DH Dufresne-Henry

Dufresne-Henry, Inc.
Precision Park
North Springfield, Vermont 05150
802-886-2261
FAX: 802-886-2260

Engineering Disciplines
Civil
Environmental
Transportation
Municipal
Structural
Electrical
Mechanical

Associated Disciplines
Surveying
Construction Management
Applied Sciences
Water Quality
Geologic
Hydrologic
Computer

February 1, 1993

Mr. Michael W. Young
Sites Management Section
Hazardous Materials Management Division
Agency of Natural Resources
103 South Main Street / West Building
Waterbury, Vermont 05761-0404

Re: L.H. Cook, Norwich
Site #92-1209
DH 462070

Dear Mr. Young:

Enclosed is our report on the investigations of the waste oil petroleum contamination at the Cook property in Norwich. The report is stamped DRAFT because it has not yet been reviewed by Mr. Cook's attorney, Robert Gerety. Once we receive comments or approval from Mr. Gerety we will submit a revised report, or ask that you consider the enclosed version as final.

Please feel free to call with any questions or comments regarding this report.

Very truly yours,

DUFRESNE-HENRY, INC.

F. David Deane

F. David Deane, P.E.
Environmental Services Division

FDD/dim

cc Leonard Cook
Robert Gerety
Cathy Stacy

COOK0201.WP

REPORT ON

PETROLEUM CONTAMINATION INVESTIGATION

L. H. COOK, INC.
RIVER ROAD
NORWICH, VERMONT

Submitted by
Dufresne-Henry, Inc.

January • 1993

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January 29, 1993

Mr. Leonard Cook
L. H. Cook, Inc.
River Road
Norwich, Vermont 05055

Re: Petroleum Contamination Investigation
L. H. Cook, Inc. DH 462071

Dear Mr. Cook:

Dufresne-Henry has completed a petroleum contamination investigation on your property in accordance with our Professional Services Agreement dated December 9, 1992. The investigation consisted of a test pit and soil sampling at the former UST location, test pits and soil sampling at, and around, the sludge disposal pit, and a potential receptor study. The scope of the work was in response to an Assurance of Discontinuance from the Agency of Natural Resources dated October 26, 1992. The work plan was approved by the Sites Management Section (SMS) in correspondence to Dufresne-Henry dated December 7, 1992.

We trust that the enclosed brief report provides the information SMS needs to fulfill the requirements of the Assurance of Discontinuance, and allow the site to move towards closure. If you have questions, or we can be of further assistance, please do not hesitate to contact us.

Respectfully submitted,

DUFRESNE-HENRY, INC.

F. David Deane, P.E.
Environmental Services Division

Approved:

C. Jonathan Manning, P.E.
Vice President

FDD/CJM/djr
Enclosure 0129900.d

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Introduction

L. H. Cook, Inc. is a trucking and excavation company in Norwich, Vermont. The site is located on River Road between I-91 and the Connecticut River, approximately .9 miles north of the Route 10A bridge to Hanover, New Hampshire. A vicinity map and site sketch are included as Attachment A. Activity on the site includes the extraction and storage of sand and gravel resources, and the storage and repair of heavy equipment used for those activities.

The date of the site investigation was December 15, 1992. Two separate locations on the property were investigated, the tank removal site and the sludge disposal site. All excavations were performed by Albert Mouton of Lee's Oil Service using L. H. Cook equipment. Weather at the time of the investigation was sunny, with temperatures in the low to upper 30's and no wind.

The primary purpose of the investigation was to determine the presence of contamination from waste oil at the two sites. The field screening procedure was to perform headspace analyses on samples of excavated soil to assess VOC content using an HNU HW-101 (10.2 eV lamp). The analysis consisted of filling a one pint Ziploc bag, agitating the sample, and screening with the HNU after approximately one minute. All screening was done at ambient air temperatures. Numerous samples were also obtained for laboratory analysis to provide positive confirmation of field observations.

Waste Oil Disposal Site

The waste oil disposal site is located on a high point of land between River Road and I-91. The actual disposal area consists of a small, shallow (10 foot± x 10 foot± x 4 foot±) excavation in native soil. Any liquid had previously been removed by Lee's Oil Service. Approximately ten cubic yards of material has been excavated from the oil

disposal area and placed on a sheet of polyethylene adjacent to the excavation. Per the recollection of Mr. Cook, one of his operators performed this excavation to remove the soil which could be observed to be contaminated.

One (1) composite soil sample was derived from individual samples from eight locations within the stockpile for analysis of volatile organic compounds (VOC's) and total petroleum hydrocarbons (TPH) by EPA Methods 8240 and 418.1 respectively. Trace headspace readings were observed.

A separate area of stockpiled soil exists just southerly of this stockpile. The soil reportedly had come from a local store and had been contaminated with a petroleum product. It has been on-site for a number of years, reportedly with the permission, and under the supervision of, the State.

Approximately two feet of soil were removed from the bottom of the disposal pit. No contamination (visual or odor) was observed. Two (2) composite soil samples from eight locations were obtained from a depth of approximately six feet for analysis of VOC's and TPH as described above. No HNU readings were observed during headspace analysis.

The excavation was continued to approximately thirteen feet, the practical limit of the excavator. No contamination (visual or odor) was observed. Two (2) composite soil samples were obtained from the interval six feet to twelve feet for analysis of VOC's and TPH as described above. No HNU readings were observed during headspace analysis.

A series of six (6) test pits were excavated around the disposal pit. The radius ranged from 35 feet to 68 feet dictated by site conditions. One (1) composite soil sample was obtained from each test pit for analysis of TPH as described above. The test pits are identified as TP-1 through TP-6 in the accompanying field reports and laboratory

reports. Headspace readings ranging from a trace to five ppm were observed. The highest readings were from a test pit in the vicinity of the older soil stockpile. All pits were filled with the material removed. Logs for the test pits and a sketch of locations relative to the disposal pit will be found in Attachment B.

Former Tank Location

The 1,000 gallon underground tank which had been used to store waste oil was located near the southwest corner of the office/shop building. L. H. Cook employees indicated the bottom of the tank had been at a depth of about six feet. The identified tank location was excavated to that depth. A faint oily odor was observed during excavation but quickly dispersed. No staining of the fill or underlying soil was observed. Four (4) discrete soil samples were obtained from the former tank base area for analysis of VOC's and TPH as described above. Sample locations and depths were as follows: SW corner (7 feet), SE corner (7.5 feet), NW corner (8 feet), and NE corner (7.5 feet). Headspace analysis indicated two to three ppm from a depth of four feet± and four to five ppm from a depth of six to eight feet. The excavation was filled with the removed material upon completion of sampling. The test pit log will be found in Attachment C.

Sample Analysis

All samples collected in the field were stored in a cooler while on the site. The samples were sent (via overnight UPS) to Eastern Analytical, Inc. in Concord, New Hampshire for analysis and were received on December 16, 1992. Containers for all samples had been obtained from Eastern Analytical. Results of the analyses and the Chain of Custody form will be found in Attachment D.

The analytical results for four (4) soil samples from the former tank base did not identify any VOC's or TPH above method detection limits. All contaminated soil present at the former tank site appears to have been removed at the time the tank was pulled.

The results from samples obtained in and around the disposal pit indicate that all detectable contaminated soil was removed by previous excavation to the polyencapsulated stockpile nearby. There is no evidence that vertical or horizontal migration of detectable contamination had occurred prior to that removal. It is noted that the disposal pit is located in a varved clay. Due to the expected extremely low permeability of this material, past or future migration of any contaminants present is unlikely.

The results of the analyses performed on the composite sample taken from the stockpile of contaminated soil indicate the presence of relatively low levels of TPH (130 mg/kg) and no VOC's above detection limits.

Receptor Study

Water well records for the Town of Norwich were obtained from the State of Vermont Water Supply Division. Those records revealed a total of twelve (12) wells within a one-half mile radius of the site. The well locations on a Receptor Plan and a table of well data are both included as Attachment E.

Based on the findings of the field screening and sample analytical results described above, there is a remote potential for impact to any of these wells from the areas investigated for waste oil contamination.

Conclusions

Based on the field work, soil sampling, and data collected it is concluded that contamination at the former tank site was very limited in extent and was removed at the time of the tank pull. There is no evidence that contamination has migrated beyond the original limits of the disposal pit, and the potential to do so is unlikely.

The contaminated soil stockpile has low levels (130 mg/kg) of Total Petroleum Hydrocarbons and no detectable volatile organic compounds. With the approval of the ANR, the soil could remain on-site with occasional aeration, until TPH is judged to be at an acceptable level. The alternative is off-site disposal at a landfill or contaminated soil treatment facility.

ATTACHMENT A

LOCUS PLAN AND SITE SKETCH

LOCUS PLAN

APPROXIMATE SCALE 1:24000

TAKEN FROM USGS FOR HANOVER, NH

Client No.	462071
Proj. Mgr.	F.D.D.
Date	01/93

L.H. COOK, INC.
SITE ASSESSMENT
NORWICH, VERMONT

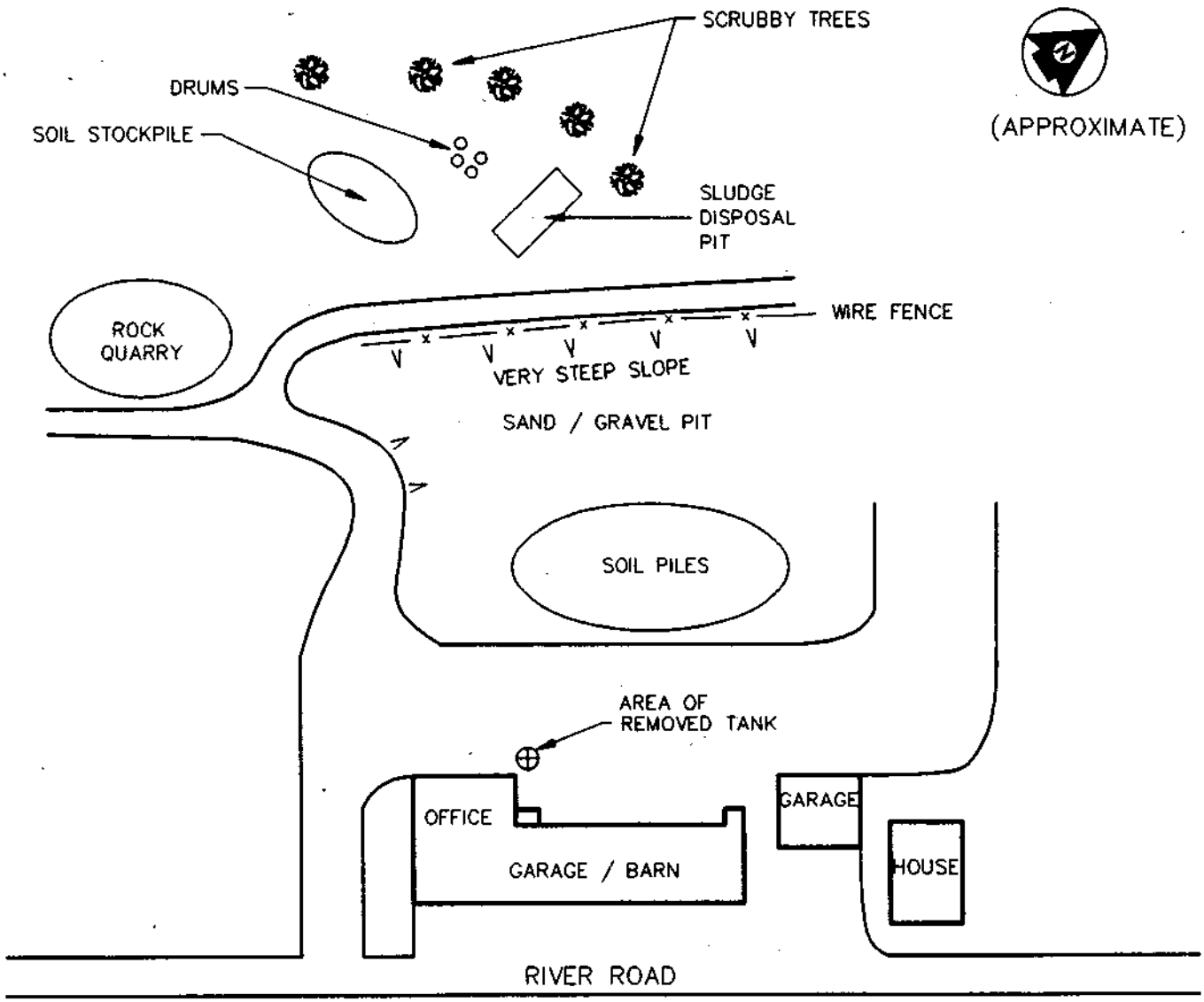
Dufresne-Henry Inc

A

BRUNING 44-232 45337-13

I – 91 SOUTH

I – 91 NORTH



SITE SKETCH
NOT TO SCALE

Client No.	462071	L.H. COOK, INC.	Dufresne-Henry Inc.
Proj.Mgr.	F.D.D.	**SITE ASSESSMENT**	Precision Park, No. Springfield, Vermont 05150
Date	01/93	NORWICH, VERMONT	A

ATTACHMENT B

TEST PIT LOGS AND SKETCH

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUM CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 490

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 1

LOCATION: SLUDGE DISPOSAL AREA

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
2±			Medium - dark brown, silty, sandy, ORGANIC SOIL with logs, branches, and a trace of plastic refuse.	E			
8±			Medium gray, varved SILT and SAND. Very fine - fine grained, well sorted sand. Non - slightly plastic fines. Moist.	E			
12			Medium - dark gray, silty CLAY and CLAY. Massive with no bedding observed. Sticky, plastic fines. Wet - saturated at bottom.	E			
			No refusal to depth.				

REMARKS: Total depth 12', no refusal to depth.
No mottling observed.
No seepage observed.

Took a composite soil sample for TPH analysis (EPA Method 418.1) at 10:10 am.
Trace ppm from HNU MW-101 (10.2 eV lamp).

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUM CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 490

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 2

LOCATION: SLUDGE DISPOSAL AREA

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
.5±			Medium brown, silty, gravelly, slightly organic SAND.	E			
11±			Light gray and brown, moderately dense, silty SAND. Very fine - fine grained, well sorted, predominately quartz sand. 30% - 40% non plastic fines. Prominent, continuous, light orange mottles at 11'±. Dry - moist.	E			
12.5			Medium - dark gray and brown varved clay. Sticky, plastic fines. Wet - saturated.	E			
			No refusal to depth.				

REMARKS: Total depth 12.5', no refusal to depth.
Mottles at 11'±.
No seepage observed.

Took a composite soil sample for TPH analysis (EPA Method 418.1) at 10:30 am.
1 - 2 ppm from HNU MW-101 (10.2 eV lamp).

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUM CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 490

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 3

LOCATION: SLUDGE DISPOSAL AREA

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
8±			Light - medium gold brown, loose - moderately dense, sandy SILT. Very fine grained, well sorted, predominately quartz sand. 70%± non plastic fines. Trace mica, mafic minerals. Dry.	E			
11.5±			Light gray, moderately dense, sandy SILT. Very fine grained, well sorted, predominately well sorted sand. 70%± non plastic fines. Dry.	E			
12.5			Medium - dark gray and brown, varved CLAY.	E			
			No refusal to depth.				

REMARKS: Total depth 12.5', no refusal to depth.
No mottling observed.
No seepage observed.

Took a composite soil sample for TPH analysis (EPA Method 418.1) at 10:50 am.
4 ppm from HNU MW-101 (10.2 eV lamp).

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUM CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 490

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 4

LOCATION: SLUDGE DISPOSAL AREA

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
.5±			Medium brown, silty, gravelly SAND.	E			
12			Light - medium gray and gray brown, stiff - hard, SILT and CLAY. Silt and clay is both massive and varved. Dry - wet At bottom is a thin, medium gray brown, sandy silt layer with medium orange mottles that is hard and moderately well cemented.	E - M			
			No refusal to depth.				

REMARKS: Total depth 12', no refusal to depth.
Mottles at 11'±.
No seepage observed.

Took a composite soil sample for TPH analysis (EPA Method 418.1) at 11:07 am.
3 ppm from HNU MW-101 (10.2 eV lamp).

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUM CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 490

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 5

LOCATION: SLUDGE DISPOSAL AREA

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
.75±			Medium brown, silty, gravelly SAND.	E			
12+			Medium - dark gray and brown, stiff - hard, SILT and CLAY. Silt and clay often varved and otherwise massive. Upper 5'± is dry and hard, lower section is wetter and softer.	E - M			
			No refusal to depth.				

REMARKS: Total depth 12'+, no refusal to depth.
No mottling observed.
No seepage observed.

Took a composite soil sample for TPH analysis (EPA Method 418.1) at 11:30 am.
4 - 5 ppm from HNU MW-101 (10.2 eV lamp).

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUM CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 490

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 6

LOCATION: SLUDGE DISPOSAL AREA

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
3.5±			Medium - dark brown, silty, sandy ORGANIC SOIL with logs, and miscellaneous plastic refuse.	E			
12.5			Medium - dark gray and brown, medium stiff - stiff, SILT and CLAY. Silt and clay often varved (sometimes with very thin fine - medium sand layers), otherwise massive. Medium - dark gray brown sand at bottom. Dry - wet.	E			
			No refusal to depth.				

REMARKS: Total depth 12', no refusal to depth.
No mottling observed.
No seepage observed.

Took a composite soil sample for TPH analysis (EPA Method 418.1) at 11:45 am.
Trace ppm from HNU MW-101 (10.2 eV lamp).

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUM CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 490

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 8

LOCATION: AT SITE OF REMOVED TANK

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
6			Light gray brown, medium dense, sandy SILT. Very fine - fine grained, well sorted, predominately quartz sand. 50%+ non plastic fines. Dry. Faint fuel oil odor. No staining observed.	E			
7.5			Light gray brown (slightly lighter than above), medium dense - dense, sandy SILT. Very fine - fine grained, well sorted, predominately quartz sand. 50%+ non plastic fines. Faint bedding with shallow dip towards the garage. Occasional siltier layers. Dry. Faint fuel oil odor. No staining observed.	E			
8.5±			Light gray and dark gray SAND and SILT in thin, alternating slightly dipping layers. Dry.	E			
			No refusal to depth.				

REMARKS: Total depth 8.5'±, no refusal to depth.
No mottling observed.
No seepage observed.

Took four (4) discrete samples from the SW (@7'), SE (@7.5'), NW (@8'), and NE (@7.5') corners of the pit for VOC's and TPH analysis (EPA Methods 8240 and 418.1 respectively) at 12:25 pm, 12:30 pm, 12:33 pm, and 12:35 pm respectively. Headspace readings of 2 - 3 ppm from 4'± and 4 - 5 ppm from 6'- 8' were obtained with an HNU HW-101 (10.2 eV lamp).

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUM CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 710B

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 7

LOCATION: IN SLUDGE DISPOSAL PIT

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
4±			Started excavation in bottom of sludge disposal pit at a depth of approximately 4'.	E			
13			Medium - dark gray and brown, medium stiff - hard, SILT and CLAY. The silt and clay are often varved, otherwise massive. Sticky, plastic fines. Moist - wet. No odor or staining.	E - M			
			No refusal to depth.				

REMARKS: Total depth 13', no refusal to depth.
No mottling observed.
No seepage observed.

Took two composite soil samples from 4'± - 6'± for VOC's and TPH analysis (EPA Methods 8240 and 418.1 respectively) at 8:40 am and 8:45 am. 0 ppm from HNU MW-101 (10.2 eV lamp).

Took two composite soil samples from 6'± - 13' for VOC's and TPH analysis (EPA Methods 8240 and 418.1 respectively) at 9:15 am and 9:20 am. 0 ppm from HNU.

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

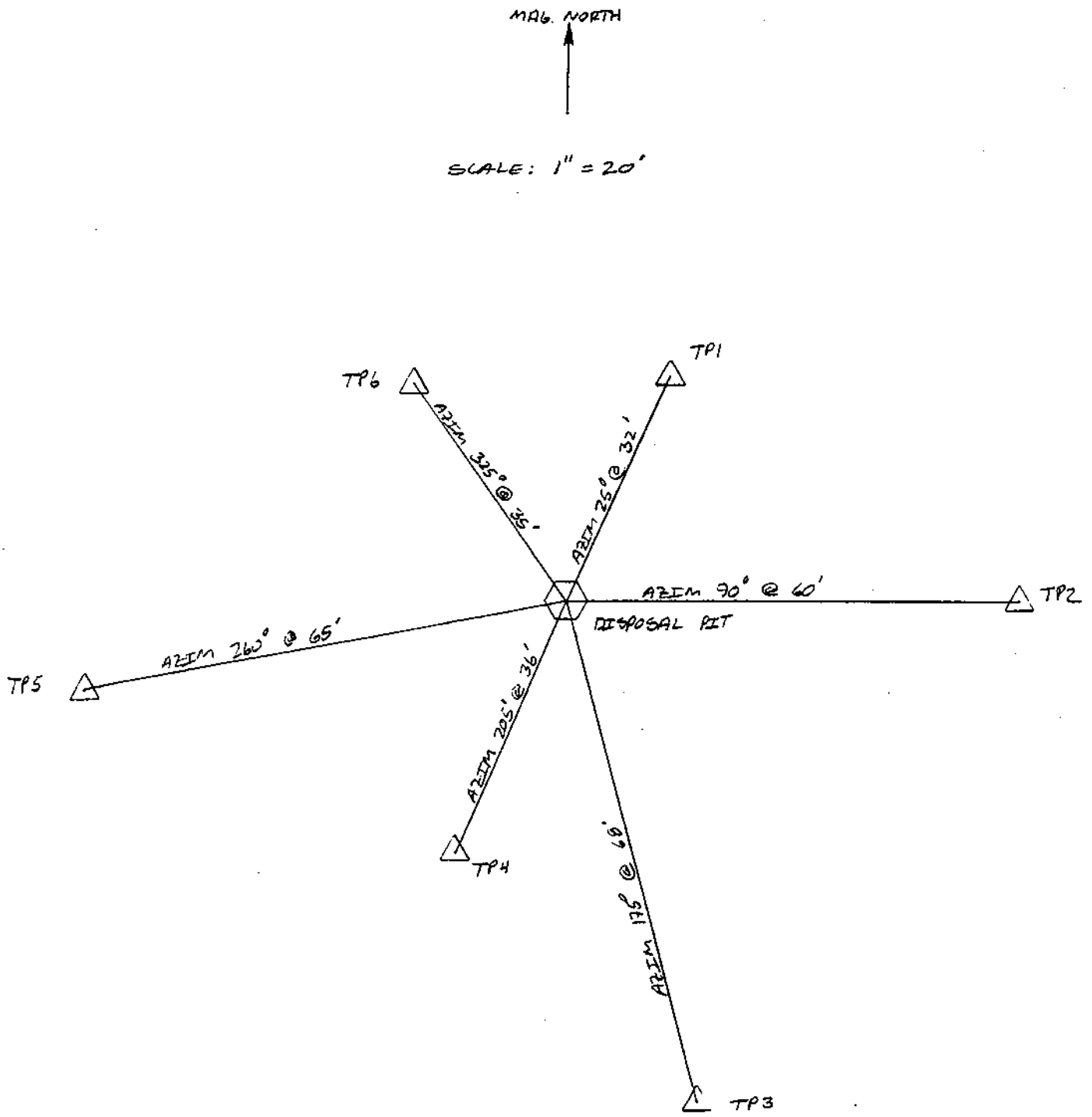
DUFRESNE-HENRY, INC.

PREPARED BY B. COX DATE 12/16/92 PROJECT NO. 462071

CALCULATIONS CHECKED BY _____ DATE _____ SHEET NO. _____ OF _____

ASSUMPTIONS / METHODS CHECKED BY _____ DATE _____

SUBJECT L.H. COOK, INC.



TEST PIT LOCATIONS
DISPOSAL PIT AREA

ATTACHMENT C

TEST PIT LOG

FIELD EXPLORATORY TEST PIT LOG

PROJECT: PETROLEUN CONTAMINATION INVESTIGATION

LOCATION: NORWICH, VERMONT

CLIENT: L. H. COOK, INC.

CONTRACTOR: L. H. COOK/LEE'S OIL SERVICE OPERATOR: ALBERT MOUTON (LEE'S)

EQUIPMENT: JD 940

CAPACITY/REACH:

WEATHER: SUNNY, 20'S, CALM

PERFORMED BY: B. COX DATE: 12/15/92

CHECKED BY: DATE:

PAGE 1 OF 1

TEST PIT NO. TP 8

LOCATION: AT SITE OF REMOVED TANK

EL.

DATUM

PROJECT NO. 462071

TIME STARTED

TIME COMPLETED

DEPTH OF STRATA CHANGE ft.	SAMPLE NO. & TYPE	SAMPLE DEPTH ft.	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY	BOULDER COUNT CLASS	REMARK NO.
6			Light gray brown, medium dense, sandy SILT. Very fine - fine grained, well sorted, predominately quartz sand. 50%+ non plastic fines. Dry. Faint fuel oil odor. No staining observed.	E			
7.5			Light gray brown (slightly lighter than above), medium dense - dense, sandy SILT. Very fine - fine grained, well sorted, predominately quartz sand. 50%+ non plastic fines. Faint bedding with shallow dip towards the garage. Occasional siltier layers. Dry. Faint fuel oil odor. No staining observed.	E			
8.5±			Light gray and dark gray SAND and SILT in thin, alternating slightly dipping layers. Dry.	E			
			No refusal to depth.				

REMARKS: Total depth 8.5'±, no refusal to depth.
No mottling observed.
No seepage observed.

Took four (4) discrete samples from the SW (@7'), SE (@7.5'), NW (@8'), and NE (@7.5') corners of the pit for VOC's and TPH analysis (EPA Methods 8240 and 418.1 respectively) at 12:25 pm, 12:30 pm, 12:33 pm, and 12:35 pm respectively. Headspace readings of 2 - 3 ppm from 4'± and 4 - 5 ppm from 6'- 8' were obtained with an HNU HW-101 (10.2 eV lamp).

LEGEND

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6" - 18"	A
18" - 36"	B
36" AND LARGER	C

EXCAVATION EFFORT

EASY ------ E
MODERATE -- M
DIFFICULT - D

DH DUFRESNE-HENRY

ATTACHMENT D

RESULTS OF SAMPLE ANALYSIS

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 5173 DUF

Client: Dufresne-Henry
Client Designation: **462071/L.H. Cook, Inc.**

Sample Qty/Type: 9 soil
Date Received: December 16, 1992

Hazardous Substance List Volatile Organic Compounds

Sample ID:	Disposal Pile	D. Shallow 8:40	D. Shallow 8:45	D. Deep 9:15	D. Deep 9:20	
Matrix:	Soil	Soil	Soil	Soil	Soil	
Date of Analysis:	12/21/92	12/21/92	12/21/92	12/21/92	12/21/92	
Units:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	EPA
Analyst:	NZ	NZ	NZ	NZ	NZ	Method
Chloromethane	< 100	< 100	< 100	< 100	< 100	8240
Bromomethane	< 100	< 100	< 100	< 100	< 100	8240
Vinyl Chloride	< 100	< 100	< 100	< 100	< 100	8240
Chloroethane	< 100	< 100	< 100	< 100	< 100	8240
Methylene Chloride	< 10	< 10	< 10	< 10	< 10	8240
Carbon Disulfide	< 10	< 10	< 10	< 10	< 10	8240
1,1-Dichloroethene	< 10	< 10	< 10	< 10	< 10	8240
1,1-Dichloroethane	< 10	< 10	< 10	< 10	< 10	8240
Trans-1,2-Dichloroethene	< 10	< 10	< 10	< 10	< 10	8240
Cis-1,2-Dichloroethene	< 10	< 10	< 10	< 10	< 10	8240
Chloroform	< 10	< 10	< 10	< 10	< 10	8240
1,2-Dichloroethane	< 10	< 10	< 10	< 10	< 10	8240
1,1,1-Trichloroethane	< 10	< 10	< 10	< 10	< 10	8240
Carbon Tetrachloride	< 10	< 10	< 10	< 10	< 10	8240
Bromodichloromethane	< 10	< 10	< 10	< 10	< 10	8240
1,2-Dichloropropane	< 10	< 10	< 10	< 10	< 10	8240
Trans-1,3-Dichloropropene	< 10	< 10	< 10	< 10	< 10	8240
Trichloroethene	< 10	< 10	< 10	< 10	< 10	8240
Dibromochloromethane	< 10	< 10	< 10	< 10	< 10	8240
1,1,2-Trichloroethane	< 10	< 10	< 10	< 10	< 10	8240
Cis-1,3-Dichloropropene	< 10	< 10	< 10	< 10	< 10	8240
2-Chloroethylvinylether	< 10	< 10	< 10	< 10	< 10	8240
Bromoform	< 10	< 10	< 10	< 10	< 10	8240
Tetrachloroethene	< 10	< 10	< 10	< 10	< 10	8240
1,1,2,2-Tetrachloroethane	< 10	< 10	< 10	< 10	< 10	8240
Acetone	< 500	< 500	< 500	< 500	< 500	8240
2-Butanone (MEK)	< 100	< 100	< 100	< 100	< 100	8240
Vinyl Acetate	< 100	< 100	< 100	< 100	< 100	8240
4-Methyl-2-Pentanone (MIBK)	< 100	< 100	< 100	< 100	< 100	8240
2-Hexanone	< 100	< 100	< 100	< 100	< 100	8240
Benzene	< 10	< 10	< 10	< 10	< 10	8240
Toluene	< 10	< 10	< 10	< 10	< 10	8240
Ethylbenzene	< 10	< 10	< 10	< 10	< 10	8240
Total Xylenes	< 10	< 10	< 10	< 10	< 10	8240
Chlorobenzene	< 10	< 10	< 10	< 10	< 10	8240
Styrene	< 10	< 10	< 10	< 10	< 10	8240

Approved By: Timothy Schaper, Organics Supervisor Timothy O. Schaper

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 5173 DUF

Client: Dufresne-Henry
Client Designation: **462071/L.H. Cook, Inc.**

Sample Qty/Type: 9 soil
Date Received: December 16, 1992

Hazardous Substance List Volatile Organic Compounds

Sample ID:	Tank NE Corner	Tank NW Corner	Tank SE Corner	Tank SW Corner	
Matrix:	Soil	Soil	Soil	Soil	
Date of Analysis:	12/21/92	12/21/92	12/21/92	12/21/92	
Units:	µg/kg	µg/kg	µg/kg	µg/kg	EPA
Analyst:	NZ	NZ	NZ	NZ	Method
Chloromethane	< 100	< 100	< 100	< 100	8240
Bromomethane	< 100	< 100	< 100	< 100	8240
Vinyl Chloride	< 100	< 100	< 100	< 100	8240
Chloroethane	< 100	< 100	< 100	< 100	8240
Methylene Chloride	< 10	< 10	< 10	< 10	8240
Carbon Disulfide	< 10	< 10	< 10	< 10	8240
1,1-Dichloroethene	< 10	< 10	< 10	< 10	8240
1,1-Dichloroethane	< 10	< 10	< 10	< 10	8240
Trans-1,2-Dichloroethene	< 10	< 10	< 10	< 10	8240
Cis-1,2-Dichloroethene	< 10	< 10	< 10	< 10	8240
Chloroform	< 10	< 10	< 10	< 10	8240
1,2-Dichloroethane	< 10	< 10	< 10	< 10	8240
1,1,1-Trichloroethane	< 10	< 10	< 10	< 10	8240
Carbon Tetrachloride	< 10	< 10	< 10	< 10	8240
Bromodichloromethane	< 10	< 10	< 10	< 10	8240
1,2-Dichloropropane	< 10	< 10	< 10	< 10	8240
Trans-1,3-Dichloropropene	< 10	< 10	< 10	< 10	8240
Trichloroethene	< 10	< 10	< 10	< 10	8240
Dibromochloromethane	< 10	< 10	< 10	< 10	8240
1,1,2-Trichloroethane	< 10	< 10	< 10	< 10	8240
Cis-1,3-Dichloropropene	< 10	< 10	< 10	< 10	8240
2-Chloroethylvinylether	< 10	< 10	< 10	< 10	8240
Bromoform	< 10	< 10	< 10	< 10	8240
Tetrachloroethene	< 10	< 10	< 10	< 10	8240
1,1,2,2-Tetrachloroethane	< 10	< 10	< 10	< 10	8240
Acetone	< 500	< 500	< 500	< 500	8240
2-Butanone (MEK)	< 100	< 100	< 100	< 100	8240
Vinyl Acetate	< 100	< 100	< 100	< 100	8240
4-Methyl-2-Pentanone (MIBK)	< 100	< 100	< 100	< 100	8240
2-Hexanone	< 100	< 100	< 100	< 100	8240
Benzene	< 10	< 10	< 10	< 10	8240
Toluene	< 10	< 10	< 10	< 10	8240
Ethylbenzene	< 10	< 10	< 10	< 10	8240
Total Xylenes	< 10	< 10	< 10	< 10	8240
Chlorobenzene	< 10	< 10	< 10	< 10	8240
Styrene	< 10	< 10	< 10	< 10	8240

Approved By: Timothy Schaper, Organics Supervisor Timothy D. Schaper

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 5173 DUF

Client: Dufresne-Henry
Client Designation: **462071/L.H. Cook, Inc.**

Sample Qty/Type: 15 soil
Date Received: December 16, 1992

Organics

Sample ID:	Disposal Pile	D. Shallow 8:40	D. Shallow 8:45	D. Deep 9:15	D. Deep 9:20	Date of		EPA
Matrix:	Soil	Soil	Soil	Soil	Soil	Analysis	Analyst	Method
Organics: (mg/kg)								
Total Petroleum Hydrocarbons	**130**	< 50	< 50	< 50	< 50	12/29/92	LB	418.1

Sample ID:	Tank NE Corner	Tank NW Corner	Tank SE Corner	Tank SW Corner	D. Area TP-1	Date of		EPA
Matrix:	Soil	Soil	Soil	Soil	Soil	Analysis	Analyst	Method
Organics: (mg/kg)								
Total Petroleum Hydrocarbons	< 50	< 50	< 50	< 50	< 50	12/29/92	LB	418.1

Sample ID:	D. Area TP-2	D. Area TP-3	D. Area TP-4	D. Area TP-5	D. Area TP-6	Date of		EPA
Matrix:	Soil	Soil	Soil	Soil	Soil	Analysis	Analyst	Method
Organics: (mg/kg)								
Total Petroleum Hydrocarbons	< 50	< 50	< 50	< 50	< 50	12/29/92	LB	418.1

Approved by: Lorraine Olashaw, Inorganics Supervisor Lorraine Olashaw LB

CHAIN OF CUSTODY FORM

DH Dufresne-Henry, Inc. PRECISION PARK NO. SPRINGFIELD, VT 05150 (802) 886-2261 | PAGE 1 OF 2

CLIENT: L.H. COOK INC. PROJECT #: 402071 PROJECT NAME: L H COOK, INC

RETURN REPORT TO: DAVID DEANE PHONE #: 886-2261 SAMPLER'S NAME: BRUCE COX DATE: 12/15/92

ADDRESS: (IF DIFFERENT THAN ABOVE)

SAMPLE IDENT. NUMBER	DATE	TIME	COMP. OR GRAB	W•WATER L•LIQUID S•SOLID	NUMBER/ SIZE CONTAINERS	FIELD PRESERVED Y/N	FIELD FILTERED Y/N	ANALYSIS REQUESTED/ REMARKS
DISPOSAL PILE	12/15/92	9:35 AM	COMP	S	1/4 ml	N	N	VOC'S BY EPA METHOD 8240
DUMP LOCATION SHALLOW	12/15/92	8:40 AM	COMP	S	"	"	"	"
DUMP LOCATION SHALLOW	12/15/92	8:45 AM	COMP	S	"	"	"	"
DUMP LOCATION DEEP	12/15/92	9:15 AM	COMP	S	"	"	"	"
DUMP LOCATION DEEP	12/15/92	9:20 AM	COMP	S	"	"	"	"
TANK SITE S-W CORNER 2'	12/15/92	12:25 PM	GRAB	S	"	"	"	"
TANK SITE S-E CORNER 2.5'	12/15/92	12:30 PM	GRAB	S	"	"	"	"
TANK SITE N-W CORNER 2'	12/15/92	12:35 PM	GRAB	S	"	"	"	"
TANK SITE N-E CORNER 2.5'	12/15/92	12:35 PM	GRAB	S	"	"	"	"
DISPOSAL PILE	12/15/92	9:35 PM	COMP	S	1/60Z	N	N	TPH BY EPA METHOD 418.1
DUMP LOCATION SHALLOW	12/15/92	8:40 PM	COMP	S	1/60Z	"	"	"
DUMP LOCATION SHALLOW	12/15/92	8:45 AM	COMP	S	"	"	"	"
DUMP LOCATION DEEP	12/15/92	9:15 PM	COMP	S	"	"	"	"

RELINQUISHED BY: Bruce Cox	DATE: 12/15/92 TIME: 3:20 PM	RECEIVED BY: Dean Culver	DATE: 12/16/92 TIME:
RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:
RELINQUISHED BY:	DATE: TIME:	RECEIVED BY:	DATE: TIME:

PLEASE RETURN COMPLETED CHAIN OF CUSTODY FORM WITH ANALYSIS RESULTS

CHAIN OF CUSTODY FORM

5.15

DH DufresneHenry, Inc. PRECISION PARK NO. SPRINGFIELD, VT 05150 (802) 886-2261 | PAGE 2 OF 2

CLIENT: L.H COOK, INC. PROJECT #: 462C.71 PROJECT NAME: L.H COOK, INC.

RETURN REPORT TO: DAVID DEANE PHONE #: 886-2261 SAMPLER'S NAME: BRUCE COX DATE: 12/15/92

ADDRESS: (IF DIFFERENT THAN ABOVE)

SAMPLE IDENT. NUMBER	DATE	TIME	COMP. OR GRAB	W•WATER L•LIQUID S•SOLID	NUMBER/ SIZE CONTAINERS	FIELD PRESERVED Y/N	FIELD FILTERED Y/N	ANALYSIS REQUESTED/ REMARKS
DRY WELL DUP	12/15/92	9:20 AM	COMP.	S	1/6oz	N	N	TPH BY EPA METHOD 418.1
DISPOSAL AREA TP1	12/15/92	10:10 AM	COMP	S	"	"	"	"
DISPOSAL AREA TP2	12/15/92	10:36 AM	COMP	S	"	"	"	"
DISPOSAL AREA TP3	12/15/92	10:50 AM	COMP	S	"	"	"	"
DISPOSAL AREA TP4	12/15/92	11:07 AM	COMP	S	"	"	"	"
DISPOSAL AREA TP5	12/15/92	11:31 AM	COMP	S	"	"	"	"
DISPOSAL AREA TP6	12/15/92	11:45 AM	COMP	S	"	"	"	"
TANK SITE SW CORNER 7'	12/15/92	12:25 PM	GRAB	S	"	"	"	"
TANK SITE SW CORNER 2.5'	12/15/92	12:30 PM	GRAB	S	"	"	"	"
TANK SITE NW CORNER 5'	12/15/92	12:33 PM	GRAB	S	"	"	"	"
TANK SITE NE CORNER 2.5'	12/15/92	12:35 PM	GRAB	S	"	"	"	"

RELINQUISHED BY: Bruce Cox DATE: 12/15/92 TIME: 3:20 PM RECEIVED BY: Steve A Clinton DATE: 12/16/92 TIME: 9:45

RELINQUISHED BY: DATE: TIME: RECEIVED BY: DATE: TIME:

RELINQUISHED BY: DATE: TIME: RECEIVED BY: DATE: TIME:

PLEASE RETURN COMPLETED CHAIN OF CUSTODY FORM WITH ANALYSIS RESULTS

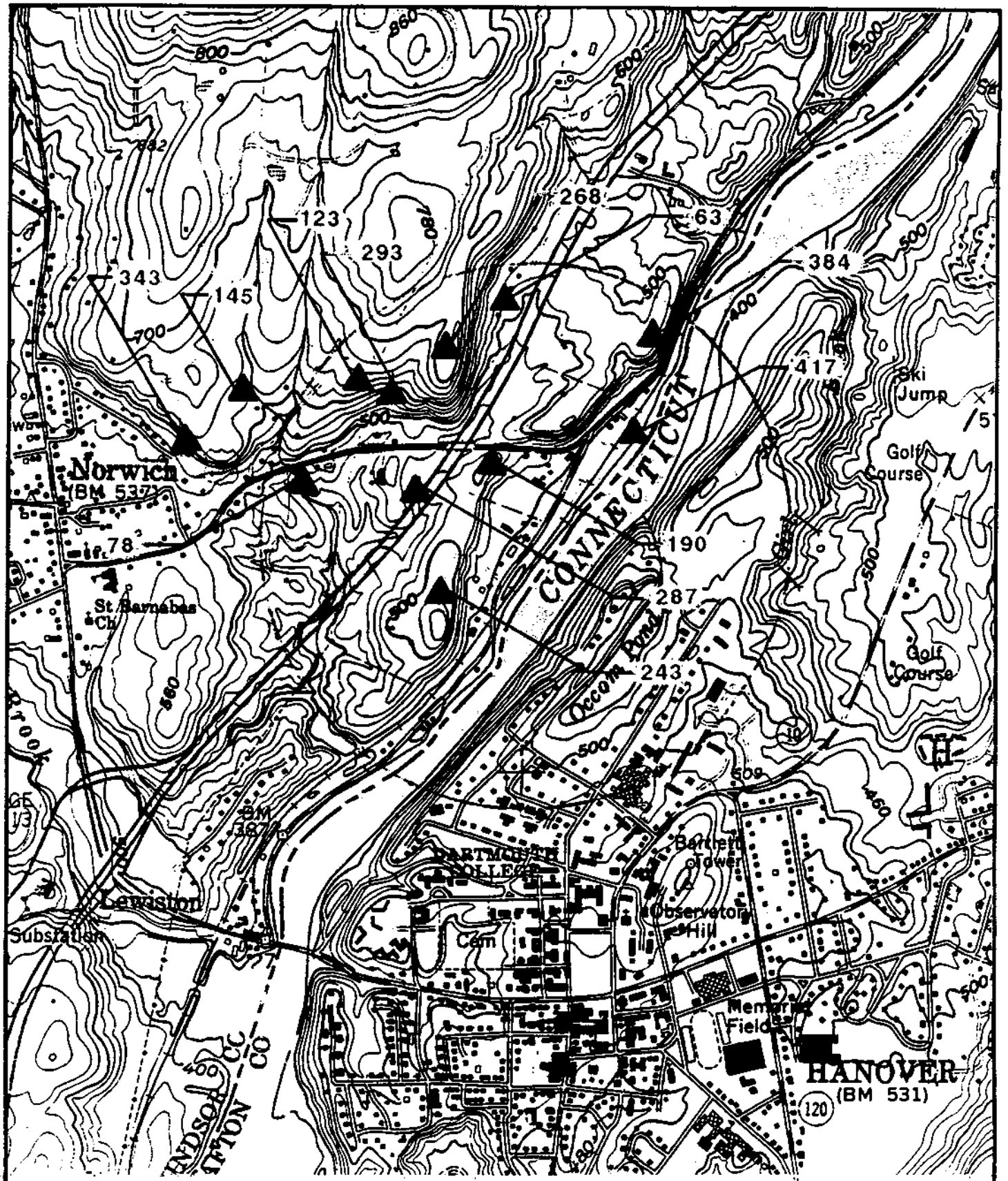
ATTACHMENT E

WELL LOCATION, RECEPTOR PLAN AND WELL DATA

WATER WELL DATA
WELLS WITHIN ONE-HALF MILE OF L. H. COOK, INC.

Well WR	No. USGS	Name of Well Owner or Purchaser (P)	Map Loc	Yield gpm	T.D. ft	Depth Rock ft	Casing Length ft	Static Water Level	Year Done	Drill. No.	Remarks
63		Dave's Services Dave Fitzgerald	46C4								
78		Robert Sherwin	46C4	14	225	62		15		18	
123		Oscar Gaoffrey	46C4	.75	445	30	40			16	
145		Hawk Mtn Corp (P)	46C4	5	325	48	61	15	1981	33	
190		Earthworks Greenhouse	46C4	45	85	6	79		1984	16	SC G
243		Jim Forcier	46C4	3	465	60	71		1986	121	
268		Keith Clifford	46C4	1	420	49	60	20	1986	206	
287		Morgan Goodrich	46C4	4	440	75	85		1987	16	
293		Keith Clifford	46C4	.75	660	26	40	18	1987	206	
343		Hastings Bldrs (P)	46C4	20	140	4	20		1989	16	
384		Merril Lynch Corp c/o McLowery Assoc	46C7	4	690	25	40	70	1989	16	
417		Cordelia Philbrook	46C7	2	360	60	70		1991	16	

Note: Data obtained from State of Vermont Water Supply Division



RECEPTOR PLAN

KNOWN WELL LOCATIONS WITHIN 1/2 MILE OF SITE

APPROXIMATE SCALE 1:18000 TAKEN FROM USGS QUAD FOR HANOVER, N.H. - VERMONT

Client No.	462071
Proj. Mgr.	F.D.D.
Date	01/93

L.H. COOK, INC.
PETROLEUM CONTAMINATION INVESTIGATION
NORWICH, VERMONT

Dufresne-Henry inc

A

BRUNING 44 232 45337-13