

2432



July 2, 1999

JUL 7 12 02 PM '99

Mr. Paul Dandrade
Cumberland Farms, Inc.
777 Dedham Street
Canton, Massachusetts 02021-9118

RE: Cumberland Farms, Inc., Station #4002 (VDEC Site #98-2432), 89 N. Main Street,
Northfield, VT - Subsurface Investigation Report

Dear Mr. Dandrade:

Lincoln Applied Geology, Inc. (LAG) is pleased to present this Subsurface Investigation Report (SIR) for Cumberland Farms, Inc. (CFI) Station #4002 (VDEC Site #98-2432) located at 89 North Main Street in Northfield, Vermont. In response to the discovery of gasoline contaminated soils during the replacement of the Underground Storage Tank (UST) system, the Vermont Department of Environmental Conservation (VDEC) Sites Management Section (SMS) requested that a subsurface contaminant investigation be performed to determine the extent and magnitude of the petroleum contamination beneath the site. The requested contaminant investigation was performed by LAG between May 17 and 25, 1999, and the report describing the results of the site investigation report (SIR) is attached. The enclosed SIR includes well logs, monitoring data, ground water quality results, observations made during the sensitive receptor survey, and our conclusions and recommendations for the site.

Results of the investigation show that soil and ground water beneath the site has been impacted by low to moderate levels of petroleum contamination which was previously detected during the UST system assessment. Other than soil and ground water directly beneath the site, no contaminant impacts were noted in several nearby potential sensitive receptors (i.e. surrounding building ambient airspaces and storm sewers). In order to appropriately delineate the extent, we recommend installing four additional ground water monitor wells on and downgradient of the CFI property. When the well installations are completed, we recommend performing another complete site monitoring and water quality sampling round. Once all data has been received and reviewed, it will be summarized and presented to you in a Supplemental Subsurface Investigation Report.

Please do not hesitate to call me or Richard S. Vandenberg, Project Manager, at (800) 477-4384, if you have any questions or comments regarding the attached report.

Sincerely,
Lincoln Applied Geology, Inc.

Jason S. Barnard
Jason S. Barnard
Geologist

cc: Richard Spiese
JSB/njp
Enclosures

Subsurface Investigation Report
Cumberland Farms Inc., Station #4002
89 N. Main Street, Northfield, Vermont
(VDEC Site #98-2432)

Prepared for:

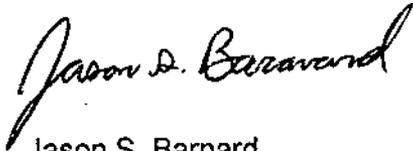
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Contact: Paul Dandrade
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Prepared by:

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July 2, 1999

Prepared by:



Jason S. Barnard
Geologist

Reviewed and Approved by:

Stephen Revell, CPG
Senior Hydrogeologist



Lincoln Applied Geology, Inc.
Environmental Consultants

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Executive Summary

In May 1998, CFI and their subcontractors completed the removal, closure, and replacement of four underground storage tanks (USTs) and associated piping at CFI facility #4002 located at 89 North Main Street in Northfield, Vermont. Lincoln Applied Geology, Inc. (LAG) conducted the assessment work between May 12 and 20, 1998, completed the UST closure report, and submitted it to the Vermont Department of Environmental Conservation (VDEC), Underground Storage Tank Program (USTP). During the assessment, the USTs and associated piping were found in fair to good condition with no holes noted. During the work and assessment activities, excavated soils were screened with a photoionization detector (PID) for the presence of volatile organic compounds (VOCs). Approximately 300 cubic yards (yds³) of the most highly contaminated soils were removed (from the two UST areas) and temporarily stockpiled on-site. Following VDEC approval, the gasoline contaminated soils were transported to the MTS Environmental, Inc. facility in Epsom, New Hampshire, where they were thermally treated. After receiving and reviewing the LAG closure report, the Sites Management Section (SMS) of the VDEC requested that additional work be performed to further define the extent and magnitude of the petroleum contamination present beneath the site.

As a part of the requested work, LAG installed two soil borings and five monitor wells on-site on May 17 and 18, 1999 to define the extent and magnitude of the contamination remaining beneath the site. One well (MW-1) was installed upgradient, two wells (MW-2 and MW-3) were installed sidegradient, and two wells (MW-4 and MW-5) were installed downgradient of the former UST areas. LAG also conducted a sensitive receptor survey by monitoring the ambient air space of the CFI building and surrounding residential building basements, and three nearby catch basins (CB-1, 2, and 3). Following installation, the wells were properly developed and sampled. A stadia survey was then performed on all monitor wells and pertinent site structures to relate the location of various features and determine the elevation of the wells.

On May 25, 1999, LAG was on-site to measure ground water levels, conduct a PID evaluation of each monitor well headspace, and collect ground water samples from the installed monitor wells. All samples were analyzed for the presence of volatile organic compounds (VOCs) by EPA Method 8021b and for total petroleum hydrocarbons (TPH) by EPA Method 8015 [gasoline range organics (GRO)].

Review of the (May 25th) water quality data shows that low to moderate levels of petroleum related VOCs and TPH concentrations were quantified in MW-3, MW-4, and MW-5. Based on these findings, we recommend that four additional ground water monitor wells be installed at this site. It is also recommended that another site monitoring and ground water sampling event be completed once the new wells are installed. Findings of the additional well installations and sampling will be submitted once this work is complete.



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Site Description

Cumberland Farms, Inc. (CFI) facility #4002 is located at 89 North Main Street in Northfield, Vermont (**Figure 1**). The property is bound by Vermont Route 12 (Main Street) to the west, the Lawrence Wayde property to the north, Bill Fanandy property to the south, and the Vermont State Housing Authority (VSHA) property to the east (**Figure 2**). CFI's one-story, slab on-grade with half basement (northern half) building is served by municipal water and sewer. **Figure 2** is a Detailed Site Map showing pertinent features of the site.

Site History

CFI and their subcontractors completed the excavation, removal, and replacement of four USTs and associated piping in May 1998. During the work, LAG provided oversight and assessment of the two UST systems and soils. The UST Permanent Closure Form, photoionization detector (PID) data, and photographs of the site were submitted by LAG to the Vermont Department of Environmental Conservation (VDEC), Underground Storage Tank Program (USTP) in a June 19, 1998 report. Data collected during the UST system upgrade indicated that soils directly beneath the two UST areas and beneath product dispensers contained elevated concentrations of VOCs. To accommodate the new UST system and appropriate backfill material, 300 yds³ of the most highly contaminated soils were removed from the two UST areas and from beneath the dispenser island. The contaminated soils were removed and taken to MTS Environmental in Epsom, New Hampshire for thermal treatment. Due to the discovery of contamination in soils surrounding the two former UST areas and beneath the product dispenser, the Sites Management Section (SMS) requested that additional work be performed to further define the extent and magnitude of the soil and ground water contamination beneath the site, if any.

Monitor Well Installation

Five monitor wells (MW-1, 2, 3, 4, and 5) and two soil borings (SB-1 and SB-2) were drilled and installed using hollow stem auger drilling techniques on May 17 and 18, 1999 by T&K Drilling, Inc of Troy, New Hampshire. The location of the five monitor wells and two borings are shown on **Figure 2**. A description of the sediments encountered during the drilling, monitor well construction details, and PID data obtained from the split spoon samples, are presented in the detailed well logs which are included as **Appendix A**.

Site Geology

Soils encountered during drilling include fine to coarse sands, with some medium to coarse gravel. The borings for monitor wells MW-3 and MW-4 contained a sandy silt layer between 15 and 17 feet below ground surface. The sediments encountered were deposited fluvially by the Dog River, which is approximately 400 feet away from the site, when base level was higher.

The underlying bedrock formation is the Cram Hill formation (458 to 478 million years old)(C.G. Doll, 1961). The Cram Hill formation consists of a greenish grey to black phyllite.



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Although the shallow rock was encountered on the other side of Route 12 during utilities installations, and in SB-1 and SB-2 on-site, no bedrock was encountered during the subsurface investigation in any of the completed monitor wells.

Site Survey and Monitoring

On May 18, 1999, LAG conducted a stadia survey to locate and determine elevations for monitor wells MW-1, 2, 3, 4, and 5; soil borings SB-1 and SB-2; and other site pertinent features relative to one and another. Using the survey data, the elevation of the top of the casing was calculated for each monitor well.

On May 25, 1999, LAG collected ground water level measurements from all monitor wells using an electronic interface probe capable of measuring 0.01 feet of free-floating petroleum product. LAG also assayed the headspace of each monitor well using a properly calibrated PID for the presence of petroleum related VOCs. No free-floating petroleum product was noted in any of the wells. The depth to ground water ranged between 19.23 feet (MW-2) and 20.21 feet (MW-3) across the site. A summary of ground water elevation data from the site visit is presented in **Table 1**, and PID assays are included in **Table 2**. Well headspace PID readings collected were background (BG) in all wells, except MW-3 which contained a PID reading of 85 parts per million (ppm).

Site Hydrogeology

The May 25th ground water elevation data was used to develop a Ground Water Contour Map which is included as **Figure 3**. The shallow ground water is associated with a water table aquifer which flows across the site towards MW-4, along a flat gradient of 0.01 feet/foot. It was originally anticipated that ground water flow would be more perpendicular to Main Street in a general west to east direction. In order to confirm the ground water flow direction at the site, a second set of water levels was collected on June 28th. The June 28th data is summarized on **Table 1** and was used to prepare the Ground Water Contour Map presented as **Figure 4**. The June data continues to show that ground water flows towards MW-4 at the site. It is possible that these flow conditions are either related to some type of geologic perturbation or to the significant disturbance in the former UST area. Once additional monitor wells are installed down/sidegradient of the former UST area we hope to better define the ground water flow direction beneath the entire site area.

Water Quality Sampling

LAG collected water quality samples from monitor wells MW-1, 2, 3, 4, and 5 following proper purging using industry accepted methods. The samples were analyzed along with a trip blank for the presence of VOCs via EPA Method 8021b and for total petroleum hydrocarbons (TPH) via EPA Method 8015 [gasoline range organics (GRO)] at Toxicon Laboratories, Inc., in Bedford, Massachusetts.

The water quality results are summarized in **Table 3** and are presented on the Water Quality Summary Map included as **Figure 5**. Copies of the laboratory reports are included as **Appendix B**. Review of **Table 3**, **Figure 5**, and **Appendix B** indicate that moderate



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concentrations of VOCs and TPH were present in the ground water samples collected from MW-3 (sidegradient) and MW-4 (downgradient). The data shows that MW-3 and MW-4 contained total benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations of 11,600 parts per billion (ppb) and 16,330 ppb, respectively. Samples collected from MW-4 and MW-5 contained 845 ppb and 101 ppb of methyl-tert-butyl-ether (MTBE), respectively. Based on these water quality data, it is apparent that ground water beneath the site has been impacted by moderate levels of petroleum related contamination. The extent of the dissolved phase contaminant plume is not completely delineated by the existing monitor well array, because the most downgradient well is also the most contaminated well (MW-4).

Sensitive Receptor Survey

On May 17, 1999, LAG conducted a sensitive receptor survey of the site and surrounding properties. Potential sensitive receptors at the site include; the storm sewer network, underground utility lines (water main), the indoor air of the CFI building (basement and first floor), the Wayde residence, the Fanandy apartment house, and the VSHA apartment complex located downgradient of the CFI property. The CFI facility and surrounding residential buildings are all served by municipal water and sewer. During the survey, three storm sewer catch basins (one near the north entrance to the facility and two downgradient of the former UST area) were screened with a PID for the presence of VOCs. The collected data is summarized and presented in **Table 2**. The data indicates that no PID readings above BG were present in any of the building structures or the three catch basins.

Summary of Findings

Based on the data collected, observations, and the evaluations presented, the following conditions exist at the site:

1. Soil and ground water down and sidegradient of the former UST area behind the CFI facility has been impacted by moderate levels of vapor and dissolved phase gasoline contamination. Ground water downgradient of the former UST area in front of the CFI facility has been impacted by low levels of dissolved phase gasoline contamination.
2. The current dissolved phase contaminant plume extends beyond the existing monitor well configuration.
3. No contaminant vapor impacts were present in any of the evaluated building structures and/or storm sewer catch basins.

Recommendations

Based on these findings, the following recommendations are made:

1. Install three additional ground water monitor wells (MW-6, 7, and 8) downgradient of the CFI property and one additional well (MW-9) sidegradient of the dispenser island area to determine the extent and magnitude of the



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dissolved phase contaminant plume (**Figure 6**).

2. Once the wells have been installed, perform a complete site monitoring and ground water sampling round (after a week stabilization period). Proposed wells MW-6, 7, and 8 will help better determine the downgradient extent of contamination and MW-9 will help identify if the underground utilities (water and sewer) north of the dispenser island area could be acting as a preferred conduit for vapor and/or dissolved phase contaminants.
3. Conduct informal interviews (at the time of the drilling) of individuals knowledgeable in the design and construction of the underground utilities (i.e. water and sewer) serving the VSHA apartment complex and the storm sewer network (SS-1 and SS-2) downgradient of the CFI property. This information will better enable us to determine if these systems are at risk of becoming impacted in the future and/or might act as a preferential pathway for contaminant migration. Collect water quality samples from SS-1 and SS-2 during the recommended site monitoring and sampling event in order to demonstrate if any contaminant impacts to this system are present.
4. Prepare a Supplemental Subsurface Investigation Summary Report (which will include our recommendations to treat and/or monitor the site). A cost estimate to implement these recommendations is included as **Appendix C**.



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REFERENCES

Doll, C.G. 1961. Centennial Geologic Map of Vermont.



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Project: Cumberland Farms, Inc. - Station #4002
Location: Northfield, Vermont

Table 1
VDEC Site # 98-2451
Sheet 1 of 1

Ground Water Elevation/Product Level (feet)

Data Point	TOC	05/25/99	06/28/99		
MW-1	100.21	80.92	80.19		
MW-2	100.00	80.77	80.04		
MW-3	100.77	81.14	80.40		
MW-4	100.00	79.79	79.07		
MW-5	100.27	80.73	80.01		

Notes:

- 1 - Elevation datum assumed
- 2 - Reference elevation is elevation of top of PVC well casing
- Light Grey Cell = DRY
- Dark Grey Cell = Inaccessible

Project: Cumberland Farms, Inc. - Station #4002
Location: Northfield, Vermont

Table 2
VDEC Site # 98-2432
Sheet 1 of 1

Photoionization Results (PID - ppm)

Data Point	05/17/99	05/25/99		
MW-1		BG		
MW-2		BG		
MW-3		85		
MW-4		BG		
MW-5		BG		
SS-1	BG	BG		
SS-2	BG	BG		
SS-3	BG	BG		
CFI - Basement	BG	BG		
CFI - First Floor	BG	BG		
Wayde Residence	BG			
Fanandy Apartment House	BG			
Apartment Complex	BG			

Notes:

BG - Background

SL - Saturated Lamp

Ground Water Quality Results (ppb)

Data Point	Compound	05/25/99			
MW-1	Benzene	<2			
	Toluene	<2			
	Ethylbenzene	<2			
	Xylenes	<4			
	MTBE	<5			
	BTEX	<10			
	BTEX + MTBE	<15			
	8015M	<0.02			
MW-2	Benzene	<2			
	Toluene	<2			
	Ethylbenzene	<2			
	Xylenes	<4			
	MTBE	<5			
	BTEX	<10			
	BTEX + MTBE	<15			
	8015M	<0.02			
MW-3	Benzene	<200			
	Toluene	<200			
	Ethylbenzene	2,070			
	Xylenes	9,130			
	MTBE	<500			
	BTEX	11,600			
	BTEX + MTBE	12,100			
	8015M	34.5			
MW-4	Benzene	2,190			
	Toluene	7,910			
	Ethylbenzene	1,010			
	Xylenes	5,220			
	MTBE	845			
	BTEX	16,330			
	BTEX + MTBE	17,175			
	8015M	23.8			
MW-5	Benzene	<2			
	Toluene	<2			
	Ethylbenzene	<2			
	Xylenes	<4			
	MTBE	101			
	BTEX	<10			
	BTEX + MTBE	111			
	8015M	0.39			
TRIP BLANK	Benzene	<2			
	Toluene	<2			
	Ethylbenzene	<2			
	Xylenes	<4			
	MTBE	<5			
	BTEX	<10			
	BTEX + MTBE	<15			
	8015M	<0.02			

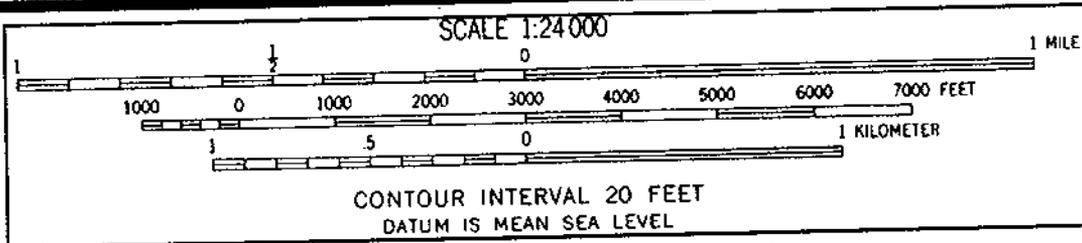
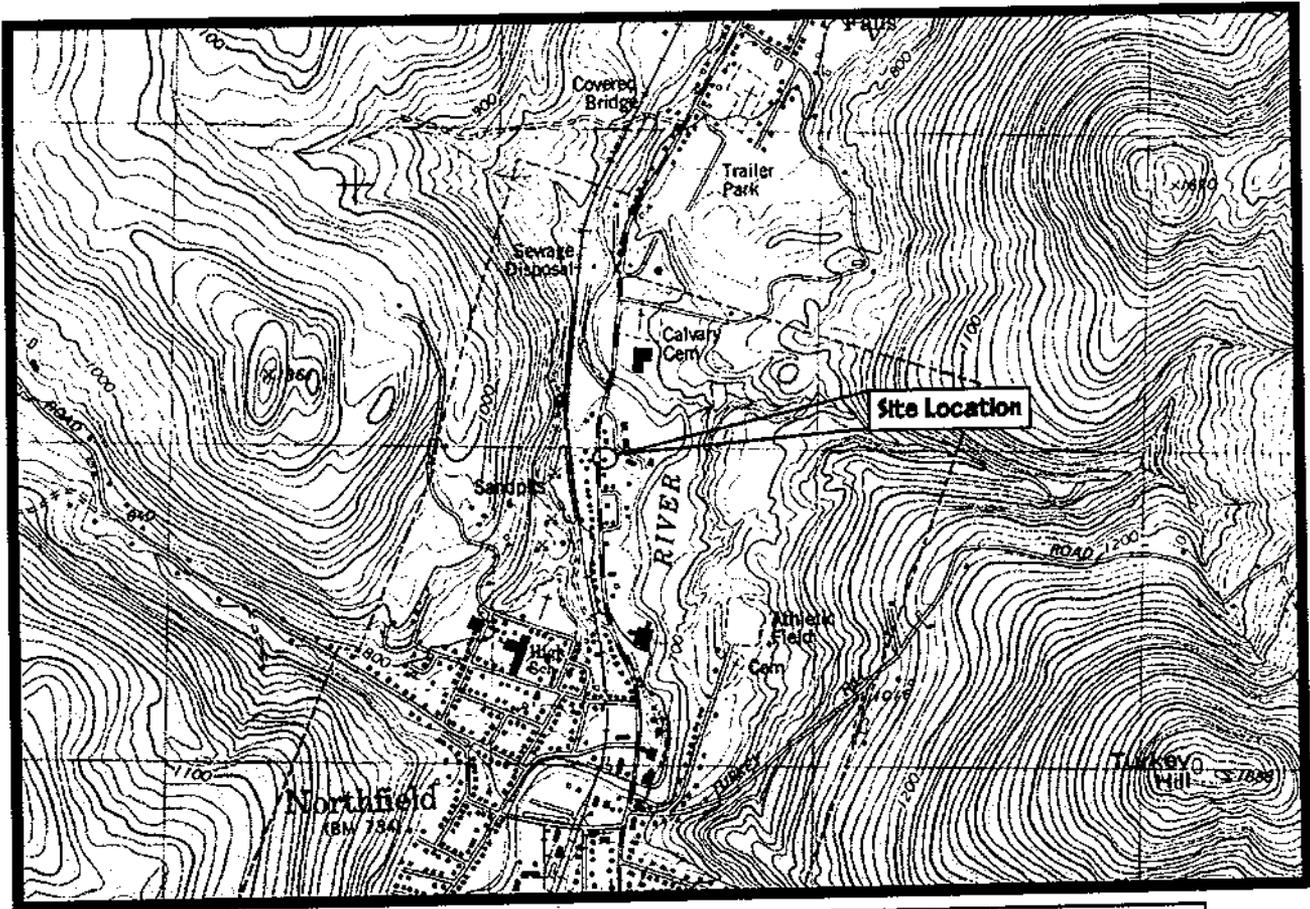
NOTES:

< - Contaminant not detected at specified detection limit
 BTEX and MTBE concentrations quantified in parts per billion (ppb), and total petroleum hydrocarbon (TPH) quantified in parts per million (ppm)

Figure 1

**Cumberland Farms, Inc.
Station #4002, VDEC Site #98-2432
Northfield, Vermont**

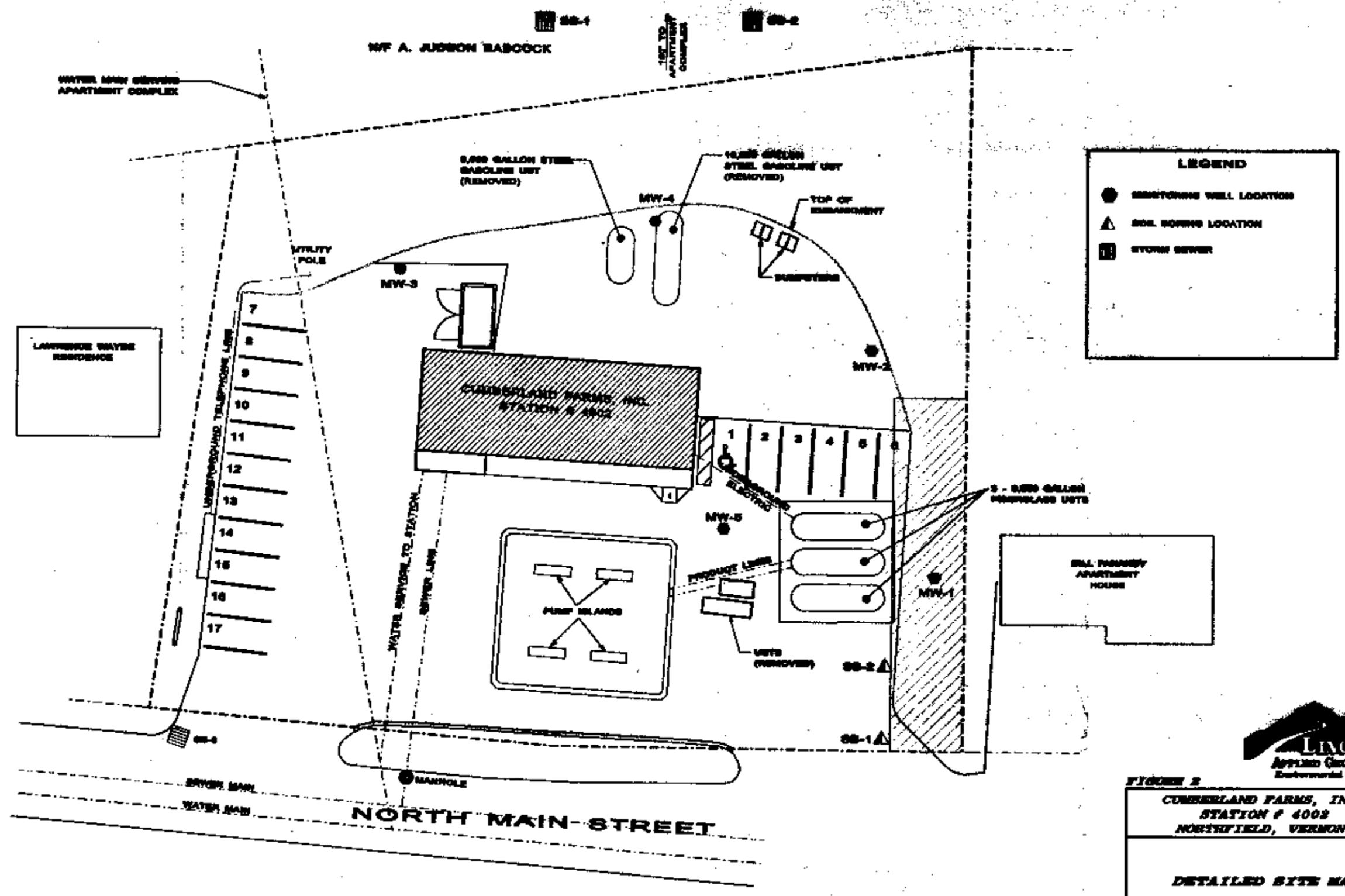
GENERAL LOCATION MAP



NORTHFIELD, VT.
NW/4 BARRE 15' QUADRANGLE
N4407.5-W7237.5/7.5

1980
PHOTOINSPECTED 1983
QUADRANGLE LOCATION DMA 6472 II NW-SERIES V813





LEGEND

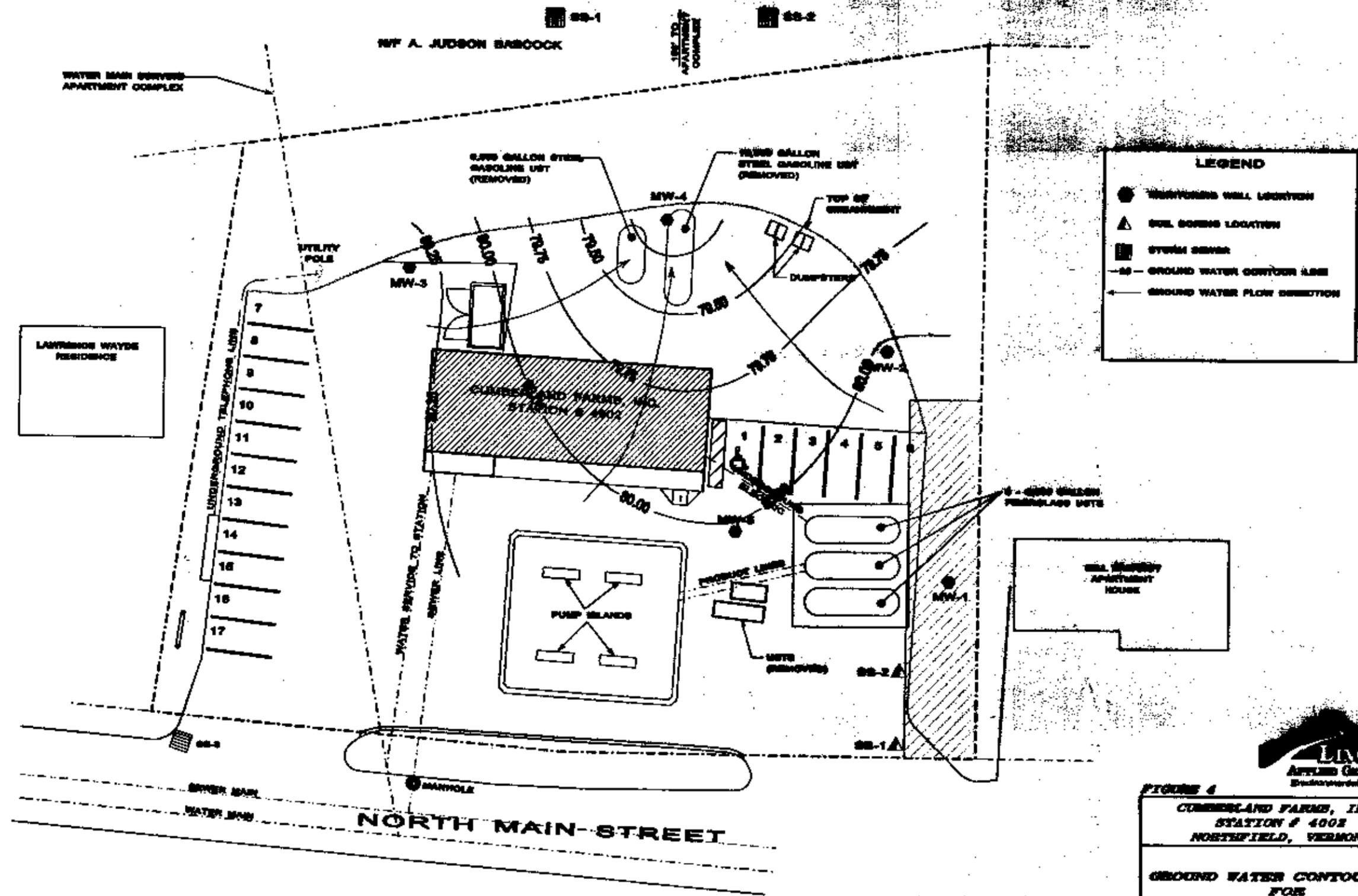
- MONITORING WELL LOCATION
- ▲ SOIL BORING LOCATION
- ▭ STORM SEWER

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FIGURE 2
CUMBERLAND FARMS, INC.
STATION # 4002
NORTHFIELD, VERMONT

DETAILED SITE MAP

Date: APR 90	Site: SITE ASSESSMENT	Scale: 1" = 50'
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PROJECT/CLIENT/DATE/SCALE/ISSUE/NO. SHEET/DATE

Appendix A

Well Logs

WELL LOG

WELL: SB-1
LOCATION: Cumberland Farms Inc., Northfield, VT - Near the southwest entrance to facility, upgradient of UST system.
DRILLER: T&K Drilling Inc. - Troy New Hampshire
HYDROGEOLOGIST: Jason S. Barnard, Lincoln Applied Geology, Inc.
DATE: May 17, 1999

Soils Description: (BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
5.0 - 7.0'	Sand, fine to medium, dark brown; some medium gravel; dry; no hydrocarbon odor.	BG
	Refusal at 7.0' below grade.	

Well Construction:

Bottom of Boring: 7.0'
Bottom of Well: No Well Set
Well Screen:
Solid Riser:
Sand Pack:
Bentonite Seal:
Backfill:
Well Box:

WELL LOG

WELL: SB-2
LOCATION: Cumberland Farms, Inc., Northfield, Vt - 10 feet west of UST area.
DRILLER: T&K Drilling, Inc. - Troy New Hampshire
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: May 18, 1999

Soils Description: (BG = Background [0.02], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
5' - 7'	Sand, fine, brown; trace gravel, medium to coarse; dry; no hydrocarbon odor.	BG
10' - 12'	Sand, medium to coarse, brown; trace silt; dry; no hydrocarbon odor.	BG
	Refusal at 12 feet below grade.	

Well Construction:

Bottom of Boring: 12'
Bottom of Well: No Well Set
Well Screen:
Solid Riser:
Sand Pack:
Bentonite Seal:
Backfill:
Well Box:

WELL LOG

WELL: MW-1
LOCATION: Cumberland Farms Inc., Northfield, VT - South of current UST area (upgradient).
DRILLER: T&K drilling Inc. - Troy New Hampshire
HYDROGEOLOGIST: Jason S. Barnard, Lincoln Applied Geology, Inc.
DATE: May 18, 1999

Soils Description: (BG = Background [0.2], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
5.0 - 7.0'	Sand, fine, brown; trace gravel, medium to large; dry; no hydrocarbon odor.	BG
10.0 - 12.0'	Sand, medium to coarse, brown; trace silt; dry; no hydrocarbon odor.	BG
15.0 - 17.0'	Sand, medium to coarse, brown; trace silt; dry; no hydrocarbon odor.	BG
20.0 - 22.0'	Sand, medium to coarse, brown; trace silt; saturated; no hydrocarbon odor.	BG
25.0 - 27.0'	Sand, fine to medium, brown; trace silt; saturated; no hydrocarbon odor.	BG

Well Construction:

Bottom of Boring: 27'
Bottom of Well: 27'
Well Screen: 10' (17 - 27') 2.0" of sch. 40 PVC, 0.010" slot
Solid Riser: 16.5' (0.5 - 17') 2.0" sch. 40 PVC
Sand Pack: 12' (15 - 27') No. 1 sand
Bentonite Seal: 2' (13 - 15') chips
Backfill: 12' (1 - 13') drill cuttings
Well Box: Cemented Flush

WELL LOG

WELL: MW-2
LOCATION: Cumberland Farms, Inc., Northfield, VT - Near southern most property boundary.
DRILLER: T&K Drilling, Inc. - Troy New Hampshire
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: May 17, 1999

Soils Description: (BG = Background [0.02], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
5' - 7'	Sand, medium to coarse, dark brown to brown; some gravel, fine; little silt, loose granular structure; dry; no hydrocarbon odor.	BG
10' - 12'	Sand, medium to coarse, grey to brown; some gravel, medium to coarse ; dry; no hydrocarbon odor.	BG
15' - 17'	Sand, medium to coarse, brown; trace gravel, fine; loose granular structure; dry; no hydrocarbon odor.	BG
20' - 22'	Sand, medium to coarse, brown; trace gravel, fine; little silt; saturated; no hydrocarbon odor.	BG
25' - 27'	Sand, medium to coarse, brown; some gravel, fine; little silt; saturated; no hydrocarbon odor.	BG

Well Construction:

Bottom of Boring: 28'
Bottom of Well: 28'
Well Screen: 10' (18'-28'); 2" Sch PVC, 40 0.010" slot
Solid Riser: 17.5' (0.5'-18'); 2" Sch 40 PVC
Sand Pack: 12' (16'-28'); No. 1 sand
Bentonite Seal: 2' (14'-16'); chips
Backfill: 12' (2'-14'); drill cuttings
Well Box: Cemented flush

WELL LOG

WELL: MW-3
LOCATION: Cumberland Farms, Inc., Northfield, VT - Near northeast corner of CFI building.
DRILLER: T&K Drilling, Inc. - Troy New Hampshire
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: May 17, 1999

Soils Description: (BG = Background [0.02], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PLD (ppm)</u>
5' - 7'	Sand, fine to medium, brown; some gravel, fine to medium; loose granular structure; dry; no hydrocarbon odor.	BG
10' - 12'	Sand, fine to medium, brown; some gravel, medium and large; trace silt; dry; no hydrocarbon odor.	BG
15' - 17'	Silt, dark brown; and sand, fine; little gravel, fine; weak granular blocky structure; damp; faint hydrocarbon odor.	323
20' - 22'	Sand, fine to medium, brown; trace silt; saturated; strong hydrocarbon odor.	223
25' - 27'	Sand, medium to coarse, brown to grey; little silt; saturated; very faint hydrocarbon odor.	47

Well Construction:

Bottom of Boring: 27'
Bottom of Well: 25'
Well Screen: 10' (15'-25'); 2" Sch 40 PVC, 0.010" slot
Solid Riser: 14.5' (0.5'-15'); 2" Sch 40 PVC
Sand Pack: 12' (13'-25'); No. 1 sand
Bentonite Seal: 2' (11'-13'); chips
Backfill: 10' (1'-11'); drill cuttings
Well Box: Cemented flush

WELL LOG

WELL: MW-4
LOCATION: Cumberland Farms, Inc., Northfield, VT - Downgradient of former UST area.
DRILLER: T&K Drilling, Inc. - Troy New Hampshire
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: May 17, 1999

Soils Description: (BG = Background [0.02], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
5' - 7'	Sand, medium to coarse, brown; trace gravel, fine; loose granular structure; dry; no hydrocarbon odor.	BG
10' - 12'	Sand, fine to medium, brown; trace gravel, fine; dry; no hydrocarbon odor.	BG
15' - 16.2'	Silt, dark brown to black; and sand, fine to very fine; little gravel, medium; dry; distinct hydrocarbon odor and root evidence.	BG
16.2' - 17'	Sand, very fine, brown; some silt, weak angular blocky structure; damp; strong hydrocarbon odor.	276
20' - 22'	Sand, very fine to fine, brown; some silt, little gravel, medium to large ; saturated; strong hydrocarbon odor.	152
25' - 27'	Sand, medium to coarse, brown; some gravel, fine; saturated; no hydrocarbon odor.	246

Well Construction:

Bottom of Boring: 28'
Bottom of Well: 28'
Well Screen: 10' (18'-28'); 2" Sch 40 PVC, 0.010" slot
Solid Riser: 17.5' (0.5'-28') 2" Sch 40 PVC
Sand Pack: 12' (16'-28'); No. 1 sand
Bentonite Seal: 2' (14'-16'); chips
Backfill: 12' (2'-14'); drill cuttings
Well Box: Cemented flush

WELL LOG

WELL: MW-5
LOCATION: Cumberland Farms, Inc., Northfield, VT - Near southwest corner of CFI building.
DRILLER: T&K Drilling, Inc. - Troy New Hampshire
HYDROGEOLOGIST: Jason Barnard, Lincoln Applied Geology, Inc.
DATE: May 18, 1999

Soils Description: (BG = Background [0.02], SL = Saturated Lamp [>500], ppm = Parts Per Million)

<u>Depth</u>	<u>Description</u>	<u>PID (ppm)</u>
5' - 7'	Sand, very fine to fine, brown to light brown; some silt and asphalt fragments; loose granular structure; dry; no hydrocarbon odor.	BG
10' - 12'	Sand, very fine to fine, light brown; trace gravel, fine; structureless; dry; no hydrocarbon odor.	BG
15' - 17'	Sand, medium to coarse, brown; trace gravel, fine; structureless; dry; no hydrocarbon odor.	BG
20' - 22'	Sand, medium to coarse, brown; little gravel, fine; trace silt; saturated; no hydrocarbon odor.	BG
25' - 27'	Sand, medium to coarse, brown; trace silt; saturated; no hydrocarbon odor.	6.7

Well Construction:

Bottom of Boring: 28'
Bottom of Well: 28'
Well Screen: 10' (18'-28'); 2" Sch 40 PVC, 0.010" slot
Solid Riser: 17.5' (0.5'-18'); 2" Sch 40 PVC
Sand Pack: 12' (16'-28'); No. 1 sand
Bentonite Seal: 2' (14'-16'); chips
Backfill: 12' (2'-14'); drill cuttings
Well Box: Cemented flush

Appendix B

Laboratory Reports
for
May 25, 1999

Received: 05/26/99

06/02/99 10:31:21

REPORT LINCOLN APPLIED GEOLOGY
TO REVELL DRIVE
LINCOLN, VT 05443
802-453-4384 FAX: 5399
ATTEN RICK VANDENBERG

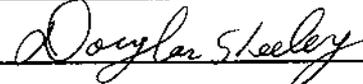
PREPARED TOXIKON CORPORATION
BY 15 WIGGINS AVE
BEDFORD, MA 01730
ATTEN PAUL LEZBERG
PHONE (781)275-3330


CERTIFIED BY
CONTACT JOHN

CLIENT LINCOLN VT SAMPLES 6
COMPANY LINCOLN APPLIED GEOLOGY
FACILITY REVELL DRIVE
LINCOLN, VT 05443

MA CERT # M-MA064; TRACE METALS, SULFATE, CYANIDE, RES. FREE
CHLORINE, Ca, TOTAL ALK., TDS, pH, THMs, VOC, PEST., NUTRIENTS.
DEMAND, O&G, PHENOLICS, PCBs, CT DHS #PH-0563, NY #10778
FL HRS E87143, NJ DEP 59538, NC DNR286, SC 88002, NH 204091-G.

WORK ID CFI #4002 NORTHFIELD, VT
TAKEN 5/25/99
TRANS _____
TYPE WATER
P.O. # _____
INVOICE under separate cover

VERIFIED BY: 
CERT #MMA064

SAMPLE IDENTIFICATION

TEST CODES and NAMES used on this workorder

- 01 TRIP BLANK
- 02 MW-1
- 03 MW-2
- 04 MW-5
- 05 MW-3
- 06 MW-4

- 8021M VOL. ORG. COMP.
- GRO GASOLINE RANGE ORGANICS

RECEIVED
JUN - 9 1999
LINCOLN APPLIED GEOLOGY, INC.

ENTERED

Received: 05/26/99

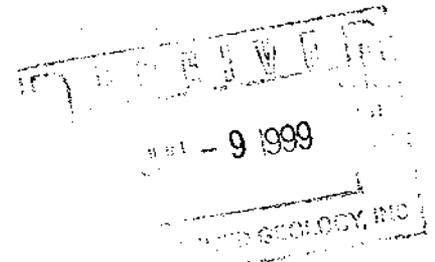
Results by Sample

SAMPLE ID TRIP BLANK FRACTION 01A TEST CODE 8021H NAME VOL. ORG. COMP.
 Date & Time Collected 05/25/99 08:00:00 Category WATER

	RESULT	LIMIT		RESULT	LIMIT
Dichlorodifluoromethane	ND	2.0	Ethyl benzene	ND	2.0
Chloromethane	ND	2.0	1,1,1,2-Tetrachloroethane	ND	2.0
Vinyl Chloride	ND	2.0	m+p-Xylene	ND	2.0
Bromomethane	ND	5.0	o-Xylene	ND	2.0
Chloroethane	ND	2.0	Styrene	ND	2.0
Trichlorofluoromethane	ND	2.0	Isopropyl benzene	ND	2.0
1,1-Dichloroethene	ND	2.0	Bromoform	ND	2.0
Methylene Chloride	ND	2.0	1,1,2,2-Tetrachloroethane	ND	2.0
trans-1,2-Dichloroethene	ND	2.0	1,2,3-Trichloropropane	ND	2.0
1,1-Dichloroethane	ND	2.0	n-Propyl benzene	ND	2.0
2,2-Dichloropropane	ND	2.0	Bromobenzene	ND	2.0
cis-1,2-Dichloroethene	ND	2.0	1,3,5-Trimethyl benzene	ND	2.0
Chloroform	ND	2.0	2-Chlorotoluene	ND	2.0
Bromochloromethane	ND	2.0	4-Chlorotoluene	ND	2.0
1,1,1-Trichloroethane	ND	2.0	tert-Butyl benzene	ND	2.0
1,1-Dichloropropene	ND	2.0	1,2,4-Trimethylbenzene	ND	2.0
Carbon Tetrachloride	ND	2.0	sec-Butylbenzene	ND	2.0
Benzene	ND	2.0	p-Isopropyltoluene	ND	2.0
1,2-Dichloroethane	ND	2.0	1,3-Dichlorobenzene	ND	2.0
Trichloroethene	ND	2.0	1,4-Dichlorobenzene	ND	2.0
1,2-Dichloropropane	ND	2.0	n-Butylbenzene	ND	2.0
Bromodichloromethane	ND	2.0	1,2-Dichlorobenzene	ND	2.0
Dibromomethane	ND	5.0	1,2-Dibromo-3-Chloropropane	ND	5.0
Toluene	ND	2.0	1,2,4-Trichlorobenzene	ND	2.0
1,1,2-Trichloroethane	ND	2.0	Hexachlorobutadiene	ND	2.0
Tetrachloroethene	ND	2.0	Naphthalene	ND	2.0
1,3-Dichloropropane	ND	2.0	1,2,3-Trichlorobenzene	ND	2.0
Dibromochloromethane	ND	2.0	Methyl-t-Butyl Ether	ND	5.0
1,2-Dibromoethane	ND	2.0			
Chlorobenzene	ND	2.0			

Notes and Definitions for this Report:

DATE RUN 06/01/99
 ANALYST XL
 INSTRUMENT G
 DILUTION 1
 UNITS ug/L



Received: 05/26/99

TOXIKON CORP.

REPORT

Work Order # 99-05-533

Results by Sample

SAMPLE ID TRIP BLANK

FRACTION 01A

TEST CODE GRO

NAME GASOLINE RANGE ORGANICS

Date & Time Collected 05/25/99 08:00:00

Category WATER

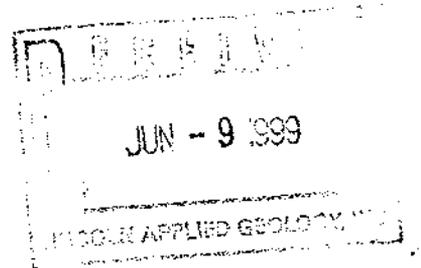
8015 MODIFIED GRO

	RESULT	LIMIT
	*	
ALIPHATICS	ND	0.010
AROMATICS	ND	0.010

Notes and Definitions for this Report:

DATE RUN 05/27/99
 ANALYST NLC
 INSTRUMENT VS
 DIL. FACTOR 1
 UNITS = mg/L

ND = not detected at detection limit



Received: 05/26/99

Results by Sample

SAMPLE ID MW-1 FRACTION 02A TEST CODE 8021M NAME VOL. ORG. COMP.
 Date & Time Collected 05/25/99 11:45:00 Category WATER

	RESULT	LIMIT		RESULT	LIMIT
Dichlorodifluoromethane	ND	2.0	Ethyl benzene	ND	2.0
Chloromethane	ND	2.0	1,1,1,2-Tetrachloroethane	ND	2.0
Vinyl Chloride	ND	2.0	m+p-Xylene	ND	2.0
Bromomethane	ND	5.0	o-Xylene	ND	2.0
Chloroethane	ND	2.0	Styrene	ND	2.0
Trichlorofluoromethane	ND	2.0	Isopropyl benzene	ND	2.0
1,1-Dichloroethene	ND	2.0	Bromoform	ND	2.0
Methylene Chloride	ND	2.0	1,1,2,2-Tetrachloroethane	ND	2.0
trans-1,2-Dichloroethene	ND	2.0	1,2,3-Trichloropropane	ND	2.0
1,1-Dichloroethane	ND	2.0	n-Propyl benzene	ND	2.0
2,2-Dichloropropane	ND	2.0	Bromobenzene	ND	2.0
cis-1,2-Dichloroethene	ND	2.0	1,3,5-Trimethyl benzene	ND	2.0
Chloroform	ND	2.0	2-Chlorotoluene	ND	2.0
Bromochloromethane	ND	2.0	4-Chlorotoluene	ND	2.0
1,1,1-Trichloroethane	ND	2.0	tert-Butyl benzene	ND	2.0
1,1-Dichloropropene	ND	2.0	1,2,4-Trimethylbenzene	ND	2.0
Carbon Tetrachloride	ND	2.0	sec-Butylbenzene	ND	2.0
Benzene	ND	2.0	p-Isopropyltoluene	ND	2.0
1,2-Dichloroethane	ND	2.0	1,3-Dichlorobenzene	ND	2.0
Trichloroethene	ND	2.0	1,4-Dichlorobenzene	ND	2.0
1,2-Dichloropropane	ND	2.0	n-Butylbenzene	ND	2.0
Bromodichloromethane	ND	2.0	1,2-Dichlorobenzene	ND	2.0
Dibromomethane	ND	5.0	1,2-Dibromo-3-Chloropropane	ND	5.0
Toluene	ND	2.0	1,2,4-Trichlorobenzene	ND	2.0
1,1,2-Trichloroethane	ND	2.0	Hexachlorobutadiene	ND	2.0
Tetrachloroethene	ND	2.0	Naphthalene	ND	2.0
1,3-Dichloropropane	ND	2.0	1,2,3-Trichlorobenzene	ND	2.0
Dibromochloromethane	ND	2.0	Methyl-t-Butyl Ether	ND	5.0
1,2-Dibromoethane	ND	2.0			
Chlorobenzene	ND	2.0			

Notes and Definitions for this Report:

DATE RUN 06/01/99
 ANALYST XL
 INSTRUMENT G
 DILUTION 1
 UNITS ug/L

JUN - 9 1999

TOXIKON CORP. BIOLOGY

ENTERED

SAMPLE ID MW-1 FRACTION 02A TEST CODE GRO NAME GASOLINE RANGE ORGANICS
 Date & Time Collected 05/25/99 11:45:00 Category WATER

8015 MODIFIED GRO

	RESULT	LIMIT
	*	
ALIPHATICS	ND	0.010
AROMATICS	ND	0.010

Notes and Definitions for this Report:

DATE RUN 05/27/99
 ANALYST NLC
 INSTRUMENT V5
 DIL. FACTOR 1
 UNITS = mg/L

ND = not detected at detection limit

9 1999
 TOXIKON CORP.

ENTERED

Received: 05/26/99

Results by Sample

SAMPLE ID MW-2 FRACTION Q3A TEST CODE 8021M NAME VOL. ORG. COMP.
Date & Time Collected 05/25/99 12:00:00 Category WATER

	RESULT	LIMIT		RESULT	LIMIT
Dichlorodifluoromethane	ND	2.0	Ethyl benzene	ND	2.0
Chloromethane	ND	2.0	1,1,1,2-Tetrachloroethane	ND	2.0
Vinyl Chloride	ND	2.0	m+p-Xylene	ND	2.0
Bromomethane	ND	5.0	o-Xylene	ND	2.0
Chloroethane	ND	2.0	Styrene	ND	2.0
Trichlorofluoromethane	ND	2.0	Isopropyl benzene	ND	2.0
1,1-Dichloroethene	ND	2.0	Bromoform	ND	2.0
Methylene Chloride	ND	2.0	1,1,2,2-Tetrachloroethane	ND	2.0
trans-1,2-Dichloroethene	ND	2.0	1,2,3-Trichloropropane	ND	2.0
1,1-Dichloroethane	ND	2.0	n-Propyl benzene	ND	2.0
2,2-Dichloropropane	ND	2.0	Bromobenzene	ND	2.0
cis-1,2-Dichloroethene	ND	2.0	1,3,5-Trimethyl benzene	ND	2.0
Chloroform	ND	2.0	2-Chlorotoluene	ND	2.0
Bromochloromethane	ND	2.0	4-Chlorotoluene	ND	2.0
1,1,1-Trichloroethane	ND	2.0	tert-Butyl benzene	ND	2.0
1,1-Dichloropropene	ND	2.0	1,2,4-Trimethylbenzene	ND	2.0
Carbon Tetrachloride	ND	2.0	sec-Butylbenzene	ND	2.0
Benzene	ND	2.0	p-isopropyltoluene	ND	2.0
1,2-Dichloroethane	ND	2.0	1,3-Dichlorobenzene	ND	2.0
Trichloroethene	ND	2.0	1,4-Dichlorobenzene	ND	2.0
1,2-Dichloropropane	ND	2.0	n-Butylbenzene	ND	2.0
Bromodichloromethane	ND	2.0	1,2-Dichlorobenzene	ND	2.0
Dibromomethane	ND	5.0	1,2-Dibromo-3-Chloropropane	ND	5.0
Toluene	ND	2.0	1,2,4-Trichlorobenzene	ND	2.0
1,1,2-Trichloroethane	ND	2.0	Hexachlorobutadiene	ND	2.0
Tetrachloroethene	ND	2.0	Naphthalene	ND	2.0
1,3-Dichloropropane	ND	2.0	1,2,3-Trichlorobenzene	ND	2.0
Dibromochloromethane	ND	2.0	Methyl-t-Butyl Ether	ND	5.0
1,2-Dibromoethane	ND	2.0			
Chlorobenzene	ND	2.0			

Notes and Definitions for this Report:

DATE RUN 06/01/99
ANALYST XL
INSTRUMENT G
DILUTION 1
UNITS ug/L

RECEIVED
JUN - 9 1999
LABORATORY

ENTERED

Received: 05/26/99

Results by Sample

SAMPLE ID MV-2 FRACTION 03A TEST CODE GRO NAME GASOLINE RANGE ORGANICS
 Date & Time Collected 05/25/99 12:00:00 Category WATER

8015 MODIFIED GRO

	RESULT	LIMIT
	*	
ALIPHATICS	ND	0.010
AROMATICS	ND	0.010

Notes and Definitions for this Report:

DATE RUN 05/27/99
 ANALYST NLC
 INSTRUMENT V5
 DIL. FACTOR 1
 UNITS = mg/L

ND = not detected at detection limit

ENTERED

Received: 05/26/99

Results by Sample

SAMPLE ID MW-5 FRACTION 04A TEST CODE 8021M NAME VOL. ORG. COMP.
 Date & Time Collected 05/25/99 12:20:00 Category WATER

	RESULT	LIMIT		RESULT	LIMIT
Dichlorodifluoromethane	ND	2.0	Ethyl benzene	ND	2.0
Chloromethane	ND	2.0	1,1,1,2-Tetrachloroethane	ND	2.0
Vinyl Chloride	ND	2.0	m+p-Xylene	ND	2.0
Bromomethane	ND	5.0	o-Xylene	ND	2.0
Chloroethane	ND	2.0	Styrene	ND	2.0
Trichlorofluoromethane	ND	2.0	Isopropyl benzene	ND	2.0
1,1-Dichloroethene	ND	2.0	Bromoform	ND	2.0
Methylene Chloride	ND	2.0	1,1,2,2-Tetrachloroethane	ND	2.0
trans-1,2-Dichloroethene	ND	2.0	1,2,3-Trichloropropane	ND	2.0
1,1-Dichloroethane	ND	2.0	n-Propyl benzene	ND	2.0
2,2-Dichloropropane	ND	2.0	Bromobenzene	ND	2.0
cis-1,2-Dichloroethene	ND	2.0	1,3,5-Trimethyl benzene	ND	2.0
Chloroform	ND	2.0	2-Chlorotoluene	ND	2.0
Bromochloromethane	ND	2.0	4-Chlorotoluene	ND	2.0
1,1,1-Trichloroethane	ND	2.0	tert-Butyl benzene	ND	2.0
1,1-Dichloropropene	ND	2.0	1,2,4-Trimethylbenzene	ND	2.0
Carbon Tetrachloride	ND	2.0	sec-Butylbenzene	ND	2.0
Benzene	ND	2.0	p-Isopropyltoluene	ND	2.0
1,2-Dichloroethane	ND	2.0	1,3-Dichlorobenzene	ND	2.0
Trichloroethene	ND	2.0	1,4-Dichlorobenzene	ND	2.0
1,2-Dichloropropane	ND	2.0	n-Butylbenzene	ND	2.0
Bromodichloromethane	ND	2.0	1,2-Dichlorobenzene	ND	2.0
Dibromomethane	ND	5.0	1,2-Dibromo-3-Chloropropane	ND	5.0
Toluene	ND	2.0	1,2,4-Trichlorobenzene	ND	2.0
1,1,2-Trichloroethane	ND	2.0	Hexachlorobutadiene	ND	2.0
Tetrachloroethene	ND	2.0	Naphthalene	ND	2.0
1,3-Dichloropropane	ND	2.0	1,2,3-Trichlorobenzene	ND	2.0
Dibromochloromethane	ND	2.0	Methyl-t-Butyl Ether	101	5.0
1,2-Dibromoethane	ND	2.0			
Chlorobenzene	ND	2.0			

Notes and Definitions for this Report:

DATE RUN 06/01/99
 ANALYST XL
 INSTRUMENT G
 DILUTION 1
 UNITS ug/L

ENTERED

Received: 05/26/99

Results by Sample

SAMPLE ID MW-5 FRACTION 04A TEST CODE GRO NAME GASOLINE RANGE ORGANICS
 Date & Time Collected 05/25/99 12:20:00 Category WATER

8015 MODIFIED GRO

	RESULT	LIMIT
	*	
ALIPHATICS	0.06	0.010
AROMATICS	0.33	0.010

Notes and Definitions for this Report:

DATE RUN 05/27/99
 ANALYST NLC
 INSTRUMENT V5
 DIL. FACTOR 1
 UNITS = mg/L

ND = not detected at detection limit

ENTERED

SAMPLE ID MW-3 FRACTION 05A TEST CODE 8021M NAME VOL. ORG. COMP.
Date & Time Collected 05/25/99 12:45:00 Category WATER

	RESULT	LIMIT			
Dichlorodifluoromethane	<u>ND</u>	<u>200</u>	Ethyl benzene	<u>2070</u>	<u>200</u>
Chloromethane	<u>ND</u>	<u>200</u>	1,1,1,2-Tetrachloroethane	<u>ND</u>	<u>200</u>
Vinyl Chloride	<u>ND</u>	<u>200</u>	m+p-Xylene	<u>6870</u>	<u>200</u>
Bromomethane	<u>ND</u>	<u>500</u>	o-Xylene	<u>2160</u>	<u>200</u>
Chloroethane	<u>ND</u>	<u>200</u>	Styrene	<u>ND</u>	<u>200</u>
Trichlorofluoromethane	<u>ND</u>	<u>200</u>	Isopropyl benzene	<u>ND</u>	<u>200</u>
1,1-Dichloroethene	<u>ND</u>	<u>200</u>	Bromoform	<u>ND</u>	<u>200</u>
Methylene Chloride	<u>ND</u>	<u>200</u>	1,1,2,2-Tetrachloroethane	<u>ND</u>	<u>200</u>
trans-1,2-Dichloroethene	<u>ND</u>	<u>200</u>	1,2,3-Trichloropropane	<u>ND</u>	<u>200</u>
1,1-Dichloroethane	<u>ND</u>	<u>200</u>	n-Propyl benzene	<u>682</u>	<u>200</u>
2,2-Dichloropropane	<u>ND</u>	<u>200</u>	Bromobenzene	<u>ND</u>	<u>200</u>
cis-1,2-Dichloroethene	<u>ND</u>	<u>200</u>	1,3,5-Trimethyl benzene	<u>1270</u>	<u>200</u>
Chloroform	<u>ND</u>	<u>200</u>	2-Chlorotoluene	<u>ND</u>	<u>200</u>
Bromochloromethane	<u>ND</u>	<u>200</u>	4-Chlorotoluene	<u>ND</u>	<u>200</u>
1,1,1-Trichloroethane	<u>ND</u>	<u>200</u>	tert-Butyl benzene	<u>ND</u>	<u>200</u>
1,1-Dichloropropene	<u>ND</u>	<u>200</u>	1,2,4-Trimethylbenzene	<u>4710</u>	<u>200</u>
Carbon Tetrachloride	<u>ND</u>	<u>200</u>	sec-Butylbenzene	<u>ND</u>	<u>200</u>
Benzene	<u>ND</u>	<u>200</u>	p-Isopropyltoluene	<u>ND</u>	<u>200</u>
1,2-Dichloroethane	<u>ND</u>	<u>200</u>	1,3-Dichlorobenzene	<u>ND</u>	<u>200</u>
Trichloroethene	<u>ND</u>	<u>200</u>	1,4-Dichlorobenzene	<u>ND</u>	<u>200</u>
1,2-Dichloropropane	<u>ND</u>	<u>200</u>	n-Butylbenzene	<u>ND</u>	<u>200</u>
Bromodichloromethane	<u>ND</u>	<u>200</u>	1,2-Dichlorobenzene	<u>ND</u>	<u>200</u>
Dibromomethane	<u>ND</u>	<u>500</u>	1,2-Dibromo-3-Chloropropane	<u>ND</u>	<u>500</u>
Toluene	<u>ND</u>	<u>200</u>	1,2,4-Trichlorobenzene	<u>ND</u>	<u>200</u>
1,1,2-Trichloroethane	<u>ND</u>	<u>200</u>	Hexachlorobutadiene	<u>ND</u>	<u>200</u>
Tetrachloroethene	<u>ND</u>	<u>200</u>	Naphthalene	<u>ND</u>	<u>200</u>
1,3-Dichloropropane	<u>ND</u>	<u>200</u>	1,2,3-Trichlorobenzene	<u>ND</u>	<u>200</u>
Dibromochloromethane	<u>ND</u>	<u>200</u>	Methyl-t-Butyl Ether	<u>ND</u>	<u>500</u>
1,2-Dibromoethane	<u>ND</u>	<u>200</u>			
Chlorobenzene	<u>ND</u>	<u>200</u>			

Notes and Definitions for this Report:

DATE RUN 06/01/99
ANALYST XL
INSTRUMENT G
DILUTION 100
UNITS ug/L

ENTERED

Received: 05/26/99

Results by Sample

SAMPLE ID MW-3 FRACTION 05A TEST CODE GRO NAME GASOLINE RANGE ORGANICS
 Date & Time Collected 05/25/99 12:45:00 Category WATER

8015 MODIFIED GRO

	RESULT	LIMIT
	*	
ALIPHATICS	8.1	0.50
AROMATICS	26.4	0.50

Notes and Definitions for this Report:

DATE RUN 05/28/99
 ANALYST NLC
 INSTRUMENT V5
 DIL. FACTOR 50
 UNITS = mg/L

ND = not detected at detection limit

[Faint handwritten notes and stamps]

ENTERED

Received: 05/26/99

Results by Sample

SAMPLE ID MW-4FRACTION 06A TEST CODE 8021M NAME VOL. ORG. COMP.Date & Time Collected 05/25/99 13:00:00 Category WATER

	RESULT	LIMIT		RESULT	LIMIT
Dichlorodifluoromethane	ND	100	Ethyl benzene	1010	100
Chloromethane	ND	100	1,1,1,2-Tetrachloroethane	ND	100
Vinyl Chloride	ND	100	m+p-Xylene	3720	100
Bromomethane	ND	250	o-Xylene	1500	100
Chloroethane	ND	100	Styrene	ND	100
Trichlorofluoromethane	ND	100	Isopropyl benzene	ND	100
1,1-Dichloroethene	ND	100	Bromoform	ND	100
Methylene Chloride	ND	100	1,1,2,2-Tetrachloroethane	ND	100
trans-1,2-Dichloroethene	ND	100	1,2,3-Trichloropropane	ND	100
1,1-Dichloroethane	ND	100	n-Propyl benzene	269	100
2,2-Dichloropropane	ND	100	Bromobenzene	ND	100
cis-1,2-Dichloroethene	ND	100	1,3,5-Trimethyl benzene	468	100
Chloroform	ND	100	2-Chlorotoluene	ND	100
Bromochloromethane	ND	100	4-Chlorotoluene	ND	100
1,1,1-Trichloroethane	ND	100	tert-Butyl benzene	ND	100
1,1-Dichloropropene	ND	100	1,2,4-Trimethylbenzene	1550	100
Carbon Tetrachloride	ND	100	sec-Butylbenzene	ND	100
Benzene	2190	100	p-Isopropyltoluene	ND	100
1,2-Dichloroethane	ND	100	1,3-Dichlorobenzene	ND	100
Trichloroethene	ND	100	1,4-Dichlorobenzene	ND	100
1,2-Dichloropropane	ND	100	n-Butylbenzene	ND	100
Bromodichloromethane	ND	100	1,2-Dichlorobenzene	ND	100
Dibromomethane	ND	250	1,2-Dibromo-3-Chloropropane	ND	250
Toluene	7910	100	1,2,4-Trichlorobenzene	ND	100
1,1,2-Trichloroethane	ND	100	Hexachlorobutadiene	ND	100
Tetrachloroethene	ND	100	Naphthalene	ND	100
1,3-Dichloropropane	ND	100	1,2,3-Trichlorobenzene	ND	100
Dibromochloromethane	ND	100	Methyl-t-Butyl Ether	854	250
1,2-Dibromoethane	ND	100			
Chlorobenzene	ND	100			

Notes and Definitions for this Report:

DATE RUN 06/01/99
 ANALYST XL
 INSTRUMENT G
 DILUTION 50
 UNITS ug/L

ENTERED
 18

Received: 05/26/99

Results by Sample

SAMPLE ID MM-4 FRACTION 06A TEST CODE GRO NAME GASOLINE RANGE ORGANICS

Date & Time Collected 05/25/99 13:00:00 Category WATER

8015 MODIFIED GRO

	RESULT	LIMIT
	*	
ALIPHATICS	6.3	0.10
AROMATICS	17.5	0.25

Notes and Definitions for this Report:

DATE RUN 05/27/99
 ANALYST NLC
 INSTRUMENT V5
 DIL. FACTOR 10
 UNITS = mg/L

ND = not detected at detection limit

ENTERED

Received: 05/26/99

Test Methodology

TEST CODE 8021M NAME VOL. ORG. COMP.

EPA METHOD 8021B

Reference: Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, SW846. Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography With Photoionization and Electrolytic Conductivity Detectors in Series. FINAL UPDATE 111, 1996.

TEST CODE GRO NAME GASOLINE RANGE ORGANICS

METHOD: EPA METHOD 8015 Modified; Gasoline Range Organics

Nonhalogenated Volatile Organics. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods 3rd Edition, Final Update 1.

Quantitation for BTEX/MTBE is performed by analysis on a PID detector. Miscellaneous aromatics eluting between o-xylene and 1,2,4-trimethylbenzene are quantitated on the PID detector using the response factor of o-xylene. Miscellaneous aliphatics eluting between 3-methylpentane and isooctane are quantitated on the FID detector using the response factor of n-hexane.

This method meets the specifications of Maine DEP Method 3.1.1.2.6



15 Wiggins Ave., Bedford, MA 01730
 Telephone: (781) 275-3330
 Fax: (781) 275-7478

CHAIN OF CUSTODY RECORD

WORK ORDER #: 17-00-222

DUE DATE: 06-02-99

COMPANY: Lincoln Applied Geology, Inc.
 ADDRESS: 163 Rensell Drive
Lincoln, VT 05443
 PHONE #: (502) 452-4584 FAX #: (502) 453-5379
 P.O. #: _____
 PROJECT MANAGER: Rick Vandenberg
 PROJECT ID/LOCATION: CFI Northfield Station # 4002

- SAMPLE TYPE CONTAINER TYPE
- 1. WASTEWATER P - PLASTIC
 - 2. SOIL G - GLASS
 - 3. SLUDGE V - VOA
 - 4. OIL
 - 5. DRINKING WATER
 - 6. WATER (GW/MW/SW)
 - 7. OTHER (SPECIFY)

ANALYSES

TOXIKON #	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER			SAMPLING		PRESERVATIVE	CONTAINER TYPE		ANALYSES										SPECIAL INSTRUCTIONS/ COMMENTS										
			SIZE	TYPE	#	DATE	TIME		P	G	V	1	2	3	4	5	6	7	8	9		10	11	12	13	14	15	16	17	18	19
(1)	Trip Blank	GW	40ml	V	4	5/25/99	8:00	HCl	X	X	EPA - 8041B (MDE) TPH 8015 (GRO)																				
(2)	MW-1						1145		X	X																					
(3)	MW-2						1200		X	X																					
(4)	MW-3						1220		X	X																					
(5)	MW-3						1245		X	X																					
(6)	MW-4						1300		X	X																					

SAMPLED BY: <u>J. Broun</u>	DATE: <u>5-25-99</u>	QUOTATION #:
RELINQUISHED BY: <u>Don Broun</u>	TIME: <u>12:00 - PM</u>	RECEIVED BY:
RELINQUISHED BY: <u>USPC</u>	DATE: <u>5-26-99</u>	RECEIVED FOR LAB BY: <u>D. J. Madigan</u>
METHOD OF SHIPMENT	TIME: <u>12:00 -</u>	COOLER TEMPERATURE <u>11:20</u>

RUSH BUSINESS DAY TURN AROUND
 ROUTINE
Sample disposal information
 Are there any other known or suspected contaminants in these samples other than those listed above?
 Yes _____ No If Yes, 1st Known _____

Appendix C
Cost Estimate

