of the Winooski River is approximately 25 feet below the top of the terrace. Groundwater flow across the site is likely to the south, towards the Winooski River.

According to the Soil Survey of Chittenden County[1] soils at the Ladd Research site are Colton gravelly loamy sands, characterized as deep, loose and excessively drained (see USDA soils map, Appendix 1, pages 2-3). Colton soils are typically porous and have a high permeability.

The test pit excavations and soil borings conducted at the site (see Site Plan, Appendix 1, page 4) during the Phase II investigation found that the gravelly loamy sands described in the Soil Survey extend down to a depth of 20-25 feet. Below 25 feet, the soils are generally finer grained sands with a greater percentage of silts (see Test Pit Logs and Soil Boring Logs, Appendix 2). The depth to the water table at the site (as measured through the

1 Soil Survey of Chittenden County, U.S. Department of Agriculture, Soil Conservation Service, 1989.

monitoring wells) is approximately 28 feet below ground surface. No perched groundwater or significant impeding horizons (impermeable soil units) were encountered during the deep drill program.

Facilities on the property consist of a 10,000 square foot (ft^2) main building, which houses offices, laboratories, machine tool areas, and service areas. A 2,000 ft^2 warehouse is also located on the property. This structure is currently used for storage of equipment, fixtures, paper goods and an assortment of chemicals. Additionally, the company's waste collection area is located in this building.

The property is served by municipal water, however septic wastes utilize onsite disposal via leaching beds. There are no floor drains in the building. Solid wastes are disposed via contract with Gauthier Trucking while the plant's hazardous wastes are disposed via Pollution Solutions of Vermont (PSOV), a certified hazardous waste transport and disposal facility.

The building's heat and hot water use both electricity and No. 2 fuel oil. Green Mountain Power Corporation is the local electric utility. The No. 2 fuel oil is stored in a 3,000 gallon underground storage tank (UST) located at the southeast corner of the main building. Fuel oil service is currently provided by Agway Energy, Inc.

3.0 LAND USE HISTORY

Historically, agriculture has been the main industry of this region. While the Champlain Valley was once the bread basket of the northeast, competition from the west forced farmers to turn to beef production and later to raising sheep. With the rapid growth of the New York and Boston urban centers came a dramatic increase in the demand for bulk milk and milk products. Thus, by the mid 1800s dairy farming had surpassed all other agricultural cash crops. However, with the decline of the family farm the later half of the 20th century, the area has seen a steady transition from agricultural activities to residential, recreational and light commercial land use.

According to Mrs. Booska, a Mallets Bay resident, in the late 1800s the majority of Colchester Point was farm land owned by the Thayer family (known locally as the Thayer Farm). While there is no real information in the land records pertaining to property

ownership prior to 1940, the records suggest the property remained essentially intact until circa 1940, after which time the property was subdivided.

The review of land records at the Town of Colchester indicates that the present day Ladd Research property is an amalgamation of five parcels from several different landowners. In 1941 the land records describe plans for a subdivision submitted by Sand Dunes Realty. Included with the subdivision records is a map which indicates that Sand Dunes Realty owned the entire area around River Road.

On October 25, 1941 Sand Dunes Realty conveyed a parcel of land to Marion Little. Through 1940 and into 1950 the land records indicate that Sand Dunes Realty continued to subdivide the original property. During this period, several parcels appear to have been sold by and later repurchased by the same person.

The present day configuration of the Ladd Research property is an amalgamation of five parcels. Parcels #1 and #2 were purchased from Norman A. Barrett and L. John Cain in 1960. Parcels #3 and #4 were purchased from Colchester Point Park, Inc. in 1962 and 1963, respectively. Parcel #5 was subsequently purchased from Anthony and Nancy Stevens in 1968.

According to Dick Frost, president of Ladd Research, the facility was built in three phases, the first of which began in 1958. The facility was later expanded in the early 1960s; the present day configuration of the facility (including the addition of the 10,000 ft^2 out-building) is the result of the final phase of construction in 1968. Mr. Frost also stated that the property had essentially remained undeveloped woodland prior to the construction of the Ladd Research facility.

3.1 Recent Land Use Activities

Ladd Research is currently involved in the manufacturing, packaging and distribution of support equipment for electron microscopes. According to Charles Duvick, Ladd Research's chemist, the facility manufactures vacuum chambers and distills and rebottles chemical fixatives. The primary chemicals used at the site are 1,2-dichloroethane, 2-propanol, amyl acetate, trichloroethane, acetone, formaldehyde, epoxy resins and a variety of anhydride compounds.

Under Mr. Duvick's supervision hazardous materials used and stored at the site appear to be handled responsibly. Waste chemicals are stored in a designated area within the out-building. The waste storage drums reside within a plastic spill containment tub, and chlorinated solvents are kept separate from other wastes.

Ladd Research is registered with the Vermont Hazardous Materials Management Division's RCRA section as a Small Quantity Generator (less than 220 pounds of hazardous waste per month). The 3,000-gallon UST containing No.2 heating oil is also properly registered with the State Underground Storage Tank Program.

Hazardous wastes are disposed via Pollution Solutions of Vermont (PSOV) under manifest. Material Safety Data Sheets (MSDS) for the chemicals currently in use were available for inspection at the facility. Additionally, the facility maintains an in-house Safety Plan document which addresses material handling and emergency response at the plant.

According to both Dick Frost and Charles Duvick, Ladd Research has done a considerable amount of work in reducing the volume of hazardous material stored at the site by disposing of surplus or no-longer-used chemicals. Robert Rooks, a former PSOV employee, recalled removing a number of different types of chemicals from the facility during the recent purge. Mike Connolly at PSOV also stated that within the last year of so, lab packs of hazardous chemicals have been removed from the site on two other occasions.

According to Mr. Duvick (and confirmed by Mike Connolly of PSOV), in June of 1992 Ladd Research contracted for the decontamination of a phosphorescent metals coating room in the main plant. The decontamination involved the removal and disposal of wall covering and equipment contaminated with zinc sulfide and cadmium sulfide. Following the sanitization of the room, a wipe test was conducted and found that all of the contamination had been successfully removed.

Only two main items of concern were noted during our inspection of Ladd Research's current handling of hazardous materials.

Ladd Research currently disposes hardened or solidified chemical wastes and epoxy resins along with the other solid wastes that are disposed in a sanitary landfill. While

in a solid form this material may not appear to be hazardous. However, when mixed with other materials in a sanitary landfill, they have the potential to form compounds toxic to the environment. We recommend that Ladd Research closely monitor their solid waste stream to insure that no regulated materials are improperly disposed.

The other item of concern relates to the use of acetone and trichloroethane used in cleaning and material preparation in the plant. Although these chemicals are only used under fume extraction hoods, the fume hoods are not equipped with filters to capture the volatile organic vapors. Thus, quantities of organic vapors are released to the environment as fugitive emissions. Emission of volatile organic compounds are regulated under Vermont Air Pollution Control Regulations (Section 5-261).

While the current management at Ladd Research has taken a very proactive approach to cleaning up the site and are, for the most part disposing of hazardous materials in conformance with State and Federal waste management guidelines, interviews with Ladd Research employees indicate that at one time hazardous waste were improperly disposed onsite (a violation of existing Vermont Hazardous Waste Management regulations).

According to Dick Cleveland, a machinist at Ladd Research, up to circa 1987 waste acetone and trichloroethane were routinely dumped onto the ground and also placed in the onsite wastewater disposal system. Mr. Cleveland stated that he observed at least one instance where hazardous chemicals were dumped into the stormwater catch basin located just off the northeast corner of the plant. Former employee John Arnot, as well as Mr. Cleveland, recalled that the bulk of the liquid chemical wastes generated at the facility were disposed in a underground tank or dry well constructed specifically for onsite disposal. This disposal facility was believed to be located just off the southwest corner of the warehouse out-building.

A telephone interview with Donna Alivoni at the Vermont Hazardous Materials Management Division discerned that the Ladd Research site is not an active or closed hazardous site. Additionally, Ms. Alivoni stated that the are no records of any chemical spills at the site. Inquires made to local spill response and clean up contractors, Mike Fontaine at New England Industrial Maintenance and Mike Connolly at PSOV, also indicate that there have been no spills at the site in recent years. Chief John Quinn, a member of the Colchester Fire Department for over 32

years, stated that the fire department has never responded to a spill at the Ladd Research site.

3.2 Neighboring Land Use

As Ladd Research is located in a residential area there are no other commercial or industrial users of significant volumes of hazardous materials in the vicinity. The State RCRA files indicate that there are no listed hazardous waste generators in the vicinity. During interviews with Chief Quinn of the Colchester Fire Department and Donna Alivoni of the Vermont Hazardous Materials Management Division, it was also learned that there are no known spill or hazardous material clean up sites within a half mile of Ladd Research. Furthermore, there are no registered USTs listed for this part of Colchester.

4.0 FACILITIES INSPECTION AND ENVIRONMENTAL TESTING

A facility orientation and walk through inspection was led by Charles Duvick in October 1992. During the site orientation, Mr. Duvick pointed out the location of the various waste storage and disposal facilities and provided a description of the activities performed at the plant. A photoionization detector (PID) was used during the site inspection to screen ambient air and shallow soils for the presence of volatile organic compounds (VOCs). The PID was equipped with an 11.2 eV probe, enabling it to detect chlorinated compounds.

The main plant building is principally constructed of wood and concrete building materials. Although no friable asbestoform materials were observed in the building, the building was constructed prior to the Federal ban on asbestos building materials (1978). The 9 x 9 inch vinyl floor tiles are suspected to contain non-friable asbestos. Additionally, asbestos-containing transite board was observed as ceiling panels above the oil furnace in the boiler room. As the asbestoform materials were found to be in good condition, their presence is unlikely to represent a health threat. No other asbestoform materials were observed on the premises.

Investigation of the grounds surrounding the plant proceeded in two phases; the first phase involved the investigation of shallow soils (to a depth of not more than ten feet) at the

suspected hazardous waste dumping sites[2] and septic system leaching field via hand auger borings and test pits excavated with a backhoe. The second phase of the investigation consisted of deep soil borings and the installation of groundwater monitoring wells via hollow-stem auger drilling techniques.

During both phases of the subsurface investigation a PID was used to screen soils and confined spaces (test pits, sewer manholes, catch basins, etc.) and soils for the presence of VOCs. The field testing was supplemented by laboratory analysis of soil, groundwater and septic tank sludge samples. The laboratory results are summarized in the table included in Appendix 2. Individual lab reports are attached in Appendix 3.

4.1 Phase I Investigation

The first phase of the site investigation took place on September 4, 1992. A series of four test pits and ten hand auger borings were used to examine soil conditions at the site. Soil logs and PID field testing results are presented in Appendix 2.

Two test pits were excavated just off the southwest corner of the out-building warehouse in the area where Dick Cleveland believed waste chemicals were dumped. Although the sandy soils encountered in both test pits evidenced black discoloration (generally an indication of petroleum contamination), no VOCs were detected in the test pits or in headspace screening of soils placed in zip-lock plastic bags.

A composite sample of soils from Test Pit #1 (TP-1; see site map) was submitted to the laboratory for analysis via EPA Methods 8010 (purgeable halocarbons) and 8270 (semi-volatiles). The results of the laboratory testing found no purgeable halocarbons (principally chlorinated compounds), although two unidentified peaks (compounds not included in the test parameters) were reported. Likewise, no semi-volatile organic contaminants were detected in the EPA Method 8270 assay.

The third test pit (TP-3) was excavated adjacent to the stormwater catch basin or dry well where waste acetone and trichloroethane was reportedly dumped. Like TP-1 and

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[2] Selection of sites for testing of suspected waste disposal sites based on interviews with Charles Duvick, Dick Cleveland and John Arnot

TP-2, lenses of black discoloration were seen in the subsoils, but no VOCs were detected on the PID.

A composite sample of soils from TP-3 was analyzed in the laboratory for the presence of chlorinated compounds via EPA Method 8010. Trace amounts of trichloroethene (less than 5 parts per billion) and one unidentified peak were detected in the soil assay.

The fourth test pit (TP-4) was excavated just downgradient (south) of the 3,000-gallon heating oil UST. No VOCs or other evidence of contamination were found in the soils at the tank site.

The hand auger investigation concentrated on evaluating soils at the septic system leachfield and screening soils along the river bank at the foot of the sandy terrace (see site map).

Four soil probes were conducted in and around the leachfield. No visual evidence of organic contamination was observed, nor were any significantly elevated levels of VOCs detected during the field screening of the subsoils. Upon our return from the field, the bagged soil samples were re-tested with a PID equipped with an 11.7 eV probe. The re-test detected VOC levels ranging from 0.6-2.5 ppm above background. Based on the re-testing, a composite sample of soils recovered from the river bank area was submitted for laboratory analysis.

Additional soil probes were conducted along the banks of the Winooski River to characterize soil conditions at the downgradient portion of the site. No visual evidence of contamination (discolored soils or hydrocarbon sheens) were observed at the southern edge of the property. The southwestern-most soil probe (site A) did yield a brief response on the PID, however the PID response was not repeatable in subsequent tests. No VOCs were detected in any of the other soil probes.

Laboratory testing via EPA Method 8240 of a composite soil sample from site A (Riverbank Composite A) detected 12.9 ppb styrene and one unidentified peak. No chlorinated compounds were detected.

PID field testing was also conducted at the stormwater catch basins and in both septic system pumping chambers. No VOCs were detected at any of these sites.

4.2 Phase II Investigation

The second phase of the subsurface investigation took place on September 25, 1992. Concern for the potential for contaminants disposed in the sandy soils to impact groundwater at the site prompted the installation of two monitoring wells at the downgradient margin of the site. Soil descriptions and PID field screening results are presented in the Soil Boring Logs attached in Appendix 2.

The first well (MW-1) was located downgradient of the septic leaching field. The soil boring was advanced to a depth of 30.4 feet. Soil samples were recovered at 5-foot intervals via a split-spoon sampling device. The split-spoon sampling found that the silt content of the soils tended to increase with depth, however no true impeding horizon was found. Saturated soils were encountered at approximately 29 feet below ground surface. No visual evidence of contamination was noted during the soil boring nor were any VOCs detected.

Like well MW-1, no overt evidence of contamination was found during the installation of well MW-2. This well was located at the southwestern corner of the site so as to monitor groundwater conditions downgradient of the suspected dry well hazardous waste disposal sites. The water table was also encountered at this location at approximately 29 feet.

The monitoring wells were developed (to purge the well bore of sediments) on October 5, 1992.

Sampling of the monitoring wells took place on October 9, 1992. Prior to sampling, water level measurements were taken and the wells were checked for the presence of both floating and sinking product. After purging the well bore of three well volumes of groundwater (to insure collection of a fresh sample) the record water quality samples were recovered for laboratory analysis. Field blank and trip blank samples were also collected for quality assurance/quality control of the sampling, transport and analytical methods.

Samples of groundwater from well MW-1 were analyzed at the laboratory for VOCs (EPA Method 624), semi-volatile organics (EPA Method 625) and dissolved metals (Vermont 11, including cadmium and zinc). For comparison purposes, the laboratory also tested for total cadmium and zinc levels in the groundwater. These analyses found only trace levels of tetrachloroethene in the groundwater at this location. According the information provided by Ladd Research's chief chemist, tetrachloroethene is not a chemical currently used at the site. No semi-volatile compounds or elevated concentrations of dissolved metals were reported. Total cadmium and zinc concentrations in the groundwater were both below detection.

Groundwater collected from MW-2 was only tested for VOCs. The EPA Method 624 assay found no detectable contamination and no unidentified peaks in groundwater downgradient of the suspect hazardous waste disposal sites.

A sample of sludge within the septic system pump chamber or septic tank located at the south side of the main plant was also tested for the presence of VOCs via EPA Method 624 and for total cadmium and total zinc.

The laboratory assays performed on the septic tank sludge yielded low levels (below the Vermont Health Advisory/Maximum Contaminant Level - VHA/MCL guidelines) of 1,4-dichlorobenzene, 1,1-dichloroethane, and toluene. Additionally, trace levels (below the test methods quantification limit) of 1,1,1-trichloroethane and xylene were detected in the assay. The inorganics analysis, however, yielded significantly elevated levels of both cadmium (205 ppm) and zinc (8,020 ppm). As the VDH/MCL limits for cadmium is 5 ppm and the VDH/MCL for zinc is 5,000 ppm, the concentrations of these metals in the septic tank sludge represents a potential threat to soil and groundwater at the site.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Although interviews with past and present employees at Ladd Research indicate that hazardous chemicals were at one time improperly disposed onsite, the current management at Ladd Research has made significant improvements in the areas of hazardous material handling and disposal, and have striven to mitigate or eliminate potential sources of

contamination from the site. However, there remains several areas where more improvement is needed:

1. The presence of elevated levels of cadmium and zinc in the south septic tank may be attributed to the use of cadmium sulfide and zinc sulfide in the former coating room. Additionally, the presence of low levels of VOCs in the septic tank sludge suggests that the septic system was used as a disposal point for hazardous materials. Although the results of the laboratory testing indicates that previous waste disposal practices have not significantly impacted groundwater quality at the site, we recommend that the contents of both septic tanks are removed for proper disposal and the tanks thoroughly decontaminated. Additionally, we suggest that all efforts are made to decommission the onsite septic waste system in favor of a connection with the municipal wastewater treatment facility.

2. The Vermont Underground Storage Tank Program records indicate that the 3,000-gallon heating oil UST is not equipped with secondary containment nor internal or external monitoring devices. The tank is now approximately 12 years old. While the absence of contamination adjacent to the tank indicates that it is in satisfactory condition, the high permeability of the surrounding soils and the facility's location within ±100 feet of the Winooski River represent a significant liability in the event of a catastrophic tank or fuel line failure. For these reasons we recommend that Ladd Research replace the fuel oil UST with a new double-walled steel tank with an interstitial monitoring system and spill containment devices or convert to an alternate fuel source such as propane.

3. The PID testing of the facility's indoor air quality indicates that the fume extraction hoods effectively remove from the building vapors generated during the use of VOCs and semi-volatile compounds in the plant. However, as the fume extraction hoods are not equipped with filters, fugitive emissions are discharged to the atmosphere. This discharge represents a potential violation of the Vermont Air Pollution Control Regulations (Section 5-261, part a). Therefore we recommend that the fume extraction hoods be equipped with activated carbon cartridges which will remove VOCs from the fume hood's effluent air stream.

4. Non-friable asbestoform building materials in the form of transite ceiling panels in the boiler room and vinyl floor tile observed in the main plant appear to be in good condition and thus do not represent a health threat. However, any damage or other destructive process (such as drilling) can result in a release of asbestos fibers. Therefore, we recommend that this material be maintained in good condition at all times. The Vermont Regulations for Asbestos Control Program (Section 2.5.6, part a) requires owners to perform an asbestos assessment prior to any demolition or renovation of a facility or portion of a facility. The asbestos assessment must be performed by a State certified Asbestos Inspector.

5. Chemical containers and quantities of solidified epoxy resins and other residues are routinely disposed of as solid waste destined for a sanitary landfill. We recommend that the owners closely monitor the plant's waste stream to insure that no hazardous materials are disposed with the solid waste. Improper disposal of hazardous wastes and improperly cleaned hazardous material containers is a violation of Vermont Hazardous Waste Management Regulations and may subject the owner to fines or legal action.

6. The recent testing of soil and groundwater quality conditions at the site found no conclusive evidence to support that previous waste disposal practices have had a lasting impact on the environmental conditions at the site. Although low levels of styrene and trichloroethene were detected in soils and trace amounts of tetrachloroethene were present in the groundwater downgradient of the septic field, all of the compounds detected were below the Vermont Health Advisory/Maximum Contaminant Level limits used by the Vermont Primary Ground Water Quality Standards.

This report was prepared solely for the use of Langrock, Sperry, Parker, and Wool. The conclusions provided by WH&N in this report are based solely on the information referenced within this document. While we are unaware of any facts or circumstances which would cause us to suspect that the conclusions drawn herein are incorrect or misleading, it is possible that additional information could require refinement or modifications of our conclusions. This report has been prepared in accordance with generally accepted site assessment practices in accordance with the terms and conditions in our agreement.

[RPT2-LADD/MKS 10-29-92]

APPENDIX 1

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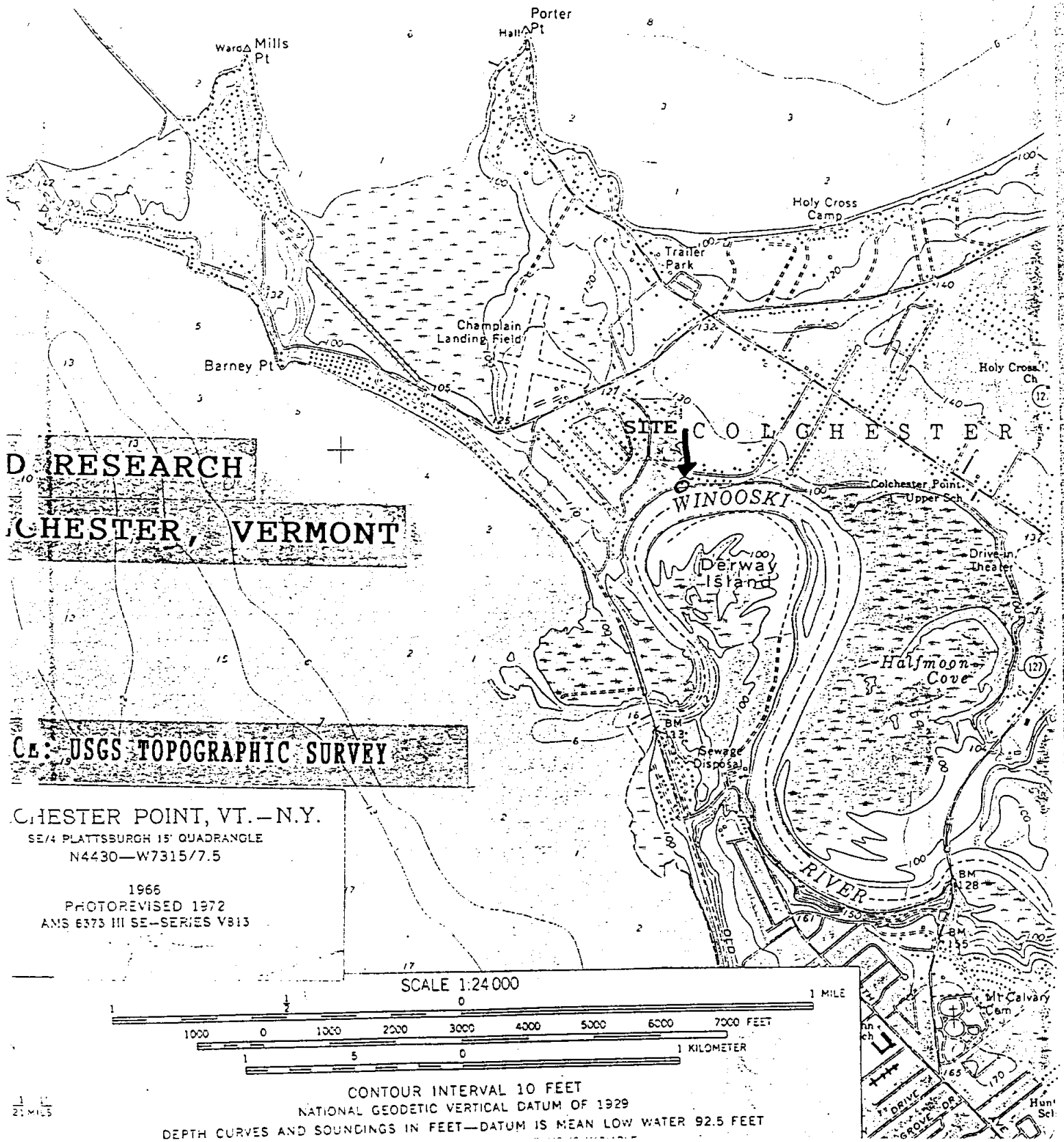
Wagner, Heindel, and Noyes, Inc.

Consulting Geologists — Burlington, Vermont

PAGE ____ OF ____

PROJECT: _____

DATE: _____



Wagner, Heindel, and Noyes, Inc.
Consulting Geologists Burlington, Vermont

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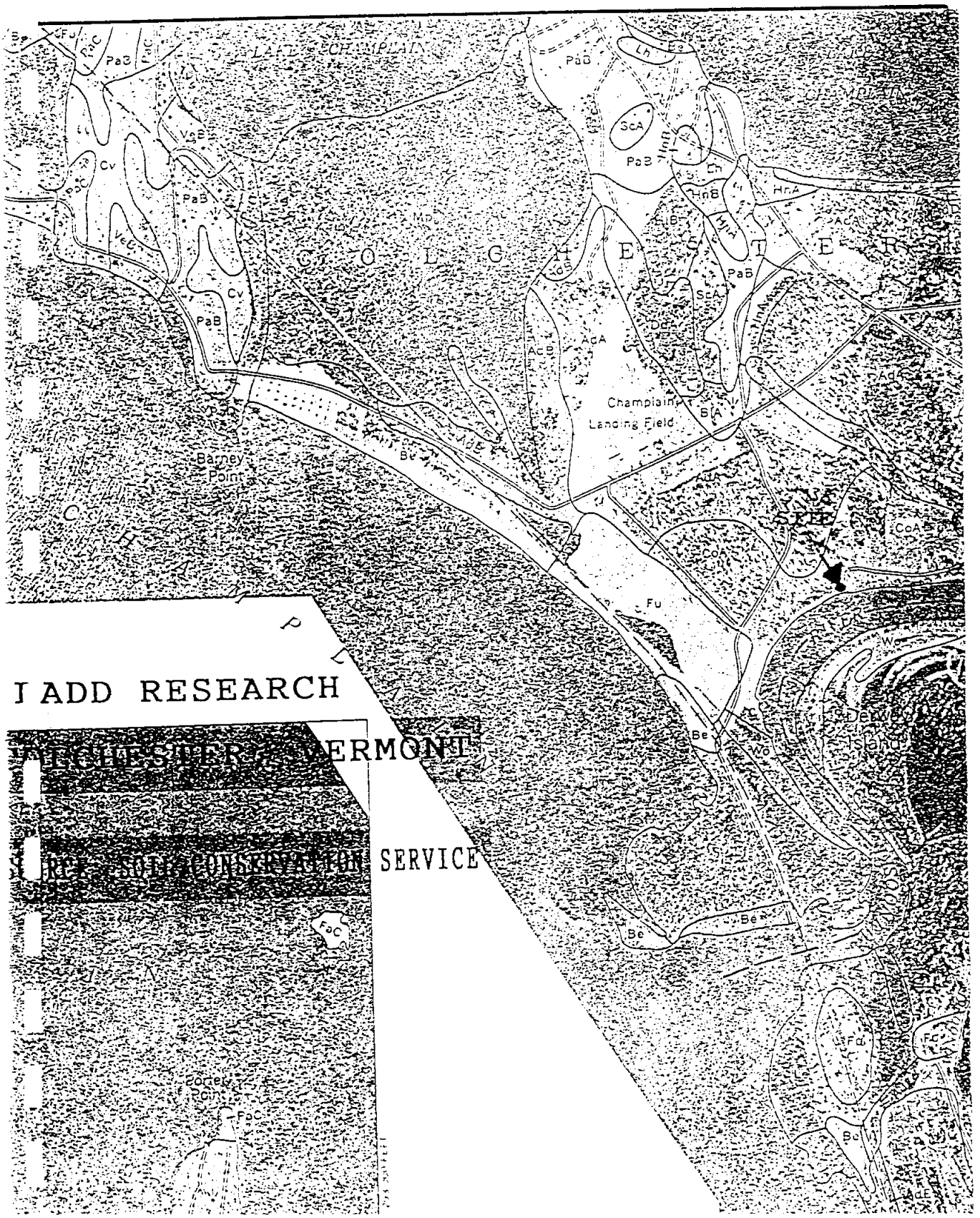


I ADD RESEARCH

VT. CHESTER, VERMONT

SOIL CONSERVATION SERVICE

Wagner, Heindel, and Noyes, Inc.
Consulting Geologists Burlington, Vermont

PAGE ____ OF ____

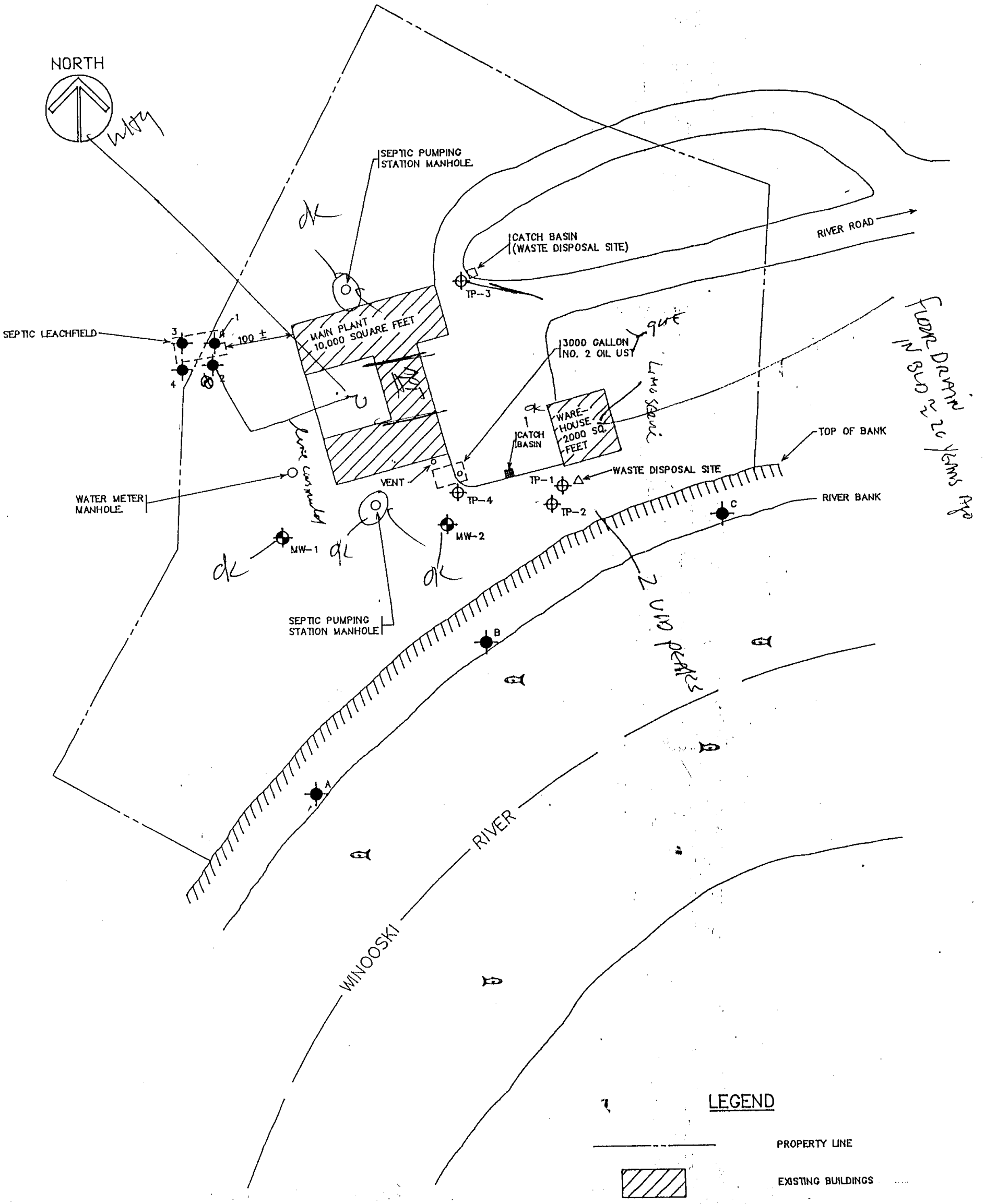
PROJECT: _____

DATE: _____

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, or E, indicates the class of slope. Most symbols without a slope letter are those of nearly level soils, but some are for land types that have a considerable range of slope.

SYMBOL	NAME
AdA	Adams and Windsor loamy sands, 0 to 5 percent slopes
AdB	Adams and Windsor loamy sands, 5 to 12 percent slopes
AdD	Adams and Windsor loamy sands, 12 to 30 percent slopes
AdE	Adams and Windsor loamy sands, 30 to 60 percent slopes
AgA	Agawam fine sandy loam, 0 to 5 percent slopes
AgD	Agawam fine sandy loam, 12 to 30 percent slopes
AgE	Agawam fine sandy loam, 30 to 60 percent slopes
An	Alluvial land
Au	Au Gres fine sandy loam
Be	Beaches
BlA	Belgrade and Eldridge soils, 0 to 3 percent slopes
BlB	Belgrade and Eldridge soils, 3 to 8 percent slopes
BlC	Belgrade and Eldridge soils, 8 to 15 percent slopes
BlD	Belgrade and Eldridge soils, 15 to 25 percent slopes
Bo	Blown-out land
Br	Borrow pits
CoA	Cabot stony silt loam, 0 to 3 percent slopes
CoC	Cabot stony silt loam, 3 to 15 percent slopes
CbA	Cabot extremely stony silt loam, 0 to 3 percent slopes
CbD	Cabot extremely stony silt loam, 3 to 25 percent slopes
CoA	Colton gravelly loamy sand, 0 to 5 percent slopes
CoB	Colton gravelly loamy sand, 5 to 12 percent slopes
CoC	Colton gravelly loamy sand, 12 to 20 percent slopes
CsD	Colton and Stetson soils, 20 to 30 percent slopes
CsE	Colton and Stetson soils, 30 to 60 percent slopes
Cv	Covington silty clay
DdA	Duane and Deerfield soils, 0 to 5 percent slopes
DdB	Duane and Deerfield soils, 5 to 12 percent slopes
DdC	Duane and Deerfield soils, 12 to 20 percent slopes
EwA	Enosburg and Whately soils, 0 to 3 percent slopes
EwB	Enosburg and Whately soils, 3 to 8 percent slopes
FoC	Formington extremely rocky loam, 5 to 20 percent slopes
FoE	Formington extremely rocky loam, 20 to 60 percent slopes
FsB	Formington-Stockbridge rocky looms, 5 to 12 percent slopes
FsC	Farmington-Stockbridge rocky looms, 12 to 20 percent slopes
FsE	Farmington-Stockbridge rocky looms, 20 to 60 percent slopes
Fu	Fill land
Fw	Fresh water marsh
GeB	Georgia stony loam, 3 to 8 percent slopes
GeC	Georgia stony loam, 8 to 15 percent slopes
GgC	Georgia extremely stony loam, 0 to 15 percent slopes
GgE	Georgia extremely stony loam, 15 to 60 percent slopes
GrA	Groton gravelly fine sandy loam, 0 to 5 percent slopes
GrB	Groton gravelly fine sandy loam, 5 to 12 percent slopes
GrC	Groton gravelly fine sandy loam, 12 to 20 percent slopes
GrD	Groton gravelly fine sandy loam, 20 to 30 percent slopes
GrE	Groton gravelly fine sandy loam, 30 to 60 percent slopes
Hf	Hadley very fine sandy loam
Hh	Hadley very fine sandy loam, frequently flooded
HlB	Hartland very fine sandy loam, 2 to 6 percent slopes
HlC	Hartland very fine sandy loam, 6 to 12 percent slopes
HlD	Hartland very fine sandy loam, 12 to 25 percent slopes
HnB	Hinesburg fine sandy loam, 3 to 8 percent slopes
HnC	Hinesburg fine sandy loam, 8 to 15 percent slopes
HnD	Hinesburg fine sandy loam, 15 to 25 percent slopes
HnE	Hinesburg fine sandy loam, 25 to 60 percent slopes
Le	Limerick silt loam
Lf	Limerick silt loam, very wet
Lh	Livingston clay
Lk	Livingston silty clay, occasionally flooded
LmB	Lyman-Marlow rocky looms, 5 to 12 percent slopes
LmC	Lyman-Marlow rocky looms, 12 to 20 percent slopes
LyD	Lyman-Marlow very rocky looms, 5 to 30 percent slopes
LyE	Lyman-Marlow very rocky looms, 30 to 60 percent slopes
MaB	Marlow stony loam, 5 to 12 percent slopes
MaC	Marlow stony loam, 12 to 20 percent slopes
MaD	Marlow stony loam, 20 to 30 percent slopes
MeC	Marlow extremely stony loam, 5 to 20 percent slopes
MeE	Marlow extremely stony loam, 20 to 60 percent slopes
MnC	Massena stony silt loam, 0 to 15 percent slopes
MoC	Massena extremely stony silt loam, 0 to 15 percent slopes
Mp	Muck and peat
MuD	Munson and Belgrade silt looms, 12 to 25 percent slopes
MyB	Munson and Raynham silt looms, 2 to 6 percent slopes
MyC	Munson and Raynham silt looms, 6 to 12 percent slopes
PaB	Palatine silt loam, 3 to 8 percent slopes
PaC	Palatine silt loam, 8 to 15 percent slopes
PaD	Palatine silt loam, 15 to 25 percent slopes
PaE	Palatine silt loam, 25 to 60 percent slopes
Pc	Peacham stony silt loam
PeA	Peru stony loam, 0 to 5 percent slopes
PeB	Peru stony loam, 5 to 12 percent slopes
PeC	Peru stony loam, 12 to 20 percent slopes
PeD	Peru stony loam, 20 to 30 percent slopes
PsC	Peru extremely stony loam, 0 to 20 percent slopes
PsE	Peru extremely stony loam, 20 to 60 percent slopes
Qd	Quarries
Rk	Rock land
ScA	Scantic silt loam, 0 to 2 percent slopes
ScB	Scantic silt loam, 2 to 6 percent slopes
Sd	Scarboro loam
StA	Stetson gravelly fine sandy loam, 0 to 5 percent slopes
StB	Stetson gravelly fine sandy loam, 5 to 12 percent slopes
StC	Stetson gravelly fine sandy loam, 12 to 20 percent slopes
SuB	Stockbridge and Nellis stony looms, 3 to 8 percent slopes
SuC	Stockbridge and Nellis stony looms, 8 to 15 percent slopes
SuD	Stockbridge and Nellis stony looms, 15 to 25 percent slopes
SxC	Stockbridge and Nellis extremely stony looms, 3 to 15 percent slopes
SxE	Stockbridge and Nellis extremely stony looms, 15 to 60 percent slopes
TeE	Terrace escarpments, silty and clayey
VeB	Vergennes clay, 2 to 6 percent slopes
VeC	Vergennes clay, 6 to 12 percent slopes
VeD	Vergennes clay, 12 to 25 percent slopes
VeE	Vergennes clay, 25 to 60 percent slopes



Wagner, Heindel, and Noyes

CONSULTING SCIENTISTS AND ENGINEERS

• Hydrogeology • Ecology •

• Environmental Engineering •

BURLINGTON, VERMONT

LADD RESEARCH

COLCHESTER, VERMONT

SITE PLAN

DATE: 10/27/92	SCALE: NONE	DRN.: SJB	APP.: MKS

APPENDIX 2

Tabl

LADD RESEARCH
SOIL & WATER ANALYSIS SUMMARY
SEPTEMBER 1992

Analysis	Parameters (compounds detected)	Sample ID MW-1	MW-2	Sewer manhole	Riverbank composite A	TP-1 composite	TP-3 composite	VHA/MCL*
EPA 624	None detected	-	ND	-	-	-	-	-
	Tetrachloroethene	TR<2	ND	ND	-	-	-	0.7
	1,4 Dichlorobenzene	ND	ND	1.4	-	-	-	75
	1,1 Dichloroethane	ND	ND	5.7	-	-	-	NS
	Toluene	ND	ND	18.1	-	-	-	2420
	1,1,1 Trichloroethane	ND	ND	TR<2	-	-	-	200
	Xylenes	ND	ND	TR<5	-	-	-	400
	Unidentified peaks	0	0	3	-	-	-	-
EPA 8240/8010	None detected	-	-	-	-	ND	ND	-
	Styrene	-	-	-	12.9	ND	ND	5
	Trichloroethene	-	-	-	-	-	TR<5	5
	Unidentified peaks	-	-	-	1	2	1	
EPA 8270/625	None detected	ND	-	-	-	ND	-	-
	Unidentified peaks	3	-	-	-	2	-	-
Metals	Arsenic, Diss.	<0.005	-	-	-	-	-	50
	Barium, Diss.	<0.010	-	-	-	-	-	1000
	Cadmium, Diss.	<0.005	-	-	-	-	-	5
	Chromium, Diss.	<0.010	-	-	-	-	-	50
	Copper, Diss.	<0.010	-	-	-	-	-	1000
	Lead, Diss.	<0.002	-	-	-	-	-	20
	Mercury, Diss	<0.001	-	-	-	-	-	2
	Nickel, Diss.	<0.020	-	-	-	-	-	350
	Selenium, Diss.	<0.010	-	-	-	-	-	10
	Silver, Diss.	<0.010	-	-	-	-	-	50
	Zinc, Diss.	<0.010	-	-	-	-	-	5000
	Cadmium, Total	<0.005	-	205	-	-	-	5
	Zinc, Total	<0.025	-	8020	-	-	-	5000

*VHA/MCL = Vermont Health Advisory/Maximum Contaminant Levels
ND = None detected; NS = No standard; TR = Trace levels below quantification

LADD RESEARCH
River Road
Colchester, Vermont
TEST PIT LOGS

September 12, 1992

Conducted by: M.K. Sparks on September 4, 1992
PID: Photovac Tip with 10.2 eV probe

TP-1	
2" - 24"	Brown fine to medium sand, loose, dry. PID = 0
24" - 48"	Coarse sands and pebbly coarse sands, loose, dry. Pebbles had a black discoloration. No odor. PID = 0
48" - 72"	Coarse pebbly sand, loose, slightly damp. Black discoloration on pebbles. No odor. PID = 0
72" - 78"	Coarse pebbly sand, damp, loose. Black discoloration on pebbles. No odor. PID = 0

TP-2 *[Location: South of free standing garage on strike with west wall]*	
0 - 36"	Wood stuff over fine to very fine sands, loose, dry
36" - 48"	Coarse pebbly sands PID = 0
60" - 84"	Medium to coarse sand without pebbles over pebbly coarse sands, loose, slightly damp, black discoloration on pebbles. No odor. PID = 0

TP-3 *[Location: Adjacent to drywell at northern edge of parking lot]*	
0 - 12"	Wood stuff over sandy loam, abundant roots PID = 0

LADD RESEARCH
River Road
Colchester, Vermont
TEST PIT LOGS

September 12, 1992

12" - 36"	Brown to tan coarse sand, some pebbles, loose, dry PID = 0
36" - 42"	Black pebbly sand to fine gravels, slightly damp, loose PID = 0
42" - 72"	Black pebbly sands and fine gravels, loose, slightly damp PID = 0
72" - 80"	Black coarse sands over fine to very fine sand and silty sands. Top of sand bright orange color. Sand/silt interface tan coloration. Slightly damp to damp. No odor. PID = 0
80" - 86"	Tan to gray coarse sands and pebbly sands, loose, damp. PID = 0
96" - 106"	Brown pebbly coarse sands, loose, moist PID = 0

TP-4
[Location: 10 feet south of underground heating oil tank]

0 - 12"	Wood stuff over sandy loam with roots
12" - 48"	Brown sands and pebbly sands, loose, dry PID = 0
48" - 60"	Brown coarse sands and pebbly sands, loose, dry. Pebbles with black coloration. No odor. PID = Non detect(??)
96" - 120"	Brown pebbly coarse sands, loose, dry. No odor. PID - Non detect

[TP-LADD/MKS 8-21-92]

LADD RESEARCH

October 8, 1992

Monitoring wells installed Tuesday, September 29, 1992. Drilling was performed by Tri-States Drilling and Boring. Ed Westover and Ray Gilfillian were the drillers.

MW-1

Located off the southwestern corner of the Ladd Research Building.

Split Spoon #1 (0.0 - 2.0')	Recover = 1.5'. PID = 0.8. Event 114.
0.0 - 0.2'	Medium brown duff, leaf letter and organic matter, dry.
0.2 - 1.45'	Light to medium brown silty very fine to medium sand with some pea gravel clasts. Fluffy, dry, loose.
Split Spoon #2 (4.0 - 6.0')	Recovery = 1.1'. PID = 0.0. Event 115.
4.0 - 4.3'	Wash spoil.
4.3 - 5.4'	Silty medium, coarse to very coarse sand with pea gravel. Loose, fluffy, dry.
Split Spoon #3 (9.0 - 11.0')	Recovery = 1.5'. PID = 0.0. Event 116.
9.0 - 9.4'	Medium brown medium coarse and very coarse sand with some pea gravel. Damp and fluffy.
9.4 - 10.5'	Same material as 9.0 - 9.4' except light brown in color.
Split Spoon #4 (14.0 - 16.0')	Recovery = 1.3'. PID = 0.0. Event 117.
14.0 - 14.3'	Medium brown medium coarse and very coarse sand with pea gravel. Damp, fluffy.
14.3 - 15.3'	Light brown medium coarse and very coarse sand with pea gravel. Has a salt and pepper visual texture. Many Fe-mg minerals plus quartz and many iron oxidized individual grains.
	PID along side augers at 18' = 0.0. Event 118. Drillers breathing zone PID = 0.0. Event 119. Uniform coarse sands as cuttings at 18'.

MW-2

Located south of the southeastern corner of the Ladd Research Building.

Split Spoon #1 (0.0 - 2.0')	Recovery = 1.2'. PID = 1.1. Event 123.
0.0 - 0.4'	Dark to medium brown organic matter, leaf litter, humus duff. Dry.
0.4 - 1.2'	Light yellowish brown silty fine, medium and coarse sand with same granules. Powdery, dry, fluffy and loose.
Split Spoon #2 (4.5 - 6.5')	Recovery = 1.1'. PID = 0.3. Event 124.
4.5 - 4.7'	Medium brown silty fine and medium sand, possible wash.
4.7 - 5.6'	Light whitish-grey brown silty fine, medium and coarse sand with pea gravel and trace pebbles. Loose, fluffy, dry.
Split Spoon #3 (9.5 - 11.5')	Recovery = 1.4'. PID = 0.0. Event 125.
9.5 - 9.7'	Medium brown silty fine, medium and coarse sand, dry.
9.7 - 10.9'	Light grayish-brown medium and coarse sand with same granule sand and pea gravel. Has a salt and pepper visual texture. Fluffy, loose, dry.
Split Spoon #4 (14.5 - 16.5')	Recovery = 1.3'. PID = 0.0. Event 126.
14.5 - 14.7'	Medium brown silty fine, medium and coarse sand with some pea gravel clasts. Damp, possible wash.
14.7 - 15.8'	Light grey-brown fine sandy medium, coarse and very coarse granule sand with some pea gravel clasts.
Split Spoon #5 (19.5 - 21.5')	Recovery = 1.25'. PID = 0.0. Event 127.
19.5 - 19.65'	Medium brown fine sandy coarse sand with trace pea and pebble gravel clasts. Probable wash.
19.65 - 20.75'	Medium to light brown fine sandy medium sand with trace coarse sand and pea gravels. Salt and pepper texture. Loose, fluffy, damp.

Spilt Spoon #5 (19.0 - 21.0')	Recovery = 1.25'. PID = 0.0. Event 120.
19.0 - 19.25'	Medium brown, medium, coarse and very coarse sand and pea gravel. Possible wash.
19.25 - 20.25'	Light brown, silty fine to very fine sand in 10 cm bands interstratified with cm-scale medium brown to grey brown silty very fine sand and very fine sandy silt. Dry, shavable siltier horizons may be somewhat more damp. Iron oxide rinds appear at textural interfaces.
Split Spoon #6 (24.0 - 26.0')	Recovery = 1.4'. PID = 0.0. Event 121.
24 - 24.3'	Medium brown silty fine sand with pea and pebble gravel, probable wash.
24.3 - 25.4'	Light brown silty fine to very fine sand. Well sorted, grades downward into a silty very fine sand. Dry, shavable. A 1 cm thick layer of very fine sandy silt occurs at the base. This is damp.
Split Spoon #7 (29.0 - 31.0')	Recovery = 1.4'. PID = 0.0. Event 122.
29.0 - 29.2'	Medium brown silty fine sand, saturated.
29.2 - 30.4'	Medium brown silty fine to medium sand with some coarse sand, saturated.

Note: Because the groundwater is at approximately 29' below ground surface, we will construct a monitoring well here. The well will be built with 15' of screens so that we can penetrate further into the aquifer materials in order to increase the chance of finding dissolved DNAPL.

Monitoring well MW-1 construction details:

15' of .010" factory slotted 2" PVC well screen with a threaded end plug and 25' of solid 2" PVC threaded riser. Total depth of well is approximately 39' below ground surface. The sand pack is placed from the bottom of the well (39') to approximately 1' over the screen at 23'. Bentonite placed from 23 - 22', native backfill to 1'. The well was finished with a mounted road box cemented in place.

Split Spoon #6 (24.5 - 26.5')	Recovery = 1.6'. PID = 0.0. Event 128.
24.5 - 24.6'	Medium brown fine, medium and coarse sand with trace pea gravel. Wash?
24.6 - 25.6'	Light orange-brown silty fine sand and very fine sand. Microlaminated on cm-scale. Dry.
25.6 - 26.1'	Medium brown silty very fine sand and very fine sandy silts interlaminated on a cm-scale. Moist
Split Spoon #7 (29.5 - 31.5')	Recovery = 1.7'. PID = 0.0. Event 129.
29.5 - 31.2'	Medium brown silty very fine and fine sand. Saturated throughout. The lowermost 0.7' picks up some medium sand. Iron oxide orange mottles evident.
Split Spoon #8 (34.5 - 36.5')	Recovery = 1.5'. PID = 0.0. Event 130.
34.5 - 36.0'	Medium brown silty fine and very fine sand saturated well sorted. Has thin, heavily iron oxidized bands approximately 1/2 cm thick.

Monitoring Well MW-2 construction details:

Total depth approximately 39'. 15' of 0.010" factory slotted PVC 2" well screen placed from 39 - 24'. Solid 2" PVC riser from 24' to the surface. Sand pack placed from 39 - 23'. Bentonite placed from 23 - 22'. Native backfill to the surface. Well was finished with a flush mount road box cemented in place.

[WL-LADD/RLP 9-9-92]

SOIL PROBE LOG

Page_1_
MW # 1
Ladd Research
Colchester, VT

TRI STATE
DRILLING & BORING, INC.
RFD #2, Box 113 West Burke, VT 05871
(802) 467-3123

		SAMPLER	SOIL
		Continuous	Saturated
TYPE	HSA		Wet
SIZE	4 1/4"		Moist
HAMMER	140#		Damp
FALL	30"		Slightly Damp

DATE STARTED: 09/29/92 DATE COMPLETED: 09/29/92

DEPTH	BLOW COUNTS 6 12 18 24	REC		DRILLER'S NOTES & COMMENTS
			.2'	Organics.
2'	.|.2|.5|.5|.4	1.4'	2-4'	Brown dry loose fine/med/coarse sand.
6	.|.2|.4|.6|.8	.8'	4-19'	Grey dry med dense med/coarse/fine sand.
11'	.|.8|.7|10|10	1.1'		
16'	.|.4|.8|.8|13	1.1'		
21'	.|.2|.6|.7|.8	1'	19-29'	Brown grey damp med dense fine sand, layers of silt.
26'	.|.3|.5|.6|12	1.1'		
31'	.|.3|.6|.6|.6	1'	29-39'	Grey wet medium dense medium sand,
				BOTTOM 39'.
				WATER LEVEL AT 28.6' AFTER WELL INSTALLED.
				Screen 39' to 24'.
				Riser 24' to 0'.
				Sand 39' to 23'.
				Bentonite chips 23' to 22'.
				Backfill 22' to 1'.
				Sakrete 1' to 0'.

Client: Ladd Research

Job Location: Colchester, VT

Engineer: Wagner, Heindel & Noyes

Inspector: Ron Parker

Driller: Ray Gilfillan

Helper: Ed Westover

Materials: 1 pvc 2" locking plug, 3 bags sand, 1/2 hole plug. Rest supplied by Heindel & Noyes.

SOIL PROBE LOG

MW # 2
Ladd Research
Colchester, VT

TRI STATE
DRILLING & BORING, INC.
RFD #2, Box 113 West Burke, VT 05871
(802) 467-3123

		SAMPLER Continuous
TYPE	HSA	
SIZE	4 1/4"	
HAMMER	140#	
FALL	30"	

SOIL
Saturated
Wet
Moist
Damp
Slightly Damp

DATE STARTED: 09/29/92 DATE COMPLETED: 09/29/92

PAGE DEPTH	BLOW COUNTS 6 12 18 24	REC .5'		DRILLER'S NOTES & COMMENTS
				Organics.
2'....		.3	.5	.4	.5	1.2'	.5-3'	Brown dry loose fine/med/coarse sand.
- .5'.		.6	.6	.5	.6	.9'	3-8'	Brown dry med dense, med/coarse/fine sand.
-11.5'		.6	.8	.6	.6	1.2'	8-18'	Grey dry med dense, med/coarse sand.
5-16.5		.7	.6	.9	13	1.2'		Same as above.
5 21.5		.3	.5	.6	.7	1.1'	18-24'	Brown damp med dense, medium sand.
5 26.5		.6	.6	.6	.9	1.4'	24-28'	Brown damp med dense fine sand, layers of silt.
5 31.5		.1	.1	.2	.3	1.7'	28-39'	Brown wet very loose fine sand, silty.
5 36.5		.1	.1	.2	.6	1.3'		Same as above.
								BOTTOM 39'.

Screen 39' to 24'.
Riser 24' to 0'.
Sand 39' to 23'.
Bentonite chips 23' to 22'.
Backfill 22' to 1'.
Sakrete 1' to 0'.

Client: Ladd Research

Job Location: Colchester, VT

Engineer: Wagner, Heindel & Noyes

Inspector: Ron Parker

Driller: Ray Gilfillan

Helper: Ed Westover

Materials: 1 pvc 2" slip cap, 4 bags sand, 1/2 hole plug. Rest supplied by Heindel & Noyes.

APPENDIX 3

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT
EPA METHOD 8010 - PURGEABLE HALOCARBONS (SOLIDS)

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Langrock/Ladd Research
REPORT DATE: September 10, 1992
SAMPLER: M.K. Sparks
DATE SAMPLED: September 4, 1992
DATE RECEIVED: September 4, 1992

PROJECT CODE: HNLL1062
ANALYSIS DATE: September 9, 1992
STATION: TP-1 Composite
REF.#: 35,359
TIME SAMPLED: 11:00

Parameter	Concentration (ug/kg)[1] dry weight
Bromodichloromethane	ND[2]
Bromoform	ND
Bromomethane	ND
Carbon tetrachloride	ND
Chlorobenzene	ND
Chloroethane	ND
2-Chloroethylvinyl ether	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Dichlorodifluoromethane	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachloroethene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	ND
Trichlorofluoromethane	ND
Vinyl Chloride	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 2

NOTES:
1 Method 8010 detection limit is 5 ug/kg
2 None detected

Reviewed by:

ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 8270 -- GC/MS BASE/NEUTRALS AND ACIDS (SOLIDS)

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Langrock/Ladd Research
REPORT DATE: September 10, 1992
SAMPLER: M.K. Sparks
DATE SAMPLED: September 4, 1992
DATE RECEIVED: September 4, 1992

PROJECT CODE: HNLL1063
ANALYSIS DATE: September 9, 1992
STATION: TP-1 Composite
REF. #: 35,361
TIME SAMPLED: 11:00

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg)
BASE/NEUTRAL EXTRACTABLES:		
Acenaphthene	50	ND[1]
Acenaphthylene	50	ND
Acetophenone	50	ND
Aldrin	50	ND
Anthracene	50	ND
4-Aminobiphenyl	50	ND
Benzidine	50	ND
Benzo(a)anthracene	50	ND
Benzo(b)fluoranthene	50	ND
Benzo(k)fluoranthene	50	ND
Benzo(a)pyrene	50	ND
Benzo(ghi)perylene	50	ND
Benzyl butyl phthalate	50	ND
alpha-BHC	50	ND
beta-BHC	50	ND
gamma-BHC	50	ND
y-BHC (Lindane)	50	ND
Bis(2-chloroethyl)ether	50	ND
Bis(2-chloroethoxy)methane	50	ND
Bis(2-ethylhexyl)phthalate	50	ND
Bis(2-chloroisopropyl)ether	50	ND
4-Bromophenyl phenyl ether	50	ND
Butyl benzyl phthalate	50	ND
4-Chloroaniline	50	ND
Chlordane	50	ND
1-Chloronaphthalene	50	ND
2-Chloronaphthalene	50	ND
4-Chlorophenyl phenyl ether	50	ND
Chrysene	50	ND
4,4'-DDD	50	ND
4,4'-DDE	50	ND
4,4'-DDT	50	ND
Dibenzofuran	50	ND

ENDYNE, INC.

Laboratory Services

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

EPA METHOD 8270 (continued)

REF. #: 35,361

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg)
Dibenz(a,j)acridine	50	ND
Dibenzo(a,h)anthracene	50	ND
Di-n-butylphthalate	50	ND
1,3-Dichlorobenzene	50	ND
1,2-Dichlorobenzene	50	ND
1,4-Dichlorobenzene	50	ND
3,3'-Dichlorobenzidine	50	ND
Dieldrin	50	ND
Diethyl phthalate	50	ND
Dimethyl phthalate	50	ND
p-Dimethylaminoazobenzene	50	ND
7,12-Dimethylbenz(a)anthracene	50	ND
a-,a-Dimethylphenethylamine	50	ND
2,4-Dinitrotoluene	50	ND
2,6-Dinitrotoluene	50	ND
Diphenylamine	50	ND
1,2-Diphenylhydrazine	50	ND
Di-n-octylphthalate	50	ND
Endosulfan I	50	ND
Endosulfan II	50	ND
Endosulfan sulfate	50	ND
Endrin	50	ND
Endrin aldehyde	50	ND
Endrin Keytone	50	ND
Ethyl methanesulfonate	50	ND
Fluoranthene	50	ND
Fluorene	50	ND
Heptachlor	50	ND
Heptachlor epoxide	50	ND
Hexachlorobenzene	50	ND
Hexachlorobutadiene	50	ND
Hexachlorocyclopentadiene	50	ND
Hexachloroethane	50	ND
Indeno(1,2,3-cd)pyrene	50	ND
Isophorone	50	ND
Methoxychlor	50	ND
3-Methylcholanthrene	50	ND
Methyl methanesulfonate	50	ND
2-Methylnaphthalene	50	ND
Naphthalene	50	ND
1-Naphthylamine	50	ND
2-Naphthylamine	50	ND
2-Nitroaniline	50	ND
3-Nitroaniline	50	ND
4-Nitroaniline	50	ND
Nitrobenzene	50	ND
N-Nitroso-di-n-butylamine	50	ND

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EPA METHOD 8270 (continued) REF. #: 35,361

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg)
N-Nitrosodimethylamine	50	ND
N-Nitrosodiphenylamine	50	ND
N-Nitrosodipropylamine	50	ND
N-Nitrosopiperidine	50	ND
PCB-1016	50	ND
PCB-1221	50	ND
PCB-1232	50	ND
PCB-1242	50	ND
PCB-1248	50	ND
PCB-1254	50	ND
PCB-1260	50	ND
Phenacetin	50	ND
Phenanthrene	50	ND
2-Picoline	50	ND
Pronamide	50	ND
Pyrene	50	ND
Toxaphene	50	ND
1,2,4-Trichlorobenzene	50	ND
1,2,4,5,-Tetrachlorobenzene	50	ND

NUMBER OF UNIDENTIFIED PEAKS: 2

NOTES:

1 None detected

Reviewed by: Susan Grubb

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LABORATORY REPORT
EPA METHOD 8010 - PURGEABLE HALOCARBONS (SOLIDS)

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Langrock/Ladd Research
REPORT DATE: September 10, 1992
SAMPLER: M.K. Sparks
DATE SAMPLED: September 4, 1992
DATE RECEIVED: September 4, 1992

PROJECT CODE: HNLL1062
ANALYSIS DATE: September 9, 1992
STATION: TP-3 Composite
REF.#: 35,360
TIME SAMPLED: 11:40

Parameter	Concentration (ug/kg)[1] dry weight
Bromodichloromethane	ND[2]
Bromoform	ND
Bromomethane	ND
Carbon tetrachloride	ND
Chlorobenzene	ND
Chloroethane	ND
2-Chloroethylvinyl ether	ND
Chloroform	ND
Chloromethane	ND
Dibromochloromethane	ND
1,2-Dichlorobenzene	ND
1,3-Dichlorobenzene	ND
1,4-Dichlorobenzene	ND
Dichlorodifluoromethane	ND
1,1-Dichloroethane	ND
1,2-Dichloroethane	ND
1,1-Dichloroethene	ND
trans-1,2-Dichloroethene	ND
1,2-Dichloropropane	ND
cis-1,3-Dichloropropene	ND
trans-1,3-Dichloropropene	ND
Methylene Chloride	ND
1,1,2,2-Tetrachloroethane	ND
Tetrachloroethene	ND
1,1,1-Trichloroethane	ND
1,1,2-Trichloroethane	ND
Trichloroethene	TBQ[3]
Trichlorofluoromethane	ND
Vinyl Chloride	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 1

NOTES:
1 Method 8010 detection limit is 5 ug/kg
2 None detected
3 Trace below quantitation limit

Reviewed by:

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LABORATORY REPORT

EPA METHOD 8240 -- SOIL EXTRACTION VOLATILES

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: Langrock/Ladd Research
REPORT DATE: September 10, 1992
SAMPLER: M.K. Sparks
DATE SAMPLED: September 4, 1992
DATE RECEIVED: September 4, 1992

PROJECT CODE: HNLL1061
ANALYSIS DATE: September 9, 1992
STATION: Riverbank Composite A
REF.#: 35,358
TIME SAMPLED: 11:30

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Acetone	100	ND[1]
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
1,3 Dichlorobenzene	5	ND
1,2 Dichlorobenzene	5	ND
1,4 Dichlorobenzene	5	ND

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EPA METHOD 8240 (continued) Ref.#: 35,358

Parameter	Quantitation Limit (ug/kg)	Concentration (ug/kg dry wt.)
Ethyl Benzene	5	ND
2-Hexanone	50	ND
4-Methyl-2-Pentanone	50	ND
Methylene Chloride	5	ND
Styrene	5	12.9
1,1,2,2-Tetrachloroethane	5	ND
Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	50	ND
Vinyl Acetate	10	ND
Vinyl Chloride	5	ND
Total Xylenes	5	ND
MTBE		

NUMBER OF UNIDENTIFIED PEAKS FOUND: 1

NOTES:

1 None detected

Reviewed by Steven Hyde

ENDYNE, INC.

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LABORATORY REPORT

EPA METHOD 624 -- GC/MS PURGEABLES

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: LADD Research
REPORT DATE: October 20, 1992
SAMPLER: Aldrich
DATE SAMPLED: October 9, 1992
DATE RECEIVED: October 9, 1992

PROJECT CODE: HNRL1423
ANALYSIS DATE: October 19, 1992
STATION: Sewer Manhole
REF.#: 36,837
TIME SAMPLED: 10:50

Parameter	Minimum Detection Limit	Concentration (ug/L)
Benzene	2.	ND[1]
Bromodichloromethane	4.	ND
Bromoform	1.	ND
Bromomethane	2.	ND
Carbon tetrachloride	2.	ND
Chlorobenzene	1.	ND
Chloroethane	1.	ND
2-Chloroethylvinyl ether	*	ND
Chloroform	2.	ND
Chloromethane	6.	ND
Dibromochloromethane	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	1.	1.4
1,1-Dichloroethane	1.	5.7
1,2-Dichloroethane	1.	ND
1,1-Dichloroethene	2.	ND
trans-1,2-Dichloroethene	2.	ND
1,2-Dichloropropane	1.	ND
cis-1,3-Dichloropropene	2.	ND
trans-1,3-Dichloropropene	3.	ND
Ethylbenzene	3.	ND
Methylene Chloride	1.	ND
1,1,2,2-Tetrachloroethane	3.	ND
Tetrachloroethene	2.	ND
Toluene	2.	18.1
1,1,1-Trichloroethane	2.	TBQ[2]
1,1,2-Trichloroethane	2.	ND
Trichloroethene	2.	ND
Trichlorofluoromethane	2.	ND
Vinyl Chloride	3.	ND
Xylenes	5.	TBQ
MTBE	2.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 3

NOTES:
1 None detected
2 Trace below quantitation limit

Reviewed by _____

ENDYNE, INC.

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LABORATORY REPORT

DATE: October 20, 1992
CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT: LADD Research
PROJECT CODE: HNLR3425
COLLECTED BY: Aldrich
DATE SAMPLED: October 9, 1992
DATE RECEIVED: October 9, 1992

Tested parameters are reported in milligrams per kilogram (mg/kg).

Parameter	Reference Number
	36,839
Total Cadmium	205.
Total Zinc	8,020.

Sample ID:

36,839: Sewer Manhole; 10:50

Reviewed by: Susan Gaskell

ENDYNE, INC.

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LABORATORY REPORT

EPA METHOD 624 -- GC/MS PURGEABLES

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: LADD Research
REPORT DATE: October 20, 1992
SAMPLER: Aldrich
DATE SAMPLED: October 9, 1992
DATE RECEIVED: October 9, 1992

PROJECT CODE: HNRL1423
ANALYSIS DATE: October 19, 1992
STATION: MW #1
REF.#: 36,836
TIME SAMPLED: 10:25

Parameter	Minimum Detection Limit	Concentration (ug/L)
Benzene	2.	ND[1]
Bromodichloromethane	4.	ND
Bromoform	1.	ND
Bromomethane	2.	ND
Carbon tetrachloride	2.	ND
Chlorobenzene	1.	ND
Chloroethane	1.	ND
2-Chloroethylvinyl ether	*	ND
Chloroform	2.	ND
Chloromethane	6.	ND
Dibromochloromethane	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	1.	ND
1,1-Dichloroethane	1.	ND
1,2-Dichloroethane	1.	ND
1,1-Dichloroethene	2.	ND
trans-1,2-Dichloroethene	2.	ND
1,2-Dichloropropane	1.	ND
cis-1,3-Dichloropropene	2.	ND
trans-1,3-Dichloropropene	3.	ND
Ethylbenzene	3.	ND
Methylene Chloride	1.	ND
1,1,2,2-Tetrachloroethane	3.	ND
Tetrachloroethene	2.	TBQ[2]
Toluene	2.	ND
1,1,1-Trichloroethane	2.	ND
1,1,2-Trichloroethane	2.	ND
Trichloroethene	2.	ND
Trichlorofluoromethane	2.	ND
Vinyl Chloride	3.	ND
Xylenes	5.	ND
MTBE	2.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected
2 Trace below quantitation limit

Reviewed by _____

ENDYNE, INC.

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LABORATORY REPORT

EPA METHOD 625 -- GC/MS BASE NEUTRALS AND ACIDS

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: LADD Research
REPORT DATE: October 20, 1992
SAMPLER: Aldrich
DATE SAMPLED: October 9, 1992
DATE RECEIVED: October 9, 1992

PROJECT CODE: HNLR1424
ANALYSIS DATE: October 20, 1992
STATION: MW #1
REF. #: 36,838
TIME SAMPLED: 10:25

Parameter	Quantitation Limit (ug/L)	Concentration (ug/L)
BASE/NEUTRAL EXTRACTABLES:		
Acenaphthene	1	ND[1]
Acenaphthylene	1	ND
Anthracene	1	ND
Aldrin	1	ND
Benzo(a)anthracene	1	ND
Benzo(b)fluoranthene	1	ND
Benzo(k)fluoranthene	1	ND
Benzo(a)pyrene	1	ND
Benzo(ghi)perylene	1	ND
Benzyl butyl phthalate	1	ND
beta-BHC	1	ND
gamma-BHC	1	ND
Bis(2-chloroethyl)ether	1	ND
Bis(2-chloroethoxyl)methane	1	ND
Bis(2-ethylhexyl)phthalate	1	ND
Bis(2-chloroisopropyl)ether	1	ND
4-Bromophenyl phenyl ether	1	ND
Chlordane	5	ND
2-Chloronaphthalene	1	ND
4-Chlorophenyl phenyl ether	1	ND
Chrysene	1	ND
4,4'-DDD	1	ND
4,4'-DDE	1	ND
4,4'-DDT	1	ND

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REF. #: 36,838

EPA METHOD 625 (continued)

Parameter	Quantitation Limit (ug/L)	Concentration (ug/L)
Dibenzo(a,h)anthracene	1	ND
Di-n-butylphthalate	1	ND
1,3-Dichlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
3,3'-Dichlorobenzidine	1	ND
Dieldrin	1	ND
Diethyl phthalate	1	ND
Dimethyl phthalate	1	ND
2,4-Dinitrotoluene	1	ND
2,6-Dinitrotoluene	1	ND
Di-n-octylphthalate	1	ND
Endosulfan sulfate	1	ND
Endrin aldehyde	1	ND
Fluoranthene	1	ND
Fluorene	1	ND
Heptachlor	1	ND
Heptachlor epoxide	1	ND
Hexachlorobenzene	1	ND
Hexachlorobutadiene	1	ND
Hexachloroethane	1	ND
Indeno(1,2,3-cd)pyrene	1	ND
Isophorone	1	ND
Naphthalene	1	ND
Nitrobenzene	1	ND
N-Nitrosodi-n-propylamine	1	ND
PCB-1016	5	ND
PCB-1221	5	ND
PCB-1232	5	ND
PCB-1242	5	ND
PCB-1248	5	ND
PCB-1254	5	ND
PCB-1260	5	ND
Phenanthrene	1	ND
Pyrene	1	ND
Toxaphene	5	ND
1,2,4-Trichlorobenzene	1	ND

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PA METHOD 625 (continued)

REF. #: 36,838

Parameter	Quantitation Limit (ug/L)	Concentration (ug/L)
ACID EXTRACTABLES:		
4-Chloro-3-methylphenol	1	ND
2-Chlorophenol	1	ND
2,4-Dichlorophenol	1	ND
2,4-Dimethylphenol	1	ND
2,4-Dinitrophenol	1	ND
2-Methyl-4,6-dinitrophenol	1	ND
2-Nitrophenol	1	ND
4-Nitrophenol	1	ND
Pentachlorophenol	1	ND
Phenol	1	ND
2,4,6-Trichlorophenol	1	ND
ADDITIONAL EXTRACTABLE PARAMETERS:		
Benzidine	10	ND
alpha-BHC	1	ND
gamma-BHC	1	ND
Endosulfan I	1	ND
Endosulfan II	1	ND
Endrin	1	ND
Hexachlorocylcopentadiene	10	ND
N-Nitrosodimethylamine	10	ND
N-Nitrosodiphenylamine	1	ND

NUMBER OF UNIDENTIFIED PEAKS: 3

NOTES:

1 None detected

Reviewed by: _____

ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

DATE: October 20, 1992
CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT: LADD Research
PROJECT CODE: HNLR3425
COLLECTED BY: Aldrich
DATE SAMPLED: October 9, 1992
DATE RECEIVED: October 9, 1992

Tested parameters are reported in milligrams per liter (ppm).

Parameter	Reference Number
	36,840
Dissolved Arsenic	<0.005
Dissolved Barium	<0.010
Dissolved Cadmium	<0.005
Dissolved Chromium	<0.010
Dissolved Copper	<0.010
Dissolved Lead	<0.002
Dissolved Mercury	<0.001
Dissolved Nickel	<0.020
Dissolved Selenium	<0.010
Dissoved Silver	<0.010
Dissolved Zinc	<0.010
Total Cadmium	<0.005
Total Zinc	<0.025

Sample ID:

36,840: MW #1; 10:25

Reviewed by Elizabeth Gendle

ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 624 -- GC/MS PURGEABLES

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: LADD Research
REPORT DATE: October 20, 1992
SAMPLER: Aldrich
DATE SAMPLED: October 9, 1992
DATE RECEIVED: October 9, 1992

PROJECT CODE: HNRL1423
ANALYSIS DATE: October 19, 1992
STATION: MW #2
REF.#: 36,835
TIME SAMPLED: 9:50

Parameter	Minimum Detection Limit	Concentration (ug/L)
Benzene	2.	ND[1]
Bromodichloromethane	4.	ND
Bromoform	1.	ND
Bromomethane	2.	ND
Carbon tetrachloride	2.	ND
Chlorobenzene	1.	ND
Chloroethane	1.	ND
2-Chloroethylvinyl ether	*	ND
Chloroform	2.	ND
Chloromethane	6.	ND
Dibromochloromethane	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	1.	ND
1,1-Dichloroethane	1.	ND
1,2-Dichloroethane	1.	ND
1,1-Dichloroethene	2.	ND
trans-1,2-Dichloroethene	2.	ND
1,2-Dichloropropane	1.	ND
cis-1,3-Dichloropropene	2.	ND
trans-1,3-Dichloropropene	3.	ND
Ethylbenzene	3.	ND
Methylene Chloride	1.	ND
1,1,2,2-Tetrachloroethane	3.	ND
Tetrachloroethene	2.	ND
Toluene	2.	ND
1,1,1-Trichloroethane	2.	ND
1,1,2-Trichloroethane	2.	ND
Trichloroethene	2.	ND
Trichlorofluoromethane	2.	ND
Vinyl Chloride	3.	ND
Xylenes	5.	ND
MTBE	2.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

Reviewed by _____

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LABORATORY REPORT

EPA METHOD 624 -- GC/MS PURGEABLES

CLIENT: Wagner, Heindel, and Noyes, Inc.
PROJECT NAME: LADD Research
REPORT DATE: October 20, 1992
SAMPLER: Aldrich
DATE SAMPLED: October 9, 1992
DATE RECEIVED: October 9, 1992

PROJECT CODE: HNRL1423
ANALYSIS DATE: October 19, 1992
STATION: Trip Blank
REF.#: 36,833
TIME SAMPLED: 9:00

Parameter	Minimum Detection Limit	Concentration (ug/L)
Benzene	2.	ND[1]
Bromodichloromethane	4.	ND
Bromoform	1.	ND
Bromomethane	2.	ND
Carbon tetrachloride	2.	ND
Chlorobenzene	1.	ND
Chloroethane	1.	ND
2-Chloroethylvinyl ether	*	ND
Chloroform	2.	ND
Chloromethane	6.	ND
Dibromochloromethane	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	1.	ND
1,1-Dichloroethane	1.	ND
1,2-Dichloroethane	1.	ND
1,1-Dichloroethene	2.	ND
trans-1,2-Dichloroethene	2.	ND
1,2-Dichloropropane	1.	ND
cis-1,3-Dichloropropene	2.	ND
trans-1,3-Dichloropropene	3.	ND
Ethylbenzene	3.	ND
Methylene Chloride	1.	ND
1,1,2,2-Tetrachloroethane	3.	ND
Tetrachloroethene	2.	ND
Toluene	2.	ND
1,1,1-Trichloroethane	2.	ND
1,1,2-Trichloroethane	2.	ND
Trichloroethene	2.	ND
Trichlorofluoromethane	2.	ND
Vinyl Chloride	3.	ND
Xylenes	5.	ND
MTBE	2.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

Reviewed by _____

ENDYNE, INC.

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LABORATORY REPORT

EPA METHOD 624 -- GC/MS PURGEABLES

LIENT: Wagner, Heindel, and Noyes, Inc.
ROJECT NAME: LADD Research
REPORT DATE: October 20, 1992
AMPLER: Aldrich
ATE SAMPLED: October 9, 1992
DATE RECEIVED: October 9, 1992

PROJECT CODE: HNRL1423
ANALYSIS DATE: October 19, 1992
STATION: Field Blank
REF.#: 36,834
TIME SAMPLED: 10:10

arameter	Minimum Detection Limit	Concentration (ug/L)
Benzene	2.	ND[1]
Bromodichloromethane	4.	ND
Bromoform	1.	ND
Bromomethane	2.	ND
Carbon tetrachloride	2.	ND
Chlorobenzene	1.	ND
Chloroethane	1.	ND
2-Chloroethylvinyl ether	*	ND
Chloroform	2.	ND
Chloromethane	6.	ND
Dibromochloromethane	2.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	1.	ND
1,1-Dichloroethane	1.	ND
1,2-Dichloroethane	1.	ND
1,1-Dichloroethene	2.	ND
trans-1,2-Dichloroethene	2.	ND
1,2-Dichloropropane	1.	ND
cis-1,3-Dichloropropene	2.	ND
trans-1,3-Dichloropropene	3.	ND
Ethylbenzene	3.	ND
Methylene Chloride	1.	ND
1,1,2,2-Tetrachloroethane	3.	ND
Tetrachloroethene	2.	ND
Toluene	2.	ND
1,1,1-Trichloroethane	2.	ND
1,1,2-Trichloroethane	2.	ND
Trichloroethene	2.	ND
Trichlorofluoromethane	2.	ND
Vinyl Chloride	3.	ND
Xylenes	5.	ND
MTBE	2.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

Reviewed by _____

ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

IDENTIFICATION OF UNKNOWN PEAKS REPORT

The following compounds were identified by direct comparison of sample and library spectral data.

Project: LADD Research

Analysis: 625

Reference #: 36,838

Station I.D.: MW #1

1- Tetradecediene
2- C_{10} amides

Project: LADD Research

Analysis: 624

Reference #: 36,837

Station I.D.: Sewer Manhole

1- alpha pinene
1- alkylated benzenes

Reviewed by_____

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

CHAIN-OF-CUSTODY RECORD

004965

Project Name: LADD Research Site Location: Colchester, VT	Reporting Address: WHN	Billing Address: WHN
Endyne Project Number: [illegible]	Contact Name: Parker or Sparks Company/Phone #: 658-0820	Sampler Name: Aldrich Company/Phone #: 658-0820

Lab #	Sample Description	Matrix	Date/ Time	Container No.	Container Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
	Trip Blank	H_2O	10-9-92 9:00A	2	40mL		624	NaN_3 4°C	
	field Blank		10:10A	↓	↓		↓	↓	
	MW #2		9:50A						
	MW #1		10:25A				624	NaN_3 4°C	
	Sewer Manhole		10:50A	2	40mL		624	4°C	
	MW #1		10:25	2	1-Liter		625	4°C	
36839	Sewer Manhole	Sludge	10:50	~~2~~	~~Plastic~~ 1 Part Glass		See 32	Total Cd + Zn	
36840	MW #1	H_2O	10:25	2	1602P.	Diss	VOA 1, Total	Cd + Zn	

Relinquished by: Signature: Colleen Aldrich	Received by: Signature: Windy Gamelin	Date/Time: 10-9-92 1:40
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals ICP/AA	21	EPA 624	26	EPA 8270				
2	Chloride	7	Total P	12	TSS	17	Fecal and/or Tot.	22	EPA 625 B/N or A	27	EPA 8010				
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8020				
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB	29	EPA 8080				
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240	30	BTOX				
31	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)														
32	Other (Specify): Dissolved (VOA) for Metals; Diss Cadmium + Zinc; Total Cadmium + Zinc														

SAMPLERS (PRINT)

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

CHAIN-OF-CUSTODY RECORD

36839 - 36840

004965

Project Name: LADD Research Site Location: Colchester, VT	Reporting Address: WHV	Billing Address: WHV
Endyne Project Number: HNL-1425	Contact Name: Parker or Sparks Company/Phone #: 658-0820	Sampler Name: Aldrich Company/Phone #: 658-0820

Lab #	Sample Description	Matrix	Date/ Time	Container No.	Container Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
	Trip Blank	H_2O	10-9-92 9:00A	2	40mL		624	NaN_3, 4°C	
	field Blank		10:10A						
	MW #2		9:50A						
	MW #1		10:25A						
	sewer manhole		10:50A	2	40mL		624	NaN_3, 4°C	
	MW #1		10:25	2	1-Liter		625	4°C	
36839	sewer manhole	Sludge	10:50	~~2~~	1pt Glass		See 32	Total	Cd + Zn
36840	MW #1	H_2O	10:25	2	1602P.	Diss	VT-14; Total	Cd + Zn	

Relinquished by: Signature: John Aldrich	Received by: Signature: Wendy Gamelin	Date/Time: 10-9-92 1:40
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Annlyses

1	pH	6	TKN	11	Total Solids	16	Metals ICP/AA	21	EPA 624	26	EPA 8270		
2	Chloride	7	Total P	12	TSS	17	Fecal and/or Tot.	22	EPA 625 B/N or A	27	EPA 8010		
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8020		
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB	29	EPA 8080		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240	30	EPTOX		
31	TCLP (Specify: voltiles, semi-volatiles, metals, pesticides, herbicides)												
32	Other (Specify): Dissolved (VT) Toxic Metals; Diss Cadmium + Zinc; Total Cadmium + Zinc												

WHITE: LABORATORY COPY CANARY: PROJECT COPY PINK