Nelson, Heindel, and Noyes

• Consulting Hydrogeologists
• Engineers
• Environmental Scientists

P.O. Box 64709 Burlington, Vermont 05406-4709 802-658-0820
FAX: 802-860-1014

October 22, 1996

Mr. Michael Young
Vermont Department of Environmental Conservation
Waste Management Division
103 South Main Street (West Office)
Waterbury, VT 05041-0404

Re: Perry's Oil Facility, Berlin, Vermont

Dear Mr. Young:

Enclosed is our Phase II Environmental Site Assessment on the Bulk Storage Facility at the above-referenced property.

If you have any questions or comments, please don't hesitate to call me.

Sincerely,

Jeffrey E. Noyes
Chief Hydrogeologist

JEN/jb

cc: Randy Rouleau
Bruce Bernier, VT Federal Bank

[U:\GNOYES\WPDOCS\YOUNG.L1]

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PERRY'S OIL
78 Barre-Montpelier Road
Berlin, Vermont

BULK STORAGE FACILITY
PHASE II ENVIRONMENTAL SITE ASSESSMENT

Prepared by:

Nelson, Heindel, and Noyes

Prepared for :

Vermont Federal Bank

October 22, 1996

PERRY'S OIL
BERLIN, VERMONT

BULK STORAGE FACILITY
PHASE II ENVIRONMENTAL SITE ASSESSMENT

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BULK OIL STORAGE FACILITY
PHASE II ENVIRONMENTAL SITE ASSESSMENT

EXECUTIVE SUMMARY

Nelson, Heindel, and Noyes (NH&N) has completed an investigation of Perry's bulk oil storage facility (Vermont Hazardous Waste Site number 95-1852) located at 78 Barre-Montpelier Road (Rt. 302) in Berlin, Vermont. The investigation included volatile organic vapor (VOC) testing in buildings, a soil boring/monitoring well installation program, laboratory analysis of groundwater samples, a sensitive receptor survey, tracing of floor and all storm water drains on the property, and a survey of the location of the monitoring wells.

The investigation was designed to define the nature and extent of soil and groundwater contamination associated with the five above ground storage tanks (ASTs). This work was intended to address Vermont Hazardous Materials Division, Site Management Section comments on a Phase II Environmental Site Assessment already submitted to the Agency[1]. An overview of the results of the NH&N investigation is presented below.

- Four new monitoring wells were installed in the AST vicinity. Groundwater samples were collected from these four and one previously installed monitoring well. Five samples (MW-3 to MW-7) were submitted for laboratory characterization by EPA Method 602 for aromatic hydrocarbons and by modified EPA Method 8100 for total petroleum hydrocarbons (TPH). The other two previously installed wells (MW-1 and MW-2) contained free phase fuel oil and hence were not sampled. Method 602

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[1] Griffin International Phase II Environmental Site Assessment September 7, 1995; Vermont HMMD Letter of Notification October 16, 1995.

results revealed toluene contamination (2.9 ppb) in both MW-3 and MW-5. No aromatic hydrocarbons were identified in MW-4 or MW-6. Unidentified aromatic hydrocarbons were present in wells MW-3, MW-4, MW-5, and MW-6. MW-7 contained no target or unidentified aromatic hydrocarbons. In the five wells sampled, no hydrocarbons were detected by the Modified EPA 8100 TPH test.

- The sensitive receptor survey included an inspection of the building basement and first floor and screening for volatile organic compounds (VOCs) with a photo-ionization detector, identification of the nearest surface water bodies, and identification of the nearest neighbors. No VOC contamination was detected in the basement or first floor of the building.

- Based upon the test data included in this report, releases from the AST site poses no imminent or immediate threat to human health.

- A nearby stream, the Stevens Branch of the Winooski River, is located approximately 100 feet to the west-southwest and is the only sensitive environmental receptor in the area. Drain dye tracing confirmed that the building floor drain and both property storm drains connect to the catch basin on the southern property boundary. The catch basin discharges via a culvert and ditch along the railroad into the Stevens Branch of the Winooski River. The building floor drain discharges to "waters of the State". This drain will need to be permitted or closed in place.

- The two storm water drains also do not have permits. Because construction of the site predates the State discharge permit program, no permit would be required for these storm drains.

- At present the risk from subsurface contamination to the Stevens Branch appears to be low since the contaminants found, do not seem to be migrating. The high PID readings in the upper soil levels at MW-6 may indicate a past surface spill (or spills). No sign of this was evident during this investigation. It appears that the greatest risk to the Stevens Branch is from a surface release.

- NH&N recommends that free product recovery from monitoring Well #1 and continued site monitoring occur.

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PERRY'S OIL
Bulk Oil Storage Facility
78 Barre-Montpelier Road
Berlin, Vermont

PHASE II ENVIRONMENTAL SITE ASSESSMENT

1.0 INTRODUCTION

1.1 Historical Perspective

In September 1995, the Vermont Federal Bank retained Nelson, Heindel & Noyes to review Phase I and Phase II site assessments performed by Griffin International on the Perry's Oil bulk storage terminal on the Barre-Montpelier Road in Berlin, Vermont. NH&N recommended that the site receive additional characterizations, based on the evidence of soil staining, a 1988 heating oil spill report (Appendix 1, page 6), and the four-decade-long history of fuel dispensing.

The site contains four, 20,000 gallon and one, 15,000 gallon above ground storage tanks (ASTs). These tanks have been leased to Perry's Oil Service since 1984. Perry's has only used the western two tanks to store No. 2 fuel oil. The other three tanks have been empty since 1984. Approximately 75,000 gallons of fuel oil are dispensed from this facility annually. The storage tanks are used to reload fuel delivery trucks on the occasion when a truck runs out of fuel oil while on its normal delivery route.[2] The tank facility was built circa 1952 and was operated by the Hartford Oil Company until 1984.

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2 Griffin International Phase II Environmental Site Assessment, September, 1995.

Based on the information contained in previous Griffin reports, the Sites Management Section (SMS) determined that additional work was necessary to define the nature and extent of contamination associated with the ASTs. Subsequently, the Vermont Federal Bank retained NH&N to complete a work plan for the additional site characterization. This work plan was approved and the investigation was completed between August 29 and September 3, 1996.

1.2 Purpose and Scope

The objectives of the investigation, as outlined in the July 1996 work plan approved by the SMS, included further characterization of the nature and extent of soil and groundwater contamination, and an assessment of the potential impact of the suspected contamination to sensitive receptors in the vicinity. This report documents, to the extent known, the history of the bulk oil facility, and presents the results of the subsurface investigation and the sensitive receptor survey. Conclusions and recommendations are presented in the final section.

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 Site Location and Physiography

The Perry's Bulk Oil facility is located at the back of a 0.4 acre lot on the south side of the Barre-Montpelier Road in Berlin (see Site Location Map and Site Plan, Appendix 1, pages 1 and 2). At the front of the lot is a two story commercial building, which is presently vacant. The most recent tenant was a sporting goods store. Prior to that, there was a retail lighting fixtures store and a meat market. No other property uses were identified. According to previous reports, 55 gallon drums had been stored in the basement; a previous owner, Fred Budzyn, thought that they had contained fuel oil.

The site is in a commercial area of Berlin. To the east is SW Rental, a tool and equipment rental shop and to the west is The World Press, a newspaper publisher. The southern border of the property is the Washington County Railroad right of way. South of the right of way is a drainage ditch and access road for the River Run Trailer Park. The ditch empties into the Stevens Branch of the Winooski River, which is to the southwest. Northward, across the Barre-Montpelier Road, are additional commercial properties.

The site and vicinity slopes southward, away from the road. The land is mostly covered by gravel with scrub weeds and brush along the railroad right of way. The Soil Conservation Survey for Washington County identifies soils in this area as Urban land (50%), Udipsamments (25%), Dumps (15%) and other soils (10%). These soils are nearly level on flood plains and stream terraces. The Urban land is defined by streets, parking lots and buildings. The Udipsamments consist of sandy soil material that has been altered by extensive grading, cutting and filling. The Dumps are areas of granite blocks, granite dust and pieces of concrete, brick and metal. Site-specific soil characteristics are described in Section 4.0.

The Stevens Branch of the Winooski River, located approximately 100 feet to the southwest, is the only watercourse in the area. The groundwater flow direction is westward toward the Stevens Branch (see the Groundwater Contour Map Appendix 1, page 4).

2.2 Existing Environmental Threats

Potential environmental hazards in the area are depicted on the map included in Appendix 1, page 2. There are no known environmental threats immediately upgradient of the subject property. The nearest potential hazard, located approximately one-half mile northwest along the Barre-Montpelier Road is Rossi Buick, an auto dealership. Rossi Buick is downgradient from the subject property and should pose no environmental threat.

2.3 Storage Tank History

The available information indicates the five above ground storage tanks were installed circa 1952. Perry's Oil used only the western two tanks since it began operation in 1984 to store No. 2 fuel oil. According to the previous report, gasoline and diesel fuel have also been stored in these tanks.

A eight inch wide by two foot high concrete berm surrounds the five tanks. A one foot deep test pit was dug inside the bermed area with a shovel. No evidence was found by this limited exploration or other observations of any containment underlying the tanks (plastic liner, compacted clay, etc.). The soil inside the bermed area appears to be the same type as in surrounding area, i.e. mixed fill of sand, gravel, and silt.

The spill history of the storage tank facility is limited. Significant surface staining is evident in front of the tanks inside the bermed area. Additional staining is evident outside the bermed area under the delivery truck filling tower.

The Vermont Hazardous Materials Division Spills Database lists one heating oil spill (spill report #88-088, April 21, 1988) occurring at the subject property. No spill quantity is given in the spill report, however the report describes a "small amount of oil stain on the ground near loading rack, small drip from valve". The incident was reported by an anonymous caller and the date and time are listed as "on-going". The VT HMMD incident report is included in Appendix 1, (page 6).

No reports or evidence was found of a single, catastrophic spill or tank failure, rather the contamination found appears to be a result of multiple spills from four decades of tanker truck loading and unloading operations.

3.0 METHODS OF INVESTIGATION

The objective of the subsurface investigation was to define the nature and extent of contamination associated with the bulk storage facility. The subsurface investigation included a soil boring and monitoring well installation program. The monitoring wells were developed and sampled for laboratory characterization. Procedures employed during this subsurface investigation are described below.

3.1 Soil Boring Completion

A total of seven soil borings and monitoring wells have been completed in the vicinity of the storage facility to define the nature and extent of soil contamination associated with the tanks. Three borings were drilled by Griffin International in 1995. Four were installed by NH&N as part of the present investigation. The boring locations are illustrated on the site plan included in Appendix 1, page 3. The boring depths range from approximately 9.5 to 19 feet bgs.

Soils from the four NH&N borings were logged from the ground surface to the total depth of each boring. Composite soil samples were collected from each split spoon sample at two foot intervals. Soil samples were permitted to equilibrate in a ziploc plastic bag prior to headspace screening. The headspace of each sample was tested with an H-Nu Systems, Inc. Model PI 101 photoionization detector (PID)

equipped with a 10.2 eV lamp. The PID was calibrated at the beginning of the day with a 100 ppm isobutylene span gas. Soil boring logs for these wells and the wells installed by Griffin are included in Appendix 2, (pages 1 through 11).

Soil screening results are discussed in Section 4.1 of this report.

3.2 Monitoring Well Installation and Sampling

The four NH&N soil borings were advanced to the water table to evaluate the extent of soil contamination in the deeper subsurface and to install groundwater monitoring wells. The monitoring well locations (#1-#3 installed by Griffin, #4-#7 installed by NH&N) are depicted on the site plan in Appendix 1, page 3. NH&N monitoring wells are constructed of 2" (i.d.) PVC casing with flush-threaded joints and a ten foot, factory slotted screened section (0.020" slot). The screened section was covered with filter sock, and the borehole around the screen was filled with clean native soil. A one foot bentonite seal was placed above the screened section. The wells were protected with flush mounted curb boxes. Monitoring well construction diagrams are included in Appendix 2, (pages 1 to 7).

The newly installed monitoring wells were developed after installation by bailing approximately ten well volumes. Wells #3 through #7 were sampled with disposable bailers five days later (September 3, 1996) for laboratory analysis. Four 40 mL vials were collected from each well. The samples were preserved with hydrochloric acid and stored on ice until delivered to the laboratory. The groundwater samples were analyzed by EPA Method 602 for aromatic hydrocarbons and by Modified EPA 8100 for total petroleum hydrocarbons (TPH).

Wells #1 and #2 were not sampled because they both contained layers (3.54' and 0.01' respectively) of free product.

The groundwater analytical data is discussed in Section 4.3 of this report. After sampling the wells were surveyed. The water level in each well was measured prior to bailing. A groundwater contour map is included in Appendix 1, (page 4).

3.3 Stormwater and Building Floor Drain Status

Three drains were identified on site. There is a storm water drain in the road right of way at the northeast corner of the property next to Route 302, a second storm water drain in the center of the lot, and a floor drain in the basement of the commercial building. All three drains were dye traced and a connection was confirmed between each drain and the storm water catch basin south of the berm around the fuel tanks. This catch basin has two lines entering, the larger of which is connected to the road storm drain. The smaller entrance line is connected to the center storm drain and basement floor drain. A single outfall connects to the ditch south of the railroad right of way via a 24" culvert. This culvert discharges to the ditch approximately four feet to the east of the access road. The ditch ends at a 24" culvert, which passes under the access road to the Stevens Branch of the Winooski River.

Under the State's current regulations the building floor drain is illegal[3]. There are several options for the building drain which include:

1. The building owner can apply for a discharge permit in order to continue using the drain as it is now.

2. Connect the drain to a leachfield and obtain an underground injection control (UIC) permit.

3. Permanently seal the floor drain.

Mr. Randy Bean of the Vermont Wastewater Management Division found no records of permits for either of the storm water drains. Because of the age of the facility, it predates the discharge permit requirement for storm water drain systems. Therefore, no permit is required. Mr. Bean stated that a review of the system and discharge permit would be required if new construction took place on the property or if releases to the environment were traced to this drain system.

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[3] Telephone call to Dan Warnick, Agency of Natural Resources Barre Office, October 2, 1996.

3.4 Commercial Building VOC Screening

Because there had been a report of the storage of 55 gallon drums in the basement and because of the fuel oil release, the commercial building was screened for VOC contamination using a PID[4]. The building is a single storey wood frame building with a full, walk out basement. The building is vacant.

The basement contains a 275 gallon fuel oil AST. This tank is in good condition and no spills or staining under the tank were evident. The rest of the basement was empty. No floor staining was noted. A floor drain was observed and traced. No non-zero PID readings were noted in the building, except at the AST vent pipe. The PID results are compiled below.

PID RESULTS	
PID READING (ppm)	**LOCATION**
0.0	Background
0.0	First floor retail area
0.0	First floor bathroom
0.0	Basement floor drain
0.0	Under fuel oil AST
0.0	Crack in concrete floor
237	Fuel oil AST vent pipe

4.0 CONTAMINANT DISTRIBUTION

The contaminant distribution in soil and groundwater is discussed below.

4.1 Soil

During the soil boring program, soils were logged and screened at two foot intervals. The general stratigraphic sequence for the upper four feet of soil consists of brown, medium to coarse gravelly sand, followed by fine sand with

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4 Photovac Microtip 10.6 eV photoionization detector calibrated with 100 ppm isobutylene span gas before use.

varying amounts of silt to a depth of 15' ±. Field testing results are included in the soil boring logs (Appendix 2, pages 1 through 11).

Geologically this sequence appears to be a thin veneer of alluvial sediments underlain by glacial till. It is believed that the adjacent Stevens Branch scoured surficial regions of the glacial till creating a nonconformity with the newly deposited river sediment. The coarse, gravelly nature of the overlying sediment would suggest a high energy depositional environment. The alluvial unit appears to be limited to the north by a small flood plain extending to Rt. 302.

The field screening results of PID testing of soil borings are compiled below.

SOIL SCREENING RESULTS			
BORING LOCATION	DEPTH	PID RESPONSE (ppm)	COMMENTS
MW-1	2'	2	MW-1 to MW-3 from Griffin well logs
MW-1	5.5'	21	
MW-1	7.5'	8	water table at 7.75'
MW-1	10.5'	0.5	
MW-1	13.0'	0.5	base of well - 13'
MW-2	3'	0	
MW-2	10'	0	
MW-2	10.5'	0	water table at 12.0'
MW-2	14.5'	0	
MW-2	15'	0.5	
MW-2	19'	0.5	base of well - 19'
MW-3	--	--	water table at 2.5', base of well -9.5'
MW-4	0 - 2'	1.2	
MW-4	2 - 4'	1.4	
MW-4	4 - 6'	1.4	water table at 6.7'
MW-4	6 - 8'	1.2	completed to 13', slight odor noted in soil sample
MW-5	0 - 2'	1.2	
MW-5	2 - 4'	1.2	
MW-5	4 - 6'	1.6	

SOIL SCREENING RESULTS			
BORING LOCATION	DEPTH	PID RESPONSE (ppm)	COMMENTS
MW-5	6 - 8'	1.6	
MW-5	8 - 10'	1.6	water table at 9.7' completed to 15'
MW-6	0 - 2'	11.4	
MW-6	2 - 4'	14.0	
MW-6	4 - 6'	15.8	
MW-6	6 - 8'	15.6	water table at 7.5'
MW-6	8 - 10'	15.4	completed to 13', slight odor noted in soil sample
MW-7	0 - 2'	0.4	
MW-7	2 - 4'	0.6	
MW-7	4 - 6'	0.8	water table at 5.3'
MW-7	6 - 8'	1.2	completed to 11.5'

PID responses vary from 0.4 to 21 ppm. The field screening results suggest that releases from the AST (leaks, spills) have had an impact on the near surface and subsurface soils in the tank vicinity and down gradient from the release point(s).

4.2 Groundwater

Seven monitoring wells have been installed in the tank vicinity and down gradient to evaluate groundwater quality. The wells were sampled for laboratory characterization by EPA Method 602 and modified EPA 8100 TPH. The laboratory analytical reports are presented in Appendix 3, (pages 1 through 11). The analytical data are compiled below.

GROUNDWATER ANALYTICAL RESULTS								
Compound	Detection Limit (µg/L)	Concentration (µg/L)						
		MW-3	MW-4	MW-5	MW-6	MW-7	field blank	state standards[1]
Benzene	1	ND[2]	ND	ND	ND	ND	ND	1.2
Chlorobenzene	1	ND	ND	ND	ND	ND	ND	--[3]

GROUNDWATER ANALYTICAL RESULTS								
Compound	Detection Limit (µg/L)	Concentration (µg/L)						
		MW-3	MW-4	MW-5	MW-6	MW-7	field blank	state standards[1]
1,3-Dichlorobenzene	1	ND	ND	ND	ND	ND	ND	400
Ethylbenzene	1	ND	ND	ND	ND	ND	ND	3100
Toluene	1	2.9	ND	2.9	ND	ND	ND	6800
Xylenes	1	ND	ND	ND	ND	ND	ND	--
MTBE	10	ND	ND	ND	ND	ND	ND	--
total petroleum hydrocarbons	1000	ND	ND	ND	ND	ND	ND	--
Unidentified Peaks	-	5	1	2	>10	0	0	--

[1] 1996 Vermont State Water Quality Standards
[2] Not detected
[3] No standard in effect

Toluene was detected in wells #3 and #5. Wells #3, #4, #5, and #6 all contained unidentified compounds in the sample chromatograms. No EPA 602 compounds or unidentified peaks were found in Well #7, which is the farthest down gradient well from the storage tanks. None of the sampled wells contained a detectable quantity of total petroleum hydrocarbon (TPH).

Water levels in the monitoring wells were measured in order to determine the direction of groundwater flow. The table below summarizes those results.

WATER LEVEL TABLE			
WELL	TOP OF PIPE ELEVATION (FT)	WATER DEPTH BELOW TOP OF PIPE (FT)	WATER TABLE ELEVATION (FT)
MW-1	97.91	--	--
MW-2	99.58	12.59	86.99
MW-3	96.76	4.25	92.51
MW-4	97.52	7.46	90.06
MW-5	97.52	10.17	87.40
MW-6	94.46	7.50	86.96
MW-7	92.77	5.29	87.48

The groundwater flow direction is to the west and southwest toward the Stevens Branch of the Winooski River. The low concentration of toluene present and the lack of detectable TPH in the wells tested, indicate that the severest contamination is restricted to the tank area.

The water sampling results indicate a localized area of subsurface contamination. This appears to be the result of decades of oil delivery truck loading. (The VT HMMD spill report lists "ongoing" as a spill date.) The monitoring well MW #1, almost underneath the filling tower, contained 3.5 feet of free product, yet surrounding wells (except MW #2) had very low or no detectable contamination.

Although MW #6 had no identified EPA 602 target contaminants, unidentifiable compounds were found. During well installation uniform, relatively high (11.4 - 15.8 ppm) PID readings were noted in headspace samples of the soil, throughout the depth of the well. This appears to be an indication of past, surface spill(s). The spill(s) may have migrated from the property via the stormwater catch basin culvert and connecting ditch at the rear of the property. At the time of inspection and during a follow up visit one month later no signs (surface staining, water sheens) of petroleum contamination were observed at the culvert outfall or ditch.

5.0 SENSITIVE RECEPTOR SURVEY

Contamination associated with the storage facility could potentially impact human and environmental receptors. As a consequence, the VT DEC requested that a sensitive receptor survey be performed, with particular emphasis on the basement of the on-site commercial building, nearby surface water, and public or private drinking water wells located in the vicinity. The results of the receptor survey are presented below.

5.1 Human Receptors

Humans can be exposed to contaminants through three major pathways, including ingestion, inhalation, and dermal contact. Exposure through ingestion occurs by the consumption of contaminated foodstuffs or drinking water. The adjacent businesses employ Barre municipal water. The nearby River Run Trailer Park uses Berlin municipal water. No commercial food crops or private gardens were noted growing in the site vicinity.

The dermal contact pathway involves exposure by physical contact with contaminated soil, surface water, or groundwater, with subsequent absorption of contaminants through the skin. During the soil borings, maximum PID readings of 11.4 ppm were encountered in the surface soils (0-2') at well #6. This is a hard packed gravel access road. Although contaminants were found at relatively shallow depths, due to the nature of the ground surface, the potential for human contact with contaminants is considered to be negligible.

The potential for inhalation exposure to occur is considered negligible. The nearest buildings with basements are all up-gradient. The air in the commercial building was screened and only one non-zero PID reading was found (this occurred at the basement above ground fuel oil tank vent pipe. There was no PID signature in the ambient air on the property. The nearest down gradient building is a mobile home. This structure is approximately 120 feet south of the storage tanks and does not have a basement.

5.2 Environmental Receptors

A storm water catch basin is located adjacent and down gradient to the berm of the storage facility. Water in this catch basin could potentially become contaminated through either the inlet pipes or cracks in the basin concrete. This catch basin drains into a ditch on the south side of the railroad right of way via a culvert. There is approximately three of open ditch before another culvert, which drains the ditch under the access road to the Stevens Branch. At the time of the groundwater sampling and at a follow up visit one month later, no sheens or odors were observed in either the catch basin, ditch, culverts leading to the Stevens Branch, or the Stevens Branch itself.

Given that there is evidence of soil contamination in the tank vicinity, the principal environmental receptors in the area are groundwater below the tank and surface water courses nearby. The analytical evidence indicates a limited amount of groundwater has been impacted by contamination associated with the ASTs. Drain tracing showed that all drains on the property empty to the catch basin south of the ASTs and from there via the ditch and culverts into the Stevens Branch of the Winooski River, the only water course in the area.

6.0 CONCLUSIONS AND RECOMMENDATIONS

NH&N has completed an investigation of the Perry's bulk oil storage facility on the Louis Alden property in Berlin, Vermont. The investigation included a subsurface sampling and testing program and an evaluation of potential sensitive receptors. Conclusions and recommendations are presented below.

1. VOC concentrations for soil samples collected during the new soil boring program ranged from 0.4 to 15.8 ppm. No non-zero PID readings were recorded in these samples.

2. Four new groundwater monitoring wells were installed in the tank vicinity and down gradient. No VOC contamination was observed in the interface zone (capillary fringe-water table) during installation or sampling. A petroleum odor was noted at two of these wells. Two previously installed wells were not sampled due to the presence of free product in the well. Toluene was the only EPA Method 602 target analyte detected. Unidentified compounds were detected in four out of five groundwater samples. The total petroleum hydrocarbon level by modified EPA 8100 was under 1 ppm (the detection limit) in the five sampled monitoring wells. The approximate location of the limits of the contaminant plume is shown on the map in Appendix 1, (page 5).

3. The contaminant distribution observed in soil and groundwater is consistent with fuel oil contamination of the subsurface from an AST source.

4. The results of the investigation indicate the AST site poses no imminent or immediate threat to human health; however, the potential exists for impact to the environment (Stevens Branch of the Winooski River).

5. The Stevens Branch of the Winooski River, is located approximately 100 feet to the west-southwest and is the only sensitive environmental receptor in the area. Drain dye tracing confirmed that the building floor drain and both property storm drains connect to the catch basin on the southern property boundary. The catch basin discharges via a culvert and ditch along the railroad into the Stevens Branch of the Winooski River.

6. Under the State's current regulations the building floor drain is illegal. There are several options for the building drain which include:

    1. The building owner can apply for a discharge permit in order to continue using the drain as it is now.

    2. Connect the drain to a leachfield and obtain an underground injection control (UIC) permit.

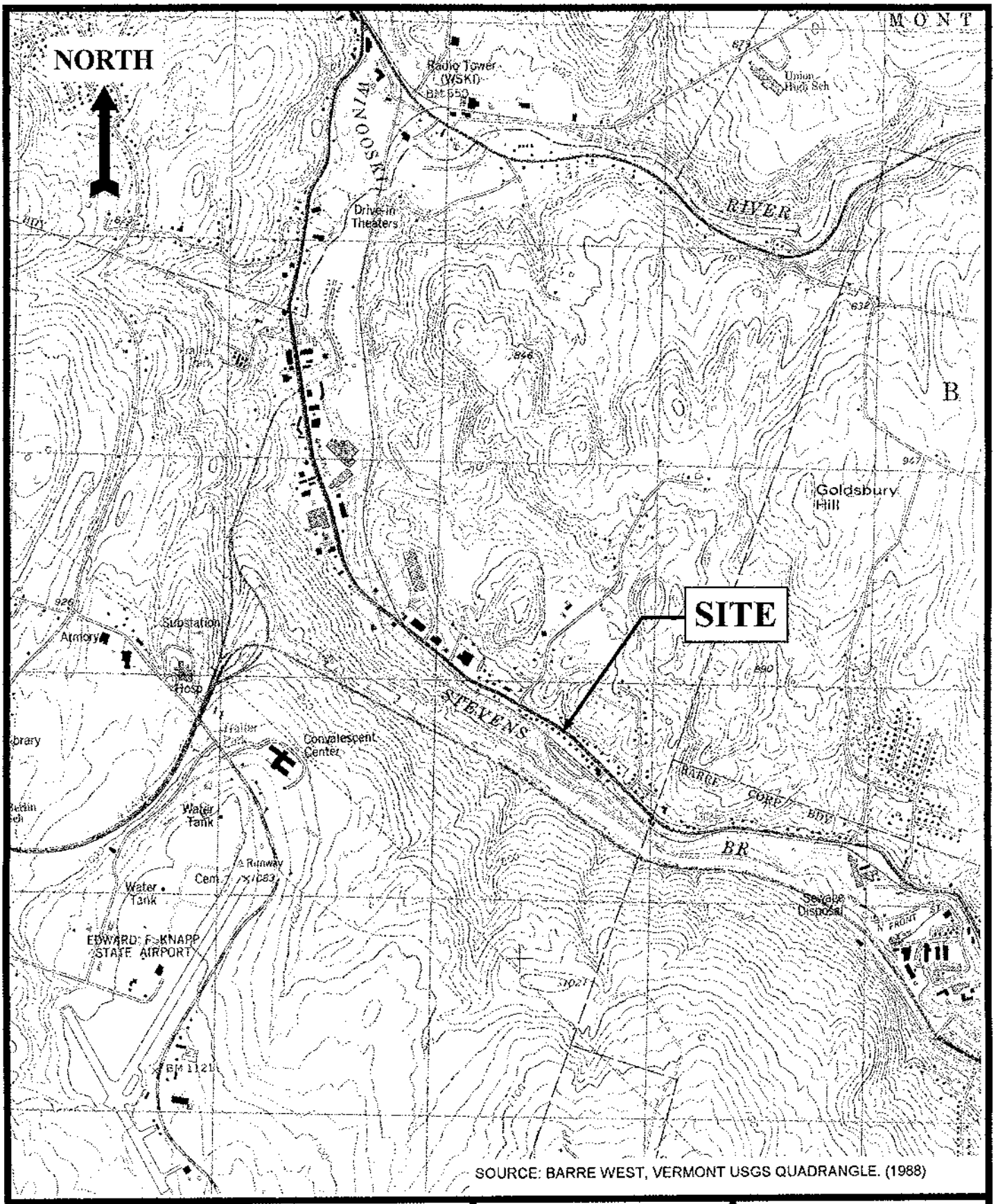
    3. Permanently seal the floor drain.

7. Mr. Randy Bean of the Vermont Wastewater Management Division found no records of permits for either of the storm water drains. Because of the age of the facility, it predates the discharge permit requirement for storm water drain systems. Therefore, no permit is required. Mr. Bean stated that a review of the system and discharge permit would be required if new construction took place on the property or if releases to the environment were traced to this drain system.

8. The low amount of toluene present and the lack of total petroleum hydrocarbon (TPH) in wells #3-#7 indicate that the contamination appears to be very localized. NH&N recommends that continued site monitoring occur while remediation options are investigated.

9. Immediate activity should be for the recovery of free product from MW #1.

This report was prepared for the use of the Vermont Federal Bank. The conclusions provided by NH&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.

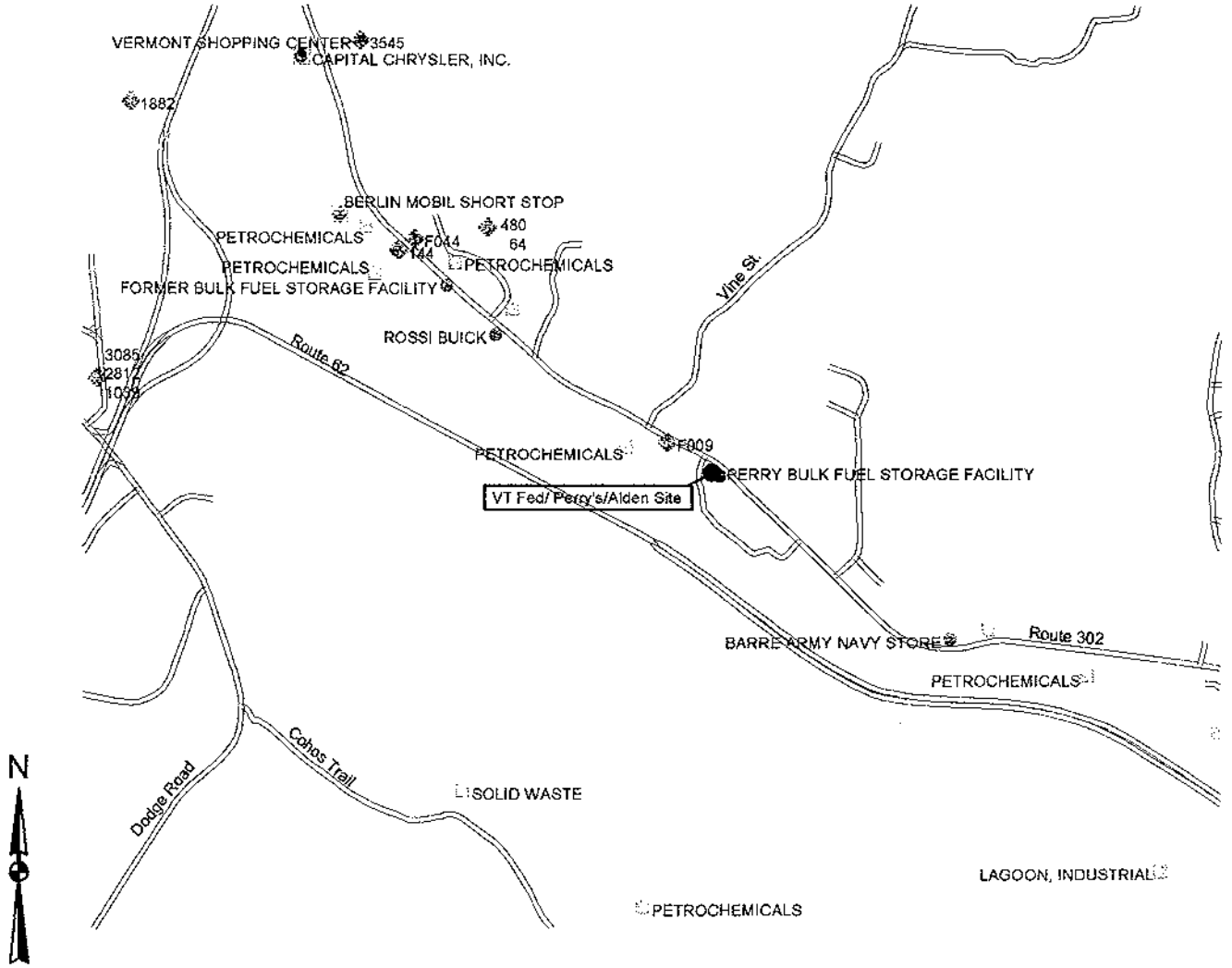


SOURCE: BARRE WEST, VERMONT USGS QUADRANGLE. (1988)

VT. FED./PERRY'S OIL	DATE: SEPTEMBER 27, 1996
BERLIN, VERMONT	PROJECT NO.: 96169
SITE LOCATION MAP	DRAWN BY: M. Luman
SCALE: 1"=2000'	PROJ. MGR: G. Noyes
FILE: C:\PERRYOIL\SITEMAP	APPROVED: J. Noyes

Nelson, Heindel, and Noyes, Inc.
• Hydrogeology • Ecology •
• Environmental Engineering •
CONSULTING SCIENTISTS AND ENGINEERS
P.O. BOX 64709 – BURLINGTON, VERMONT 05406
PREPARED BY: INFORMATION & VISUALIZATION SERVICES

Environmental Hazards and Locations With Test Data Surrounding Perry's/Alden Site, Rte. 302, Berlin, VT



STATE DESIGNATED HAZARDOUS WASTE SITE.
(Last updated 7/96, next update 10/96)

OLD STATE DESIGNATED HAZADOUS WASTE SITE.
(No longer on the State HWS List as of 7/96)

UNDERGROUND STORAGE TANK
(On the 7-96 State UST List, all sites are not located)

SITE SPECIFIC DATA AVAILABLE. (Last updated 7-15-96, next update 10-1-96)
NOT NECESSARILY INDICATIVE OF AN ENVIRONMENTAL HAZARD.

POTENTIAL SOURCE OF GROUNDWATER POLLUTION. (1980)
(IE. LANDFILL, INDUSTRIAL WASTE, FARMING, SALT, JUNK YARD, ETC.)

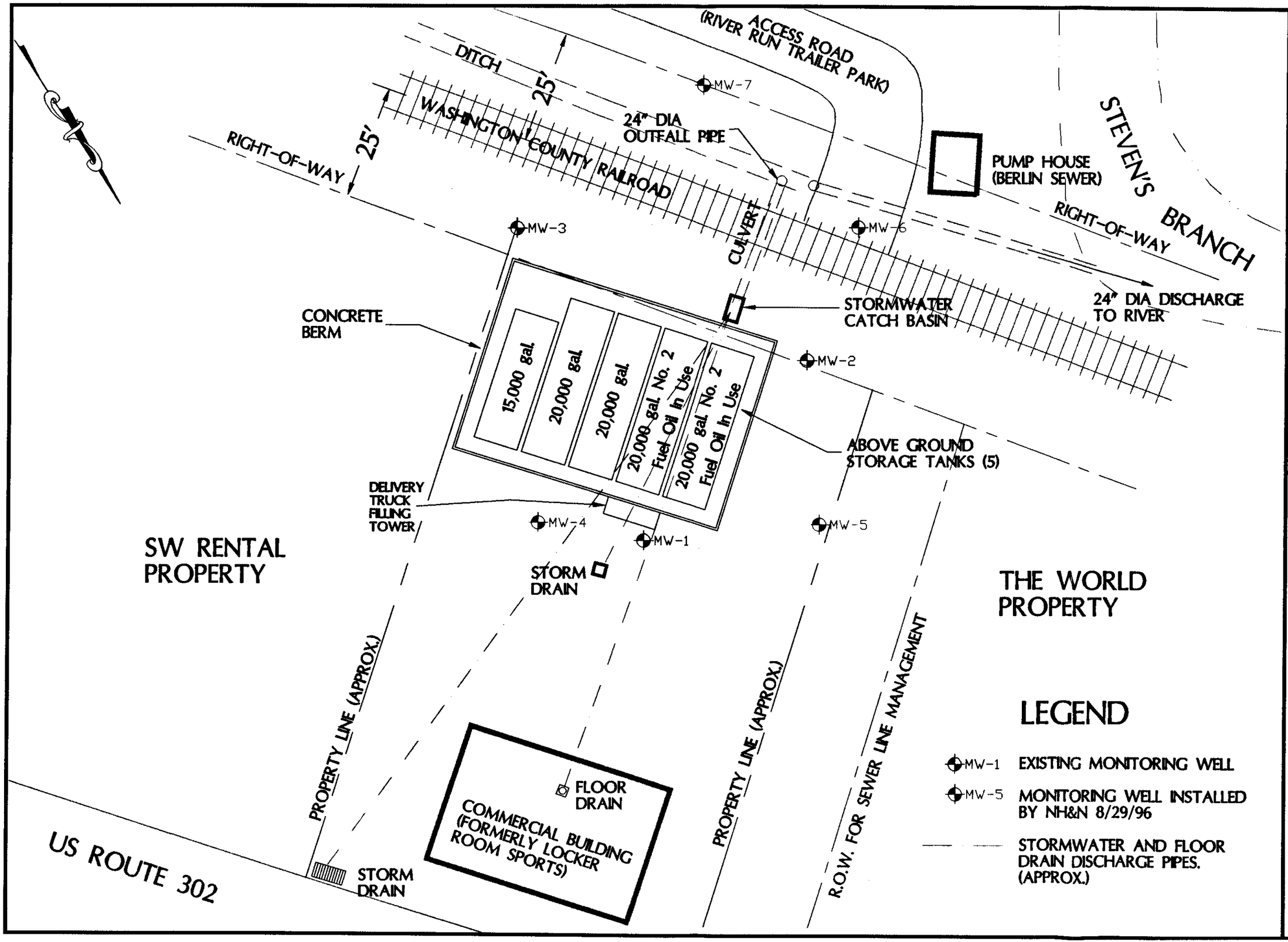
NOTE:
TEST DATA SITES INDICATE
INVESTIGATIONS OF AN ECOLOGICAL,
GEOLOGICAL OR PLANNING NATURE

MOST FEATURES ACCURATE +/- 152

INFORMATION & VISUALIZATION SERVICES

1000 0 1000 Feet

P.O. Box 64709 - Burlington, Vermont - 05406-4709 - Tel: (802) 865-0437 - Fax: (802) 860-1014 - Email: IVSBURL@AOL.COM



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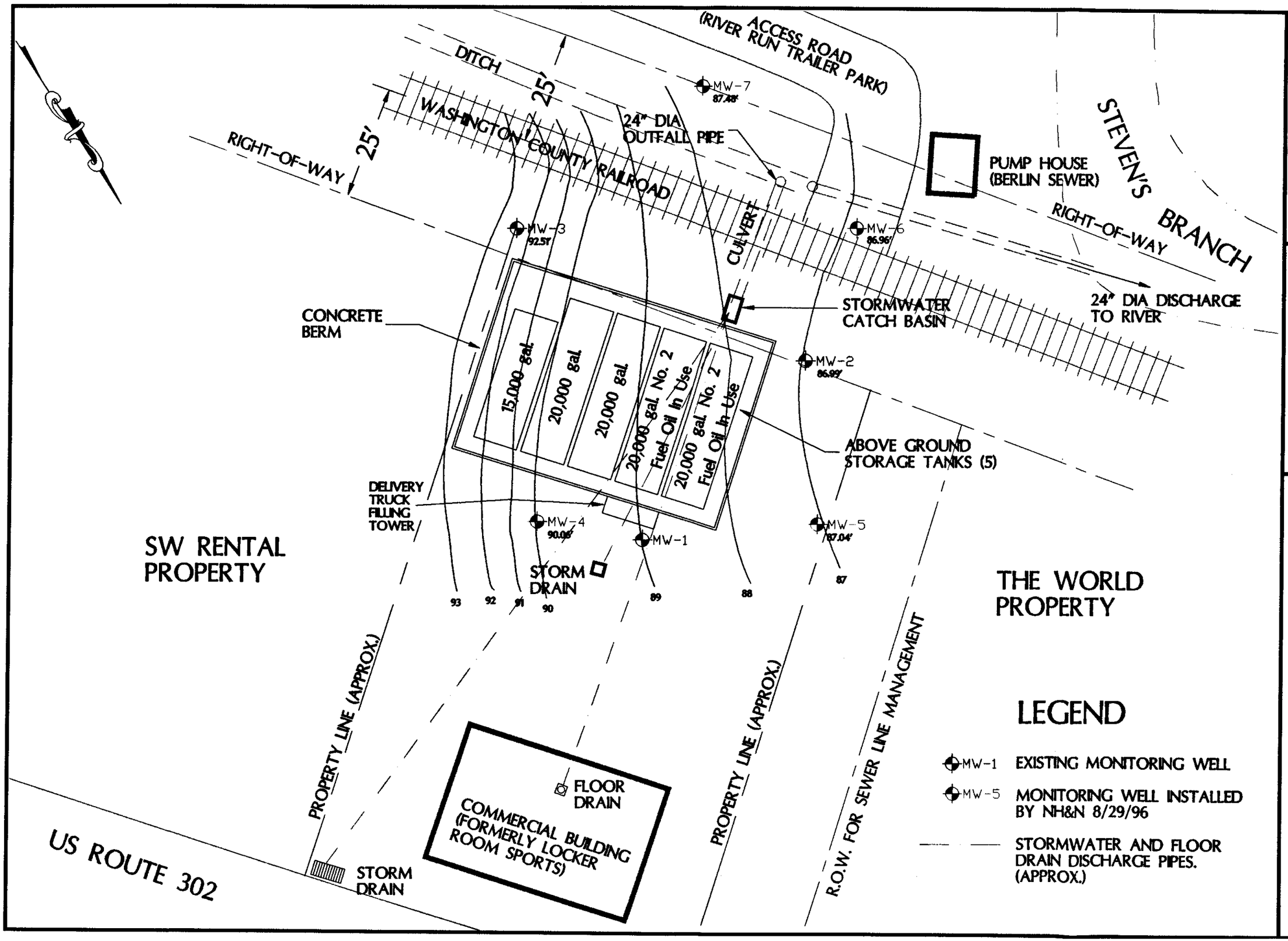
• Hydrogeology • Ecology •
• Environmental Engineering •
CONSULTING SCIENTISTS AND ENGINEERS
P.O. BOX 64709
BURLINGTON, VERMONT 05406-4709
Prepared By:
Information & Visualization Services

DATE: SEPTEMBER 27,1996
PROJECT NO. 96169
DRAWN BY: K. Bryan
PROJ. MGR: L. Noyes
APPROVED: L. Noyes
☒ DRAFT ☐ FINAL

VT. FED – PERRY'S – ALDEN PROPERTY
SO. BURLINGTON, VT

SITE PLAN

SCALE: 1"=20'
FILE: D:\VTFED\SITEPLAN



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VT. FED – PERRY'S – ALDEN PROPERTY
SO. BURLINGTON, VT

GROUNDWATER CONTOUR MAP – (9-3-96)

SCALE: 1"=20'

FILE: D:\VTFED\SITEPLAN

(RIVER ACCESS ROAD
RIVER RUN TRAILER PARK)

DITCH

25'

25'

RIGHT-OF-WAY

WASHINGTON COUNTY RAILROAD

MW-7
BTEX-ND
TPH-ND

24" DIA
OUTFALL PIPE

PUMP HOUSE
(BERLIN SEWER)

STEVEN'S BRANCH

RIGHT-OF-WAY

MW-3
BTEX-2.9
TPH-ND

CULVERT

MW-6
BTEX-ND
TPH-ND

24" DIA DISCHARGE
TO RIVER

STORMWATER
CATCH BASIN

CONCRETE
BERM

15,000 gal.

20,000 gal.

20,000 gal.

20,000 gal. No. 2
Fuel Oil In Use

20,000 gal. No. 2
Fuel Oil In Use

MW-2
FREE PRODUCT

ABOVE GROUND
STORAGE TANKS (5)

DELIVERY
TRUCK
FILLING
TOWER

MW-4
BTEX-ND
TPH-ND

MW-1
FREE PRODUCT

MW-5
BTEX-2.9
TPH-ND

APPROXIMATE
LIMIT OF
DISSOLVED
PHASE PLUME

SW RENTAL
PROPERTY

STORM
DRAIN

APPROXIMATE
LIMIT OF
FREE PRODUCT
PHASE

THE WORLD
PROPERTY

PROPERTY LINE (APPROX.)

PROPERTY LINE (APPROX.)

R.O.W. FOR SEWER LINE MANAGEMENT

FLOOR
DRAIN

COMMERCIAL BUILDING
(FORMERLY LOCKER
ROOM SPORTS)

US ROUTE 302

STORM
DRAIN

LEGEND

- MW-1 EXISTING MONITORING WELL
- MW-5 MONITORING WELL INSTALLED BY NH&N 8/29/96
- STORMWATER AND FLOOR DRAIN DISCHARGE PIPES. (APPROX.)
- ND - NONE DETECTED

Nelson, Heindel, and Noyes
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VT. FED – PERRY'S – ALDEN PROPERTY
SO. BURLINGTON, VT

CONTAMINANT DISTRIBUTION MAP – (9-3-96) – ppb

SCALE: 1"=20'

FILE: D:\VTFED\SITEPLAN

CASE # 88-88

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

INCIDENT REPORT

Date/Time: 4-22-88 0900 Person Taking Report: Ken Rota

LOCATION:

Town/City: Berlin
Road/Street/Highway: Berry Montpelier Road
Address/Mile Marker: Behind Budrin Beef

PERSON MAKING REPORT:

Name/Organization: Anonymous Caller
Address:
Telephone #:

Is this an emergency? NO
Nature of Incident: Oil Spills
Date/Time of Incident: On-going
Type of Contaminant: Heating Oil
Quantity of Contaminant:
Responsible Parties:
owner/operator: Berry Oil
shipper/consignee:
carrier/facility:

Other Information:

Oil Spill at Bulk Facility
owner Lou Alden - Operation Berry oil

Case Assigned to Which Section: Spills

Priority: High (Medium) Low

Actions Taken:

Ken Rota to scene - small amount of oil Stain on ground near Loading Rack
Small Drip from Valve

cc to:
___ Dept of Health
___ Dept of Motor Vehicles
___ Dept of Fish & Wildlife
___ U.S. EPA
___ Dept of Agriculture
___ Dept of Labor & Industry
___ Emergency Management

Case Closed: Date: _____

TOTAL P.02

WELL NUMBER MW1

PROJECT PERRY'S OIL

LOCATION BARRE-MONTPELIER ROAD BERLIN, VERMONT

DATE DRILLED 8/11/95 TOTAL DEPTH OF HOLE 13.5'

DIAMETER 2.75"

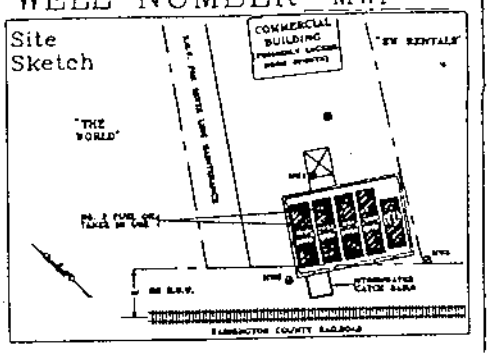
SCREEN DIA. 1.5" LENGTH 10' SLOT SIZE 0.010"

CASING DIA. 1.5" LENGTH 2.5' TYPE sch 40 pvc

DRILLING CO. ADAMS CONST. DRILLING METHOD VIB. CORING

DRILLER GERRY ADAMS LOG BY K. UNDERWOOD

Site Sketch



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX			0
		LOCKING WELL CAP			
		CONCRETE			
1		NATIVE BACKFILL			1
		BENTONITE			
2			2' 2 ppm	Medium brown to dark brown, coarse to fine SAND and fine rounded GRAVEL, trace silt, dry, mild odor.	2
3		WELL RISER			3
4					4
5					5
		SAND PACK			
6			5.5' 21 ppm	Medium gray, stained coarse to fine SAND, trace gravel, moist, moderate to strong fuel oil smell.	6
7			7.5' 8 ppm	7.75' WATER TABLE	7
8		WELL SCREEN			8
9				Medium gray, stained very fine SAND, some silt, moderately stiff, moist to wet.	9
10			10.5' 0.5 ppm	Medium gray, medium to fine SAND, saturated, no sheen, mild odor.	10
11					11
12		BOTTOM CAP			12
			13.0' 0.5 ppm	Medium gray, very fine SAND, some silt, wet, mild odor.	13
13				Medium gray, medium to fine SAND, wet, mild petroleum odor.	
14		UNDISTURBED NATIVE SOIL		BASE OF WELL AT 13.0' END OF EXPLORATION AT 13.5'	14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

WELL NUMBER MW2

PROJECT PERRY'S OIL

LOCATION BARRE-MONTPELIER ROAD BERLIN, VERMONT

DATE DRILLED 8/11/95 TOTAL DEPTH OF HOLE 19.0'

DIAMETER 2.75"

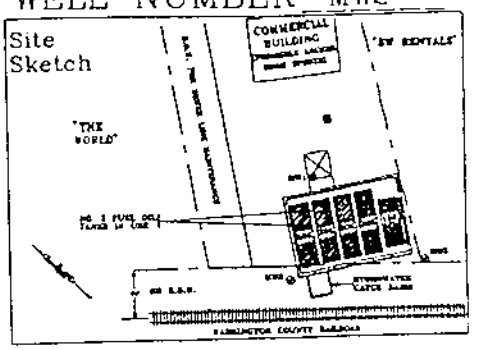
SCREEN DIA. 1.5" LENGTH 10' SLOT SIZE 0.010"

CASING DIA. 1.5" LENGTH 8.5' TYPE sch 40 pvc

DRILLING CO. ADAMS CONST. DRILLING METHOD VIB. CORING

DRILLER GERRY ADAMS LOG BY K. UNDERWOOD

Site Sketch



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX			0
1		LOCKING WELL CAP			1
		CONCRETE			
		NATIVE BACKFILL			
2				Grayish brown coarse to fine grained SAND with fine to medium GRAVEL, subrounded to rounded, dry.	2
3		BENTONITE	3' 0 ppm		3
4					4
5					5
6				Medium gray fine grained SAND, moist to wet, mild petroleum odor.	6
7		WELL RISER			7
8					8
9					9
10			10' 0 ppm	Medium gray fine SAND, moist.	10
				Medium brown coarse to fine SAND, trace of fine gravel, moist.	
11			10.5' 0 ppm	Medium gray, stained fine SAND, moist, moderate to strong petroleum odor.	11
12		WELL SCREEN		12.0' WATER TABLE ▼	12
13					13
14			14.5' 0 ppm	Medium gray, coarse to fine SAND, very moist, moderate petroleum odor.	14
15		SAND PACK	15' 0.5 ppm		15
16				Medium gray to brownish gray, coarse to fine SAND, wet, moderate petroleum odor.	16
17					17
18		BOTTOM CAP		Dark gray, coarse SAND and fine to medium GRAVEL, subrounded to rounded, strong petroleum odor.	18
19			19' 0.5 ppm		19
20		UNDISTURBED NATIVE SOIL		BASE OF WELL AT 19.0' END OF EXPLORATION AT 19.0'	20
21					21
22					22
23					23
24					24
25					25

WELL NUMBER MW3

PROJECT PERRY'S OIL

LOCATION BARRE-MONTPELIER ROAD BERLIN, VERMONT

DATE DRILLED 8/11/95 TOTAL DEPTH OF HOLE 9.5'

DIAMETER 2.75"

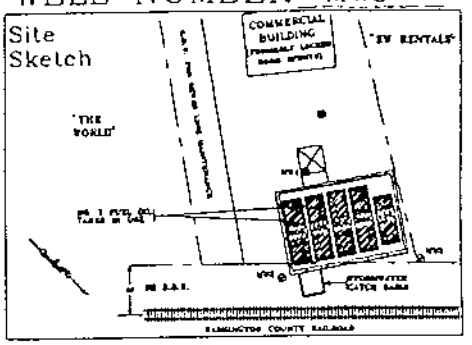
SCREEN DIA. 1.5" LENGTH 7.0' SLOT SIZE 0.010"

CASING DIA. 1.5" LENGTH 2.0' TYPE sch 40 pvc

DRILLING CO. ADAMS CONST. DRILLING METHOD VIB. CORING

DRILLER GERRY ADAMS LOG BY K. UNDERWOOD

Site Sketch

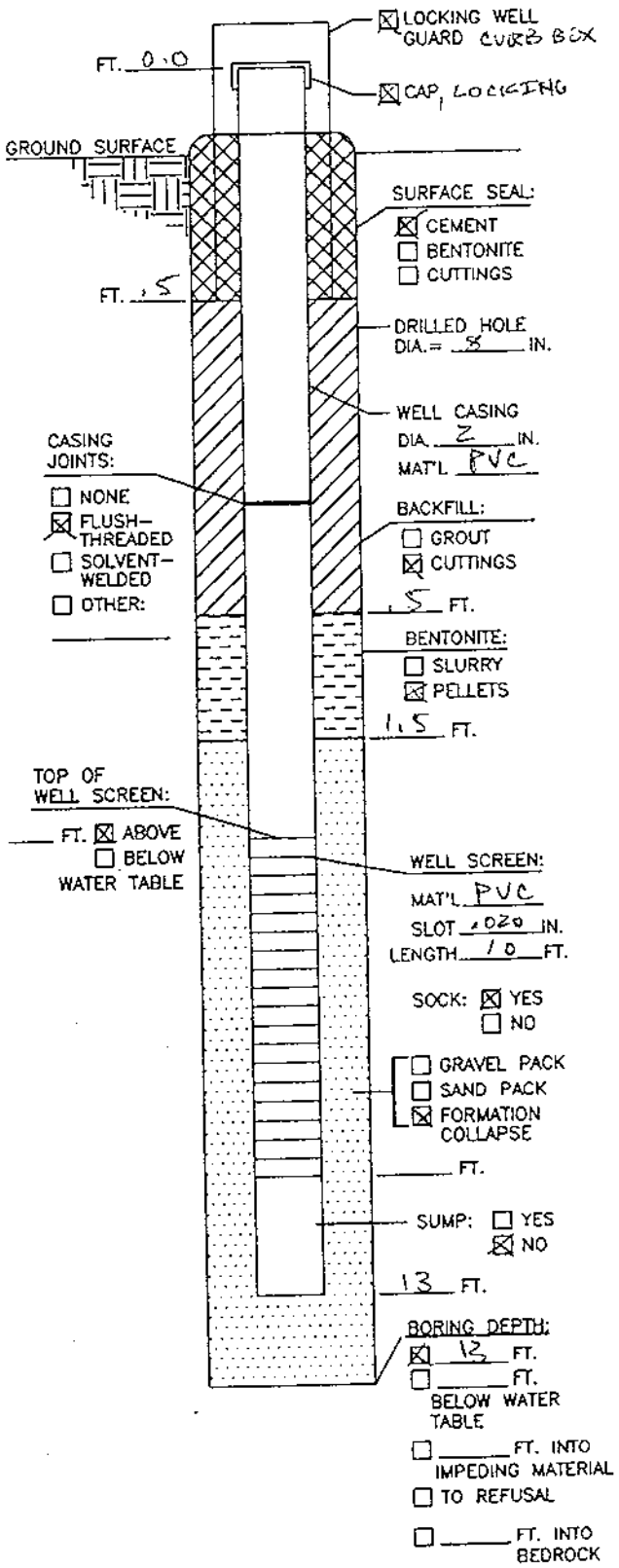


GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX LOCKING WELL CAP CONCRETE			0
1		BENTONITE		Medium brown, coarse to fine SAND and GRAVEL.	1
2		WELL RISER		2.5' WATER TABLE	2
3					3
4		WELL SCREEN			4
5					5
6				Grayish brown, stiff SILT, some fine grained sand, wet, no odor.	6
7		SAND PACK			7
8				Medium gray, moderately stiff SILT, trace fine grained sand, wet, no odor.	8
9		BOTTOM CAP			9
10		UNDISTURBED NATIVE SOIL		BASE OF WELL AT 9.5' END OF EXPLORATION AT 9.5'	10
11					11
12					12
13					13
14					14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

WELL CONSTRUCTION LOG

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT



PROJECT PERRY'S OIL

WELL # MW-4

JOB # 93508.1

TOWN/CITY/STATE BERLIN, VT

INSTALLATION DATE(S) 8.29.96

DRILLING METHOD HSA

DRILLING FLUID TYPE _____ VOLUME _____

DRILLING CONTRACTOR M&W SOILS ENGINEERING

WELL DEVELOPED? ☒ YES ☐ NO

IF YES, THEN VOLUME RECOVERED IS 9.0 GAL.

IF YES, BY WHOM? A. HOAK

DATE: 8.29.96

STATIC DEPTH TO WATER 6.7 FT. BELOW TOP OF CASING

☒ MEASURED ☐ ESTIMATED ON DATE: 8.29.96

SPLIT-SPOON SAMPLES? ☒ YES ☐ NO

IF YES, THEN INTERVAL IS _____ FT. OR ☒ CONTINUOUS

WELL PURPOSE MONITORING

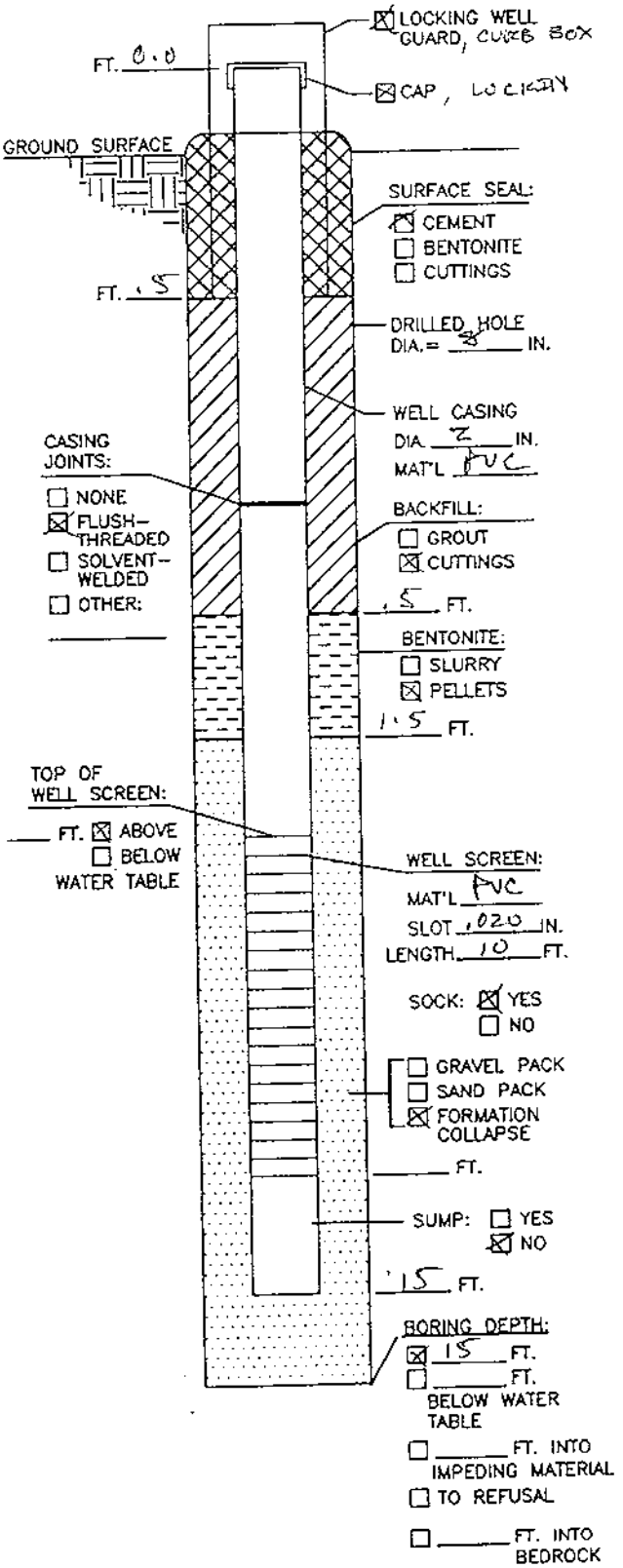
REMARKS

PREPARED BY [signature]

DATE 9.4.96

WELL CONSTRUCTION LOG

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT



PROJECT Perry's Oil

WELL # MW-5

JOB # 93508.1

TOWN/CITY/STATE Berlin, VT

INSTALLATION DATE(S) 8·29·96

DRILLING METHOD HSA

DRILLING FLUID TYPE _____ VOLUME _____

DRILLING CONTRACTOR M & W Soils Engineering

WELL DEVELOPED? ☒ YES ☐ NO

IF YES, THEN VOLUME RECOVERED IS 7.5 GAL.

IF YES, BY WHOM? A. Hoak

DATE: 8·29·96

STATIC DEPTH TO WATER 9.7 FT. BELOW TOP OF CASING

☒ MEASURED ☐ ESTIMATED ON DATE: 8·29·96

SPLIT-SPOON SAMPLES? ☒ YES ☐ NO

IF YES, THEN INTERVAL IS _____ FT. OR ☒ CONTINUOUS

WELL PURPOSE MONITORING

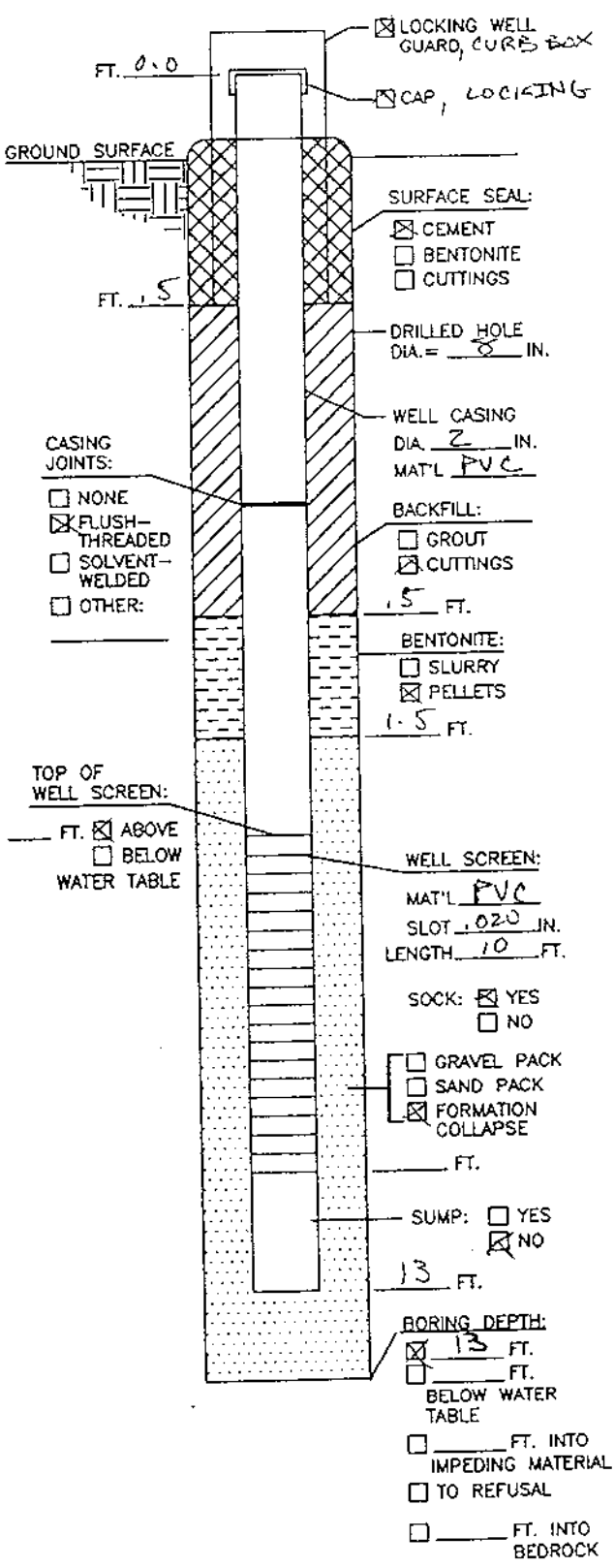
REMARKS _____

PREPARED BY Edward C. Hoak

DATE 9·4·96

WELL CONSTRUCTION LOG

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT



PROJECT PERRY'S OIL

WELL # MW-6

JOB # 93508.1

TOWN/CITY/STATE BERLIN, VT

INSTALLATION DATE(S) 8·29·96

DRILLING METHOD HSA

DRILLING FLUID TYPE _____ VOLUME _____

DRILLING CONTRACTOR M & W SOILS ENGINEERING

WELL DEVELOPED? ☒ YES ☐ NO

IF YES, THEN VOLUME RECOVERED IS 8.0 GAL.

IF YES, BY WHOM? A. HOAK

DATE: 8·29·96

STATIC DEPTH TO WATER 7.5 FT. BELOW TOP OF CASING

☒ MEASURED ☐ ESTIMATED ON DATE: 8·29·96

SPLIT-SPOON SAMPLES? ☒ YES ☐ NO

IF YES, THEN INTERVAL IS _____ FT. OR ☒ CONTINUOUS

WELL PURPOSE MONITORING

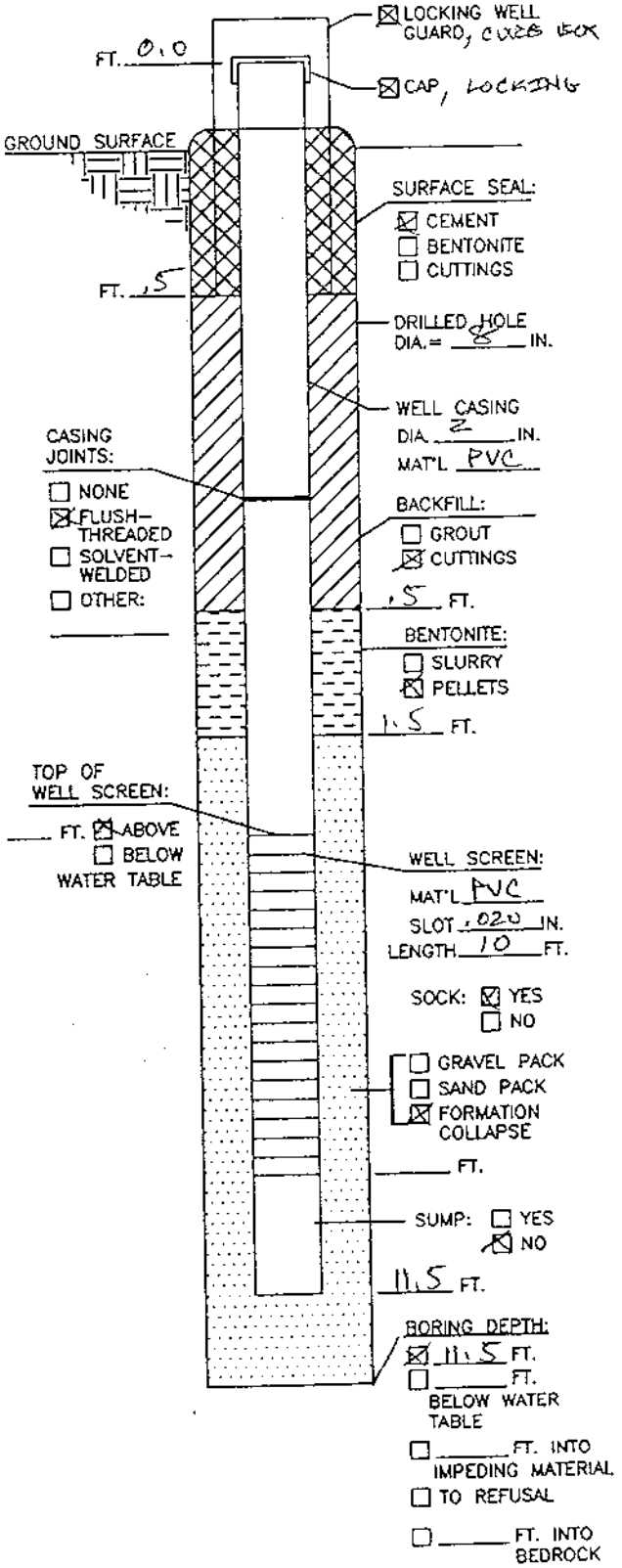
REMARKS _____

PREPARED BY _____

DATE 9·4·96

WELL CONSTRUCTION LOG

WAGNER, HEINDEL, and NOYES, INC.
BURLINGTON, VERMONT



PROJECT Perry's Oil

WELL # MW-7

JOB # 93508.1

TOWN/CITY/STATE Berlin, VT

INSTALLATION DATE(S) 8·29·96

DRILLING METHOD HSA

DRILLING FLUID TYPE _____ VOLUME _____

DRILLING CONTRACTOR M&W Soils Engineering

WELL DEVELOPED? ☒ YES ☐ NO

IF YES, THEN VOLUME RECOVERED IS 7.5 GAL.

IF YES, BY WHOM? A. Hoak

DATE: 8·29·96

STATIC DEPTH TO WATER 5.3 FT. BELOW TOP OF CASING

☒ MEASURED ☐ ESTIMATED ON DATE: 8·29·96

SPLIT-SPOON SAMPLES? ☒ YES ☐ NO

IF YES, THEN INTERVAL IS _____ FT. OR ☒ CONTINUOUS

WELL PURPOSE MONITORING

REMARKS _____

PREPARED BY Richard A. Hoak

DATE 9·4·96

SOIL BORING LOG

NELSON, HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: Perry's Oil Berlin, Vermont	Boring Number: MW 4 Sheet 1 of 1 Project Number: 93508.1

Boring Company: M&W Soils Engineering
Foreman: Richard Holmes
NH&N Staff: Andrew Hoak

Boring Location:
Ground Elevation:
Date Started: August 29, 1996 Date Ended: August 29, 19966

Casing
Size: 2"
Hammer:
Fall:

Sampler
Type: PVC Other: Split-spoon
140 lbs
30 "

Groundwater Readings

Date Time	Depth	Cashin	Stabil.

Sample No.	Rec.	Depth	Blows	Sample Description	Stratra Change & General Description	Field Testing PID	Equipment or Well Installed
1		0-2'	9,14,16,19	Brown medium to coarse gravelly sand and soil with pebbles and cobbles, fill		1.2	
2		2'-4'	14,14,12,8	Brown medium to coarse gravelly sand and dark brown fine med. dense micaceous sand in basal regions		1.4	
3		4'-6'	7,9.12,15	Gray loose fine silty sand, moist		1.4	
4		6'-8'	8,8,8,6	Gray loose fine sand with silt, wet, slight petrol odor		1.2	Augered to 13' 10' 0.020 screen 2.7' 2" riser Curb box and lock cap

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

Penetration Resistance
140 lb wt falling 20" on 2" O.D. Sampler

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

Well Construction Legend

Concrete to Finish
Backfilled to 1.5' bgs
Bentonite from 1.5'-0.5' bgs

SOIL BORING LOG

NELSON, HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: Perry's Oil Berlin, Vermont	Boring Number: MW 5 Sheet 1 of 2 Project Number: 93508.1

Boring Company: M&W Soils Engineering
Foreman: Richard Holmes
NH&N Staff: Andrew Hoak
Boring Location:
Ground Elevation:
Date Started: August 29, 1996 Date Ended: August 29, 19966

Casing
Size: 2"
Hammer:
Fall:

Sampler
Type: PVC
140 lbs
30 "
Other: Split-spoon

Groundwater Readings

Date Time	Depth	Cashin	Stabil.

Sample No.	Rec.	Depth	Blows	Sample Description	Stratra Change & General Description	Field Testing PID	Equipment or Well Installed
1		0-2'	12,18,21,22	Brown medium to coarse gravelly sand and soil with pebbles and cobbles		1.2	
2		2'-4'	21,19,21,12	Brown medium to coarse gravelly sand and soil with pebbles and cobbles		1.2	
3		4'-6'	6,5,6,9	Brown-gray fineloose silty sand		1.6	
4		6'-8'	7,8,8,8	Gray fine loose silty sand, moist to wet		1.6	
5		8'-10'	5,5,4,5	Gray fine loose micaceous silty sand, wet		1.6	Augered to 15' 10' of 0.020 slotted screen 4.7' of 2" riser Curb box and lock cap

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

Penetration Resistance
140 lb wt falling 20" on 2" O.D. Sampler

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

Well Construction Legend

Concrete to Finish
Backfilled to 1.5' bgs
Bentonite from 1.5'-0.5' bgs

SOIL BORING LOG

NELSON, HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: Perry's Oil Berlin, Vermont	Boring Number: MW 6 Sheet 1 of 3 Project Number: 93508.1

Boring Company: M&W Soils Engineering
Foreman: Richard Holmes
NH&N Staff: Andrew Hoak

Boring Location:
Ground Elevation:
Date Started: August 29, 1996 Date Ended: August 29, 19966

Casing	Sampler	Groundwater Readings
Size: 2"	Type: PVC	Other: Split-spoon	Date / Time	Depth	Cashin	Stabil.
Hammer:	140 lbs					
Fall:	30 "					

Sample				Sample Description	Stratra Change & General Description	Field Testing PID	Equipment or Well Installed
No.	Rec.	Depth	Blows				
1		0-2'	3,5,5,7	Brown medium to coarse gravelly sand and soil		11.4	
2		2'-4'	4,2,2,3	Brown micaceous medium sand with few pebbles up to 1" in diameter		14.0	
3		4'-6'	2,2,4,4	Brown-gray micaceous medium silty sand with few pebbles, moist		15.8	
4		6'-8'	5,7,5,4	Brown-gray micaceous medium silty sand, wet		15.6	
5		8'-10'	2,2,6,3	Gray-black coarse gravelly sand with rounded pebbles and cobbles (fluvial), slight petrol odor, wet		15.4	Augered to 13' 10' of 0.020 slotted screen 2.7' of 2" riser Curb box and lock cap

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

Penetration Resistance
140 lb wt falling 20" on 2" O.D. Sampler

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

Well Construction Legend

Concrete to Finish
Backfilled to 1.5' bgs
Bentonite from 1.5'-0.5' bgs

SOIL BORING LOG

NELSON, HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709	Project: Perry's Oil Berlin, Vermont	Boring Number: MW 7 Sheet 1 of 4 Project Number: 93508.1

Boring Company: M&W Soils Engineering
Foreman: Richard Holmes
NH&N Staff: Andrew Hoak

Boring Location:
Ground Elevation:
Date Started: August 29, 1996 Date Ended: August 29, 19966

Casing
Size: 2"
Hammer:
Fall:

Sampler
Type: PVC
140 lbs
30 "
Other: Split-spoon

Groundwater Readings

Date Time	Depth	Cashin	Stabil.

Sample No.	Sample Rec.	Sample Depth	Sample Blows	Sample Description	Stratra Change & General Description	Field Testing PID	Equipment or Well Installed
1		0-2'	3,3,4,7	Brown micaceous medium to fine sand and soil		0.4	
2		2'-4'	5,5,5,5	Brown-gray micaceous medium to fine moist sand, few pebbles		0.6	
3		4'-6'	3,3,3,3	Brown micaceous medium sand, wet at 5', some iron staining		0.8	
4		6'-8'	1,2,1,2	Brown micaceous medium sand, saturated, and dark brown-black gravelly sand and pebbles, rounded		1.2	Augered to 11.5' 10' of 0.020 slotted screen 1.3' of 2" riser Curb box and lock cap

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

Penetration Resistance
140 lb wt falling 20" on 2" O.D. Sampler

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

Well Construction Legend

Concrete to Finish
Backfilled to 1.5' bgs
Bentonite from 1.5'-0.5' bgs

(U:\AHOAK\WPDOCS\PERRYS.SB1)

ENDYNE, INC.

Laboratory Services

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REPORT OF LABORATORY ANALYSIS

CLIENT: Nelson, Heindel, and Noyes, Inc.
PROJECT NAME: VT Fed./Alden Prop.
REPORT DATE: September 9, 1996
DATE SAMPLED: September 3, 1996

PROJECT CODE: HNVF1983
REF.#: 93,235 - 93,240

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

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

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

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Nelson, Heindel, and Noyes, Inc.
PROJECT NAME: VT Fed./Alden Prop.
REPORT DATE: September 9, 1996
DATE SAMPLED: September 3, 1996
DATE RECEIVED: September 3, 1996
DATE ANALYZED: September 6, 1996

PROJECT CODE: HNVF1983
REF.#: 93,237
STATION: MW-3
TIME SAMPLED: 12:00
SAMPLER: GWN & KAD

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	2.9
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 95%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 5

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Nelson, Heindel, and Noyes, Inc.
PROJECT NAME: VT Fed./Alden Prop.
REPORT DATE: September 9, 1996
DATE SAMPLED: September 3, 1996
DATE RECEIVED: September 3, 1996
DATE ANALYZED: September 5, 1996

PROJECT CODE: HNVF1983
REF.#: 93,238
STATION: MW-4
TIME SAMPLED: 11:45
SAMPLER: GWN & KAD

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

Bromobenzene Surrogate Recovery: 91%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 1

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Nelson, Heindel, and Noyes, Inc.
PROJECT NAME: VT Fed./Alden Prop.
REPORT DATE: September 9, 1996
DATE SAMPLED: September 3, 1996
DATE RECEIVED: September 3, 1996
DATE ANALYZED: September 6, 1996

PROJECT CODE: HNVF1983
REF.#: 93,239
STATION: MW-5
TIME SAMPLED: 11:45
SAMPLER: GWN & KAD

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	2.9
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 105%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 2

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Nelson, Heindel, and Noyes, Inc.
PROJECT NAME: VT Fed./Alden Prop.
REPORT DATE: September 9, 1996
DATE SAMPLED: September 3, 1996
DATE RECEIVED: September 3, 1996
DATE ANALYZED: September 5, 1996

PROJECT CODE: HNVF1983
REF.#: 93,236
STATION: MW-6
TIME SAMPLED: 11:15
SAMPLER: GWN & KAD

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

Bromobenzene Surrogate Recovery: 92%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Nelson, Heindel, and Noyes, Inc.
PROJECT NAME: VT Fed./Alden Prop.
REPORT DATE: September 9, 1996
DATE SAMPLED: September 3, 1996
DATE RECEIVED: September 3, 1996
DATE ANALYZED: September 5, 1996

PROJECT CODE: HNVF1983
REF.#: 93,235
STATION: MW-7
TIME SAMPLED: 11:15
SAMPLER: GWN & KAD

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

Bromobenzene Surrogate Recovery: 93%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Nelson, Heindel, and Noyes, Inc.
PROJECT NAME: VT Fed./Alden Prop.
REPORT DATE: September 9, 1996
DATE SAMPLED: September 3, 1996
DATE RECEIVED: September 3, 1996
DATE ANALYZED: September 6, 1996

PROJECT CODE: HNVF1983
REF.#: 93,240
STATION: Field Blank
TIME SAMPLED: 12:00
SAMPLER: GWN & KAD

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

Bromobenzene Surrogate Recovery: 92%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.
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HNVF 1984

10331

CHAIN-OF-CUSTODY RECORD

93,235 — 93,246

Project Name: VT FED/ALDEN PROP. Site Location: BERLIN, VT	Reporting Address: NH&N	Billing Address: NH&N
Endyne Project Number: HNVF 1983	Company: NH&N Contact Name/Phone #: JEN 658-0820	Sampler Name: GWN/KAD Phone #: 658-0820

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
93,235	MW-7	H_2O	✓		9/3/96 11:35	4	40ml	~~GW~~	602+MTBE	HCl	
93,236	MW-6	↓	↓		11:15	↓	↓		8010 7/H		
93,237	MW-3				12:00						
93,238	MW-4				11:45						
93,239	MW-5				11:45						
93,240	FIELD BLANK	↓	↓		12:00	↓	↓				

Relinquished by: Signature: Kirsten DiPietro	Received by: Signature: Rosanne Greco	Date/Time: 9/3/96 4:00 PM
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):										

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REPORT OF LABORATORY ANALYSIS

CLIENT: Nelson, Heindel & Noyes
PROJECT NAME: VT Fed/Alden Prop.
DATE REPORTED: September 19, 1996
DATE SAMPLED: September 3, 1996

PROJECT CODE: HNVF1984
REF. #: 93,241 - 93,246

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

Chain of custody indicated proper 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

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LABORATORY REPORT

TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: September 19, 1996
CLIENT: Nelson, Heindel & Noyes
PROJECT: VT Fed/Alden Prop.
PROJECT CODE: HNVF1984
COLLECTED BY: GWN/KAD
DATE SAMPLED: September 3, 1996
DATE RECEIVED: September 3, 1996

Reference #	Sample ID	Concentration (mg/L)[1]
93,241	MW - 7; 11:15	ND[2]
93,242	MW - 6; 11:15	ND
93,243	MW - 3; 12:00	ND
93,244	MW - 4; 11:45	ND
93,245	MW - 5; 11:45	ND
93,246	Field Blank; 12:00	ND

Notes:

1 Method detection limit is 1.0 mg/L.
2 None detected

ENDYNE, INC.

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10331

CHAIN-OF-CUSTODY RECORD

Project Name: VT FED/ALDEN PROP. Site Location: BERLIN, VT	Reporting Address: NH&N	Billing Address: NH&N
Endyne Project Number: [illegible]	Company: NH&N Contact Name/Phone #: JEN 658-0820	Sampler Name: GWN/KAD Phone #: 658-0820

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
93,241	MW-7	H_2O	✓		9/3/96 11:35	4	40ml	~~60~~	602+MTBE	HCl	
93,242	MW-2R	↓	↓		11:15	↓	↓		*8100 TPH		
93,243	MW-3				12:00						
93,244	MW-4				11:45						
93,245	MW-5				11:45						
93,246	FIELD BLANK	↓	↓		12:00	↓	↓				

Relinquished by: Signature: Kirstin DiPietro	Received by: Signature: Roseann Bacon	Date/Time: 9/3/96 4:00 PM
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):										