

CORRESPONDENCE/MEMORANDUM-----

DATE: October 8, 1990

TO: Bill Niemi  
District Eight, Design

FROM: Julie White, Site Assessment Coordinator *J White*  
Risk, Safety, and Hazardous Materials Management

Subject: ENVIRONMENTAL SITE ASSESSMENT REPORT  
Property: Hedlund DX Site  
Project ID# 8040-03-00

Attached are two copies of the report for the site assessment conducted on the above property.

The assessment concludes:

Soils at this site are contaminated by gasoline.  
Groundwater is contaminated by petroleum products above WI action limits.  
Sources of contamination are off WDOT right of way.

The assessment recommends:

Aqua Tech recommends a meeting between WDOT, WDNR and property owners to discuss specific clean up responsibilities and funding.

This site should be remediated by responsible parties prior to any right of way acquisition.

If you have any questions about the data contained within this report or need additional information, please contact me at (608) 266-1476.

cc: File  
DNR✓

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HEADQUARTERS

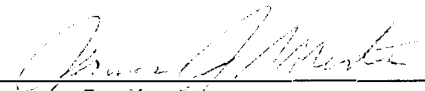
PHASE III  
ENVIRONMENTAL ASSESSMENT REPORT  
FOR THE  
HEDLUND DX SITE  
VILLAGE OF FALUN, BURNETT COUNTY, WISCONSIN

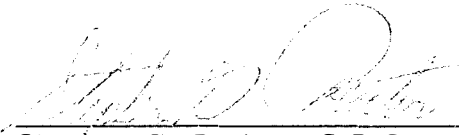
SEPTEMBER 1990

PREPARED FOR THE  
WISCONSIN DEPARTMENT OF TRANSPORTATION  
PROJECT 8040-03-00

PREPARED BY  
AQUA-TECH, INC.  
140 SOUTH PARK STREET  
PORT WASHINGTON, WISCONSIN 53074  
ATI PROJECT 91036

PHASE III  
ENVIRONMENTAL ASSESSMENT REPORT  
FOR THE  
HEDLUND DX SITE  
VILLAGE OF FALUN, BURNETT COUNTY, WISCONSIN

Prepared By:  Date: 9-11-90  
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Environmental Project Coordinator  
Aqua-Tech, Inc.

Reviewed By:  Date: 9/14/90  
Stephen G. Reuter, C.P.G.  
Hydrogeologist  
AIPG Certificate #7836  
Aqua-Tech, Inc.

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## 1.0 SUMMARY

Aqua-Tech, Inc. has completed a Phase III Environmental Assessment for the Hedlund DX site in Falun, Wisconsin. The assessment was performed on June 7, 1990, as contracted by the Wisconsin Department of Transportation (WDOT) Risk and Safety Management Section under Project I.D. 8040-03-00.

The purpose of the assessment was to further define the vertical and horizontal extent of petroleum contaminants discovered within the highway right-of-way during an initial investigation conducted November 7, 1989. Additional activities included:

- \* Three soil borings to a maximum depth of 15.0 feet
- \* Collection and field screening of subsurface soil and groundwater samples for volatile organic compounds (VOCs) with a photoionization detector (PID)
- \* Chemical analysis of two subsurface soil samples for one or more of the following parameters: total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylene (BTEX); percent solids; pH, flash point, total lead, and EP toxicity lead.
- \* Chemical analysis of two groundwater samples for BTEX

Results of the phase III investigation indicate that THE SOILS WITHIN THE EXISTING RIGHT-OF-WAY ARE CONTAMINATED WITH GASOLINE ABOVE THE WISCONSIN DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATION (DILHR) 10 UG/G (PPM) REMEDIAL ACTION LEVEL FOR TPH. GROUNDWATER CONTAMINANTS WERE IDENTIFIED AT LEVELS EXCEEDING THE WISCONSIN ADMINISTRATIVE CODE NR 140.10 ENFORCEMENT STANDARDS.

## 2.0 SITE BACKGROUND

### 2.1 Introduction

This section summarizes the activities and results of the previous environmental investigation at the site.

### 2.2 Previous Investigations

The site was the subject of a Phase II Environmental Assessment conducted by Aqua-Tech on November 7, 1989.

Activities included in that assessment were:

- \* Regulatory background review
- \* Site representative interview
- \* Two soil borings to a maximum depth of 13.0 feet
- \* Collection and field screening of subsurface soil samples for volatile organic compounds (VOCs)
- \* Chemical analysis of two subsurface soil samples for total petroleum hydrocarbons (TPH) and one subsurface soil sample for EP toxic metals
- \* Chemical analysis of one groundwater sample for volatile organic compounds

Results of that investigation indicated that soils and groundwater within the proposed right-of-way acquisition at the site were contaminated by petroleum products and 1,2 dichloroethane. A copy of the Phase II Environmental Assessment report is provided in Attachment A.

### 3.0 SITE ASSESSMENT PROCEDURES AND FIELD OBSERVATIONS

#### 3.1 Introduction

This section outlines assessment procedures and field observations for the environmental assessment at the Hedlund DX site. Individual subsections address the sampling and chain of custody procedures. Rationales for specific activities are also provided.

#### 3.2 Sampling Procedures

On June 7, 1990, Aqua-Tech completed three soil borings and collected two subsurface soil samples and two groundwater samples for laboratory analyses. See Figure 3-1 for boring locations.

Subsurface samples were collected from borings to determine the vertical and horizontal extent of petroleum product contamination present in the soil and/or groundwater at the site. Suitable boring locations were limited by the presence of overhead utilities and State Highway 70.

##### Soil Sampling Procedures

Subsurface soil samples were collected with a truck mounted rotary drill equipped with hollow stem augers and 2 inch diameter, 24 inch split spoon sampler. The split spoon sampler was advanced at 2 foot intervals by conventional methods, including the attachment of the sampler to an AW rod and standard 140 pound hammer.



FIGURE 3-1

# AQUA-TECH INC.

SCALE: 1"=100'

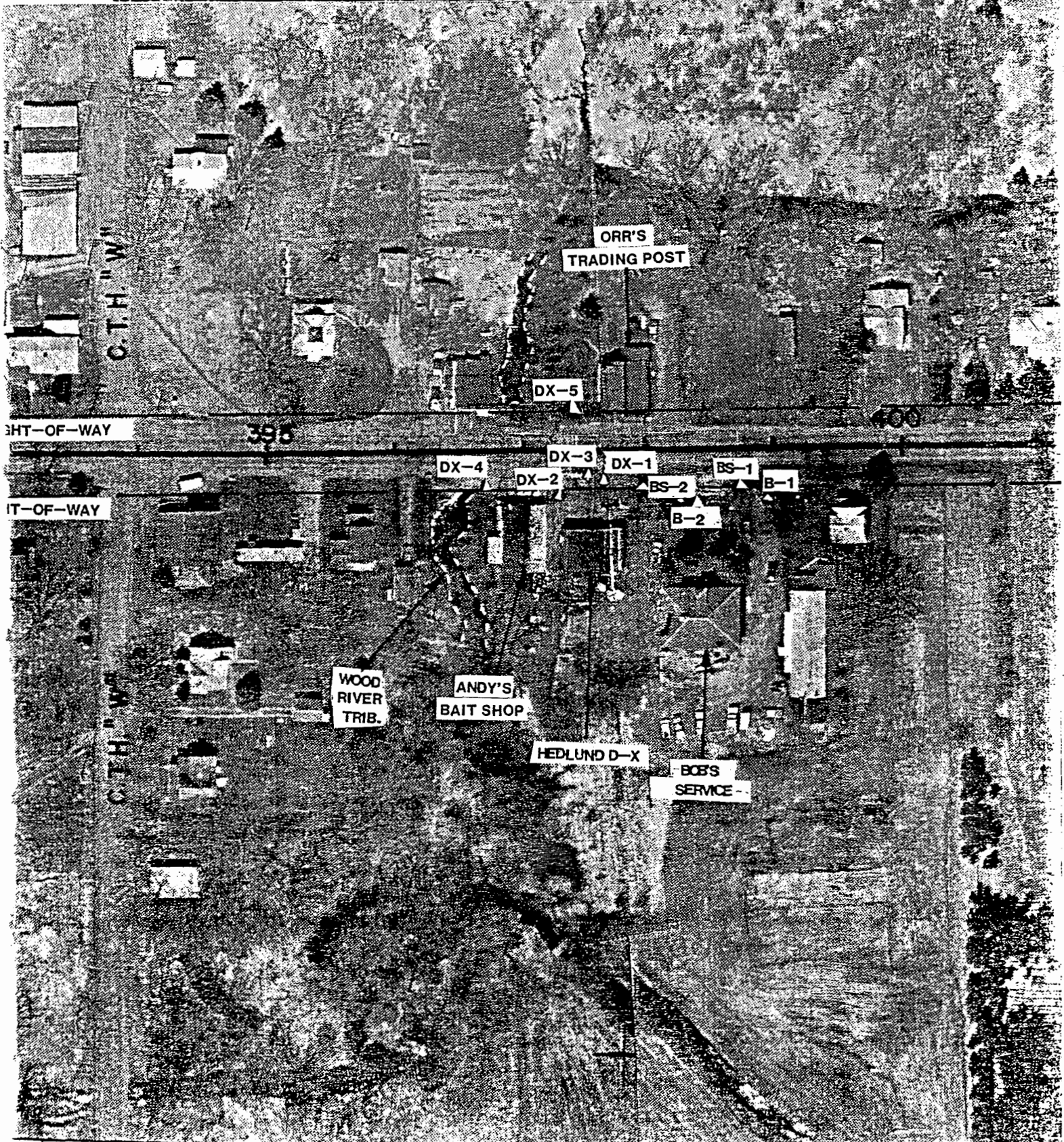
APPROVED:

DRAWN BY:

DATE: 8/23/90

RICHARDSON

HEDLUND D-X / BOB'S SERVICE



All drilling tools and equipment were washed with high-pressure steam equipment prior to the start of sampling work. All sampling equipment was decontaminated with an alconox and reagent water solution between sampling points to prevent cross contamination.

A preliminary survey was conducted by screening samples for volatile organic compounds with a photoionization detector (PID) immediately upon opening the split spoon sampling tube. Results from the survey were used to select the most contaminated soils from each boring for laboratory analysis. Data from the preliminary survey are recorded on the soil profile logs in Appendix A.

After pedologic logging (See Appendix A), the selected samples were stored in clean, teflon lidded, 4 ounce jars and cooled to 4° for transport to the laboratory.

Upon completion of sampling, the boreholes were completely backfilled with bentonite and abandoned according to procedures outlined in Wisconsin Administrative Code NR 141.25. Boring abandonment documentation is included in Appendix B. Contaminated drill cuttings were stockpiled within an impermeable membrane on the site.

#### Groundwater Sampling Procedures

Groundwater samples were collected from soil borings DX-3 and DX-5 to determine whether any petroleum components had migrated from the contaminated subsurface soil to groundwater. Samples were collected by inserting a clean

disposable polyethylene bailer down the hollow stem auger and transferring the contents into two 40 ml glass vials.

After collecting each water sample, the vials were sealed, taking care to ensure no air was included, and cooled to 4°C for transport to the laboratory.

### 3.3 Chain of Custody

This section describes procedures used for sample identification and chain of custody. The purpose of these procedures is to ensure that the quality of the samples is maintained during their collection, transportation, and storage through analysis.

Sample identification documents are carefully prepared so that sample identification and chain of custody are maintained and sample disposition is controlled. Sample identification documents include:

- \* Field Notebook
- \* Sample Labels
- \* Chain of Custody Record

Each sample is labeled, physically preserved, and sealed immediately after collection. To minimize handling of sample containers, labels are filled out prior to sample collection. The sample label is completed using waterproof ink and is firmly affixed to the sample containers. The sample label provides the following information:

- \* Location
- \* Sample Number
- \* Date and Time of Collection
- \* Analysis Required
- \* Name of Sampler

A chain of custody record is fully completed in triplicate by the Aqua-Tech sampler (See Appendix C) immediately following sample collection.

#### Transfer of Custody Shipment

The cooler in which the samples are packed is accompanied by the chain of custody record. When transferring samples, the individuals relinquishing and receiving them sign, date, and note the time on the chain of custody record. This record documents sample custody.

#### Laboratory Custody Procedures

A designated sample custodian accepts custody of the shipped samples and verifies that the sample identification number matches that on the chain of custody record. A copy of the completed chain of custody record is retained by the laboratory until analyses are complete. The record is then transferred to the site file with the analytical results.

#### 4.0 ANALYTICAL PROCEDURES AND RESULTS

##### 4.1 Introduction

This section includes analytical procedures and results of chemical analyses of subsurface soil samples for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), percent solids, pH, EP toxic lead, total lead, flash point, and groundwater samples for BTEX.

##### 4.2 Analytical Procedures

All soil and groundwater samples were analyzed by Aqua-Tech, Inc., Port Washington, Wisconsin, by the following methods:

TPH	Modified California Gas Chromatography
EP toxic lead	EPA 1310
BTEX (soil)	EPA 8020
(water)	EPA 602
Percent Solids	EPA 160.3
pH	EPA 9045
Total Lead	EPA 3050 and 7420
Flash Point	EPA 1020

Analytical methodology references contain specific quality control (QC) criteria associated with the particular methods. These specific requirements include calibration and QC samples and are described in detail within the methods. Daily performance tests and demonstration of precision and accuracy are required.

#### 4.3 Results of Chemical Analyses of Aqua-Tech Collected Samples

Chemical analyses of soil samples yielded the following:

- \* TPH as gasoline was detected at a concentration of 1750 ug/g (ppm) in soil sample DX-3 (5 to 7 feet), and 430 ug/g in soil sample DX-4 (3 to 5 feet)
- \* BTEX components were identified at concentrations as high as 173 ug/g xylenes in soil samples DX-3 (5 to 7 feet), and DX-4 (3 to 5 feet)
- \* Flash point was less than 70°F in soil samples DX-3 (5 to 7 feet) and DX-4 (3 to 5 feet)
- \* EP toxic lead concentration was 0.30 mg/l in soil sample DX-3 (5 to 7 feet)

All TPH results were calculated on a dry weight basis as required by the Wisconsin Department of Industry, Labor, and Human Relations. See Table 4-1 for complete soil sample results. The original laboratory data are provided in Appendix C.

Chemical analyses of groundwater samples yielded the following:

- \* BTEX components were identified in samples WDX-3 and WDX-5 at concentrations up to 690 ug/l (ppb) benzene

See Table 4-2 for complete groundwater sample results. The original laboratory data are provided in Appendix C.

TABLE 4-1

## HEDLUND DX SITE

## SUBSURFACE SOIL SAMPLE CHEMICAL ANALYSIS RESULTS

COLLECTED: June 7, 1990

<u>Parameter</u>	Soil Sample DX-3 <u>5 to 7 feet</u>	Soil Sample DX-4 <u>3 to 5 feet</u>
Field Photoionization Detector (PID) Reading (ppm)	200	200
Total Petroleum Hydrocarbons (ug/g) * as Gasoline	1750**	430**
Benzene (ug/g)	21	<1.0
Toluene (ug/g)	82	3.5
Ethylbenzene (ug/g)	19	7.9
Xylenes (ug/g)	173	50
Percent Solids	81	85
pH (units)	6.86	6.97
Flash Point (°F)	<70°F	<70°F
Total Lead (ug/g)	8.70	--
EP Toxicity Lead (mg/l)	<0.30	---

\* All TPH results reported on a dry weight basis.

\*\* Ten ug/g is the maximum level of TPH contamination allowed in soil before remediation is required by the Wisconsin Department of Industry, Labor and Human Relations.

TABLE 4-2

## HEDLUND DX SITE

## GROUNDWATER CHEMICAL ANALYSIS RESULTS

COLLECTED: June 7, 1990

<u>Parameter</u>	Sample <u>WDX-3</u>	Sample <u>WDX-5</u>	Wis. Administrative Code N.R. 140.10	
			<u>Preventive Action Limit</u>	<u>Enforcement Standard</u>
Benzene (ug/l)	224	690	0.067	0.67
Toluene (ug/l)	180	18	68.6	343
Ethylbenzene (ug/l)	19	5.9	272	1360
Xylenes (ug/l)	117	810	124	620
Headspace Field Photoionization Detector (ppm)	30	5	--	--



## 5.0 DISCUSSION

### 5.1 Introduction

This section discusses data and information that apply to observed and potential contamination that may be attributed to the Hedlund DX site.

### 5.2 Soil

Total petroleum hydrocarbon contamination above the 10 ug/g (ppm) Wisconsin Department of Industry, Labor and Human Relations remedial action limit was identified by laboratory analyses and by field screening in borings DX-3 and DX-4. Contamination was identified in borings DX-1 and DX-2 during the previous investigation.

Contamination was identified at the following approximate depths:

Boring DX-1	0 - 12 feet
Boring DX-2	0 - 6+ feet (boring terminated at 6 feet)
Boring DX-3	0 - 12 feet
Boring DX-4	0 - 10 feet

Contamination identified within the current right-of-way at the Hedlund DX site extends from the eastern property boundary to a small tributary of the Wood River to the west. It is not known how far contaminated soil extends north. However, cuttings from boring DX-5 completed on the north side of State Highway 70 did not produce PID readings above background levels. If contaminated soil is assumed to extend north to the centerline of State Highway 70, a volume of approximately 900 cubic yards of contaminated

soil is expected within current WDOT right-of-way. It must be noted that flash point of the soil samples collected was <70°F, which classifies the soils as hazardous waste.

### 5.3 Groundwater

Groundwater was identified at depths ranging from 4.0 to 6.5 feet at the site. The hydraulic gradient has not been determined. Based on surface topography and groundwater contaminant concentrations identified, groundwater flow direction may vary seasonally. The Wood River is located 400 feet south of the site while a lowland occupies the area 200 feet to the north. A small tributary connecting the lowland to the Wood River borders the site to the west.

Groundwater samples WDX-3 and WDX-5 were collected from borings DX-3 and DX-5. Groundwater sample WDX-1 was collected from boring DX-1 during the previous investigation. Laboratory analysis indicated petroleum components in each of the samples above the groundwater quality enforcement standards outlined in Wisconsin Administrative Code NR 140.10. In addition to petroleum components, 1,2 dichloroethane was identified in groundwater during the initial investigation.

Petroleum contaminated groundwater appears to extend along the entire width of the current WDOT right-of-way in front of the Hedlund DX site and the adjacent Andy's Bait Shop to the west. The small tributary to the Wood River bordering Andy's Bait Shop to the west may be acting as a groundwater boundary preventing further westward migration

of the contamination. However, additional borings need to be completed to verify this hypothesis.

Groundwater contamination was also identified east of the Hedlund DX site at the Bob's Service Station site (Phase III Environmental Assessment Report for the Bob's Service Station site September 1990, ATI 91035). Contamination at Bob's Service Station appears to be limited to the western portion of the site which borders Hedlund DX.

Petroleum components were identified in groundwater collected from boring DX-5 on the north side of State Highway 70 across from Hedlund DX.

## 6.0 RECOMMENDATIONS

After completing the Phase III Environmental Assessment at the Hedlund DX site, Aqua-Tech, Inc. recommends that Wisconsin Department of Transportation (WDOT) meet with Wisconsin Department of Natural Resources (WDNR), Wisconsin Department of Industry, Labor and Human Relations (WDILHR) and the affected property owners to define:

- 1) Additional monitoring and remedial action responsibilities
- 2) Lateral and vertical extent of contaminants identified within and outside of WDOT right-of-way
- 3) Remediation options

Remedial procedures available for treating petroleum contaminated soils include in-situ vapor extraction, asphalt plant processing, low temperature incineration, bioremediation, and landfill disposal. Remedial options will be limited at the site by the predominantly clay soil type, low soil flash point ( 70°F), a high water table, and existing building and highway structures. Remedial options for petroleum contaminated soil generally range from \$40 to \$125 per cubic yard. Resampling and analysis of soils for flash point is recommended.

Additional groundwater monitoring and remedial action will be required by the Wisconsin Department of Natural Resources. Groundwater remedial options include sprinkler systems, air stripping, and pump and treat systems. The method used at this site will depend primarily on the extent of contamination which may be migrating from the area outside of the right-of-way. If an air stripper is required at the site, costs are expected to

range from \$30,000 to \$100,000. A more accurate cost estimate will require further definition of the contamination presently identified.

## APPENDIX A

**AQUA-TECH, INC**

140 S. PARK ST.

PORT WASHINGTON, WI 53074

TELEPHONE:

(414) 284-5746  
(414) 375-0407 (MILW METRO)**SOIL PROFILE LOG**PROJECT: **HEDLUND DX**LOCATION: STATE HWY 70  
FALUN, WI

PROJECT#: 8040-03-00

ATI WO#: 91036

BORING DX-3

SURFACE ELEVATION \_\_\_\_\_

**SAMPLES****DESCRIPTION AND REMARKS**

NO.	(bpf) MOISTURE	REC	PID LEVELS (PPM)	DEPTH (FT)	
				0.0	
			30		0.0' - 0.4' GRAVEL (POTHOLE OF ASPHALT)
			50		0.4' - 2.0' SAND AND GRAVEL
			150		
WDX-3			200	5.0	
DX-3					
			4	10.0	
			0		
				15.0	13.0' - 15.0' MEDIUM BROWN SAND
					TERMINATED BORING AT 15.0'
				20.0	

**WATER LEVEL OBSERVATIONS**

WHILE DRILLING ----

DEPTH TO WATER 6.5'▼

DEPTH TO CAVE-IN ----

**GENERAL INFORMATION**START DATE 6/07/90COMPLETION DATE 6/07/90DRILLING METHOD: HOLLOW STEM AUGERS; SPLIT SPOON SAMPLING

LOGGER: \_\_\_\_\_

SH. 1 OF 1



<b>AQUA-TECH, INC</b> 140 S. PARK ST. PORT WASHINGTON, WI 53074 TELEPHONE: (414) 284-5746 (414) 375-0407 (MILW METRO)					<b>SOIL PROFILE LOG</b> PROJECT: <b>HEDLUND DX</b> LOCATION: STATE HWY 70 FALUN, WI PROJECT#: 8040-03-00 ATI WO#: 91036				
BORING <u>DX-5</u>					SURFACE ELEVATION _____				
<b>SAMPLES</b>					<b>DESCRIPTION AND REMARKS</b>				
NO.	(bpf) MOISTURE	REC	PID LEVELS (PPM)	DEPTH (FT)					
				0.0	0.0' - 3.0' DARK BROWN SAND				
				1.0					
				2.0	3.0' - 10.0' BROWN CLAYEY SAND				
				3.0					
WDX-5			0 (CUTTINGS)	5.0					
				6.0					
				7.0	TERMINATED BORING AT 10.0'				
				8.0					
				9.0	*ACCESS LIMITED DUE TO OVERHEAD UTILITIES				
				10.0					
				11.0					
				12.0					
				13.0					
				14.0					
				15.0					
				16.0					
				17.0					
				18.0					
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				21.0					
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				23.0					
				24.0					
				25.0					
				26.0					
				27.0					
				28.0					
				29.0					
				30.0					

<b>WATER LEVEL OBSERVATIONS</b> WHILE DRILLING ---- DEPTH TO WATER 5.0'▼ DEPTH TO CAVE-IN ----	<b>GENERAL INFORMATION</b> START DATE <u>6/07/90</u> COMPLETION DATE <u>6/07/90</u> DRILLING METHOD: <u>HOLLOW STEM AUGERS</u> LOGGER: _____
---	---

## APPENDIX B

<b>(1) GENERAL INFORMATION</b>		<b>(2) FACILITY NAME</b>	
Well/Drillhole Location <u>DX-3</u>	County <u>BIRNETT</u>	Original Well Owner (If Known)	
<u>1/4 of 1/4 of Sec. _____</u> ; T. _____ N; R. _____ (If applicable)		Present Well Owner	
Gov't Lot _____ Grid Number _____		Street or Route	
Civil Town Name <u>HEDLUND DX</u>		City, State, Zip Code	
Street Address of Well <u>350' east of State HWY 70 &amp; Range Line Road</u>		Well Number and/or Name (If Applicable)	
City, Village <u>FALUN, WI</u>		Reason For Abandonment <u>TEST BORING FOR STH 70 Improvement</u>	
Date of Abandonment <u>6-7-90</u>			

**WELL/DRILLHOLE INFORMATION**

<b>(3) Original Well/Drillhole Construction Completed on</b> (Date) <u>6-7-90</u>		<b>(4) Depth to Water (Feet)</b> <u>6.5</u>	
<input type="checkbox"/> Water Well <input checked="" type="checkbox"/> Drillhole	Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <u>Attached</u>	Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, Explain _____	
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____		Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Was Drillhole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Well Type: <u>N/A</u> <input type="checkbox"/> Unconsolidated Formation Well <input type="checkbox"/> Bedrock Well		<b>(5) Required Method of Placing Sealing Material</b>	
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____  Casing Depth (ft.) _____		<input type="checkbox"/> Conductor Pipe-Gravity, <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____	
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet		<b>(6) Acceptable Sealing Materials</b>	
		Neat Cement Grout; Concrete Grout; Concrete; Clay Slurry; Sodium Bentonite Slurry	

(7) Kind of Sealing Material	From (FL)	To (FL)	No. Yards or Sacks Sealant	Mix Ratio or Mud Weight
<u>BENTONITE</u>	<u>Surface</u>	<u>15.0</u>		<u>100%</u>

(8) Comments:

<b>(9) Name of Person or Firm Doing Sealing Work</b> <u>AGUA-TECH INC</u>		<b>(10) FOR DNR OR COUNTY USE ONLY</b>	
Signature of Person Doing Work <u>[Signature]</u>	Date Signed <u>7-23-90</u>	Date Received/Inspected	District/County
Street or Route <u>1403 PARK ST</u>	Telephone Number <u>(414) 284-5746</u>	Reviewer/Inspector	
City, State, Zip Code <u>PORT WASHINGTON WIS 53074</u>		Follow-up Necessary	

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole Location <i>DX-4</i>	County <i>BURNETT</i>	Original Well Owner (If Known)	
<i>1/4 of 1/4 of Sec. ; T. N; R. </i> (If applicable)		Present Well Owner	
Gov't Lot Grid Number		Street or Route	
Civil Town Name <i>HEDLUND DX</i>		City, State, Zip Code	
Street Address of Well <i>3501 EAST OF STH 70 AND RANGE LANE ROAD</i>		Well Number and/or Name (If Applicable)	
City, Village <i>FALUN WI</i>		Reason For Abandonment <i>TEST BORING FOR STH 70 IMPROVEMENT</i>	
Date of Abandonment <i>6-7-90</i>			

WELL/DRILLHOLE INFORMATION	
(3) Original Well/Drillhole Construction Completed on (Date) <i>6-7-90</i>	
<input type="checkbox"/> Water Well <input checked="" type="checkbox"/> Drillhole	Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>ACHIEVED</i>
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify)	
Well Type: <i>N/A</i> <input type="checkbox"/> Unconsolidated Formation Well <input type="checkbox"/> Bedrock Well	
Total Well Depth (ft.) Casing Diameter (ins.)	
Casing Depth (ft.)	
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? Feet	
(4) Depth to Water (Feet) <i>4.0'</i> Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, Explain	
Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Was Drillhole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
(5) Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe-Gravity, <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain)	
(6) Acceptable Sealing Materials Neat Cement Grout; Concrete Grout; Concrete; Clay Slurry; Sodium Bentonite Slurry	

(7) Kind of Sealing Material	From (Ft.)	To (Ft.)	No. Yards or Sacks Sealant	Mix Ratio or Mud Weight
<i>BENTONITE</i>	Surface	<i>10.0</i>		<i>100%</i>

(8) Comments:

(9) Name of Person or Firm Doing Sealing Work <i>ALMA-TECH INC.</i>		(10) FOR DNR OR COUNTY USE ONLY	
Signature of Person Doing Work <i>[Signature]</i>	Date Signed <i>7-23-90</i>	Date Received/Inspected	District/County
Street or Route <i>140 S. PARK ST.</i>	Telephone Number <i>(414) 284-5744</i>	Reviewer/Inspector	
City, State, Zip Code <i>BRT WASHINGTON WI 53074</i>		Follow-up Necessary	

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole Location <i>DX-5</i>	County <i>BURNETT</i>	Original Well Owner (If Known)	
1/4 of 1/4 of Sec. _____; T. _____ N; R. _____ (If applicable)		Present Well Owner	
Gov't Lot _____ Grid Number _____		Street or Route	
Civil Town Name <i>HEDLUND TX</i>		City, State, Zip Code	
Street Address of Well <i>350' EAST OF STH 70 AND RANGE LINE ROAD</i>		Well Number and/or Name (If Applicable)	
City, Village <i>FALUN WI</i>		Reason For Abandonment <i>TEST BOREING FOR STH 70 Improvement</i>	
Date of Abandonment <i>6-7-90</i>			

WELL/DRILLHOLE INFORMATION

(3) Original Well/Drillhole Construction Completed on (Date) <i>6-7-90</i> <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole Construction Report Available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Attached</i> Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____ Well Type: <i>N/A</i> <input type="checkbox"/> Unconsolidated Formation Well <input type="checkbox"/> Bedrock Well Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ Casing Depth (ft.) _____ Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet	(4) Depth to Water (Feet) <i>5.0'</i> Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, Explain _____ Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Was Drillhole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

(5) Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe-Gravity, <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain) _____	(6) Acceptable Sealing Materials Neat Cement Grout; Concrete Grout; Concrete; Clay Slurry; Sodium Bentonite Slurry
---	--

(7) Kind of Sealing Material	From (Ft.)	To (Ft.)	No. Yards or Sacks Sealant	Mix Ratio or Mud Weight
<i>BENTONITE</i>	Surface	10.0		160%

(8) Comments:

(9) Name of Person or Firm Doing Sealing Work

<i>AQUA-TECH INC</i>	
Signature of Person Doing Work <i>[Signature]</i>	Date Signed <i>7-23-90</i>
Street or Route <i>140 S PARK ST.</i>	Telephone Number <i>(414) 284-5700</i>
City, State, Zip Code <i>PERT WASHINGTON WI 53074</i>	

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

## APPENDIX C

tribution: White - Accompanies Shipment; Yellow - Laboratory File; Pink - Coordinator Field Files

# AQUA-TECH

## GROCE LABORATORIES

ANALYTICAL LABORATORY REPORT

91036

Sample #: WZ927 A-D  
 Customer: Hedlund DX, Mary 70  
 Date Sampled: 6-7-90  
 Date Received: 6-11-90  
 Date Wanted: 6-21-90

Lab Director Approval: *Bruce J. Vetter* 7-5-90  
 ATI Contact Name: \_\_\_\_\_

### Sample Description

	DX-3 (5-7)	WDX-3	DX-4 (3-5)	WDX-5		
PARAMETER	Z927 A	Z927 B	Z927 C	Z927 D	Tech ID	Date Analysis Completed
total solids	81%	—	85%	—	PS	6-12-90
TPH- gasoline	1750 $\mu$ g/l (1.0%)	—	430 $\mu$ g/l (1.0%)	—	Y2H	6-12-90
Flash point	<70°F	—	<del>570°F</del> 570°F	—	PS	6-14-90
pH	6.86	—	6.97	—	58 PS	6-12-90
total Pb	8.70 ppm	—	—	—	DD	6-29-90
E.P. Tox Pb	<0.30 mg/l	—	—	—	DD	6-29-90
Benzene	21 $\mu$ g/l (1.0)	224 $\mu$ g/l * (1.0)	ND (1.0)	690 $\mu$ g/l * (1.0)		
Toluene	82 $\mu$ g/l (1.0)	180 $\mu$ g/l * (1.0)	35 $\mu$ g/l (1.0)	18 $\mu$ g/l (1.0)		
Ethylbenzene	19 $\mu$ g/l (1.0)	19 $\mu$ g/l (1.0)	7.9 $\mu$ g/l (1.0)	5.9 $\mu$ g/l (1.0)		
Xylene	173 $\mu$ g/l (1.0)	117 $\mu$ g/l * (1.0)	50 $\mu$ g/l (1.0)	810 $\mu$ g/l * (1.0)		
	Y2H	Y2H	Y2H	Y2H		
	6-18-90	6-20-90	6-18-90	6-20-90		
* Estimated concentration; sample concentration for this parameter exceeded instrument calibration range. Sample could not be diluted due to large amount of solids present.						



ATTACHMENT A

# **AQUA-TECH**

## **GROCE LABORATORIES**

February 1, 1990

Mr. Kevin Gehrmann  
Risk and Safety Management  
751 Hill Farms State  
Office Building  
4802 Sheboygan Avenue  
Madison, WI 53707-7915

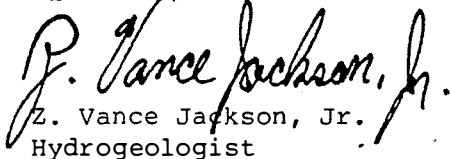
Dear Mr. Gehrmann:

Enclosed please find the Environmental Site Assessment for the Hedlund DX, located on State Highway 70 in Falun, Wisconsin, Project No. 7091-06-00.

If you have any questions regarding this report, please do not hesitate to contact me.

Sincerely,

AQUA-TECH, INC.

  
Z. Vance Jackson, Jr.  
Hydrogeologist

ZVJ/rk

Enclosure

ENVIRONMENTAL SITE ASSESSMENT REPORT

FOR THE

HEDLUND DX

STATE HIGHWAY 70

FALUN, WISCONSIN

JANUARY 1990.

PREPARED FOR THE

WISCONSIN DEPARTMENT OF TRANSPORTATION

PROJECT 8040-03-00

PREPARED BY

AQUA-TECH, INC.

140 SOUTH PARK STREET

PORT WASHINGTON, WISCONSIN 53074

ATI PROJECT NO. 91036

SIGNATURE PAGE

FOR THE

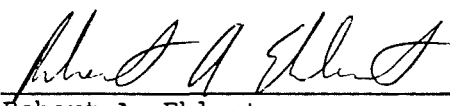
ENVIRONMENTAL SITE ASSESSMENT REPORT

FOR THE

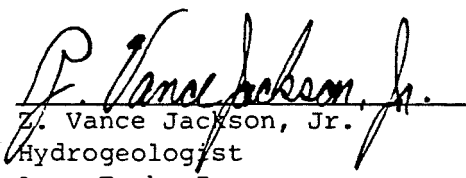
HEDLUND DX

STATE HIGHWAY 70

FALUN, WISCONSIN

Prepared By  Date: 2/1/90

Robert A. Ehlert  
Field Technician  
Aqua-Tech, Inc.

Reviewed By:  Date: 2/1/90

Z. Vance Jackson, Jr.  
Hydrogeologist  
Aqua-Tech, Inc.

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## 1.0 SUMMARY

Aqua-Tech, Inc. has completed an environmental site assessment of the Hedlund DX Service Station underground storage tank site as contracted November 13, 1989, by the Wisconsin Department of Transportation (WDOT) Risk and Safety Management Section as part of WDOT Project 8040-03-00.

The purpose of this site assessment was to identify possible environmental contamination associated with the underground storage tanks formerly located at the site. The assessment included the following:

- \* Regulatory background review
- \* Site representative interview
- \* Two soil borings to a maximum depth of 13 feet
- \* Collection and field screening of subsurface soil samples for volatile organic compounds
- \* Chemical analysis of two subsurface soil samples for total petroleum hydrocarbons (TPH)
- \* Chemical analysis of one subsurface soil sample for E.P. Toxicity Metals
- \* Chemical analysis of one groundwater sample for volatile organic solvents (601/602)

The laboratory results of this investigation indicate that THE SOILS AND GROUNDWATER WITHIN THE EXISTING WDOT RIGHT-OF-WAY AND THE PROPOSED RIGHT-OF-WAY EXPANSION AT THE SITE ARE CONTAMINATED BY PETROLEUM HYDROCARBONS.

AQUA-TECH RECOMMENDS THAT ADDITIONAL INVESTIGATION BE CONDUCTED TO DETERMINE THE SOURCE AND EXTENT OF CONTAMINATION. The additional work at the site should include soil borings

which may be completed as groundwater monitoring wells if necessary.

If WDOT determines to purchase the property, it will be desirable to conclude agreements with adjacent property owners defining remedial action responsibilities prior to beginning construction. Aqua-Tech suggests that WDOT arrange concurrent remedial operations with the adjacent property owners.



## 2.0 SITE BACKGROUND

### 2.1 Introduction

This section includes information obtained from the site reconnaissance inspection, regulatory background review, and the site representative interview.

### 2.2 Site Location

The Hedlund DX Service Station is an abandoned vehicle service and gasoline station located on less than one acre of land in the unincorporated village of Falun, Wisconsin. It is located on the south side of State Highway 70 approximately 350 feet east from the intersection of State Highway 70 and Range Line Road in Burnett County, Wisconsin (See Figure 2-1).

### 2.3 Site Geology

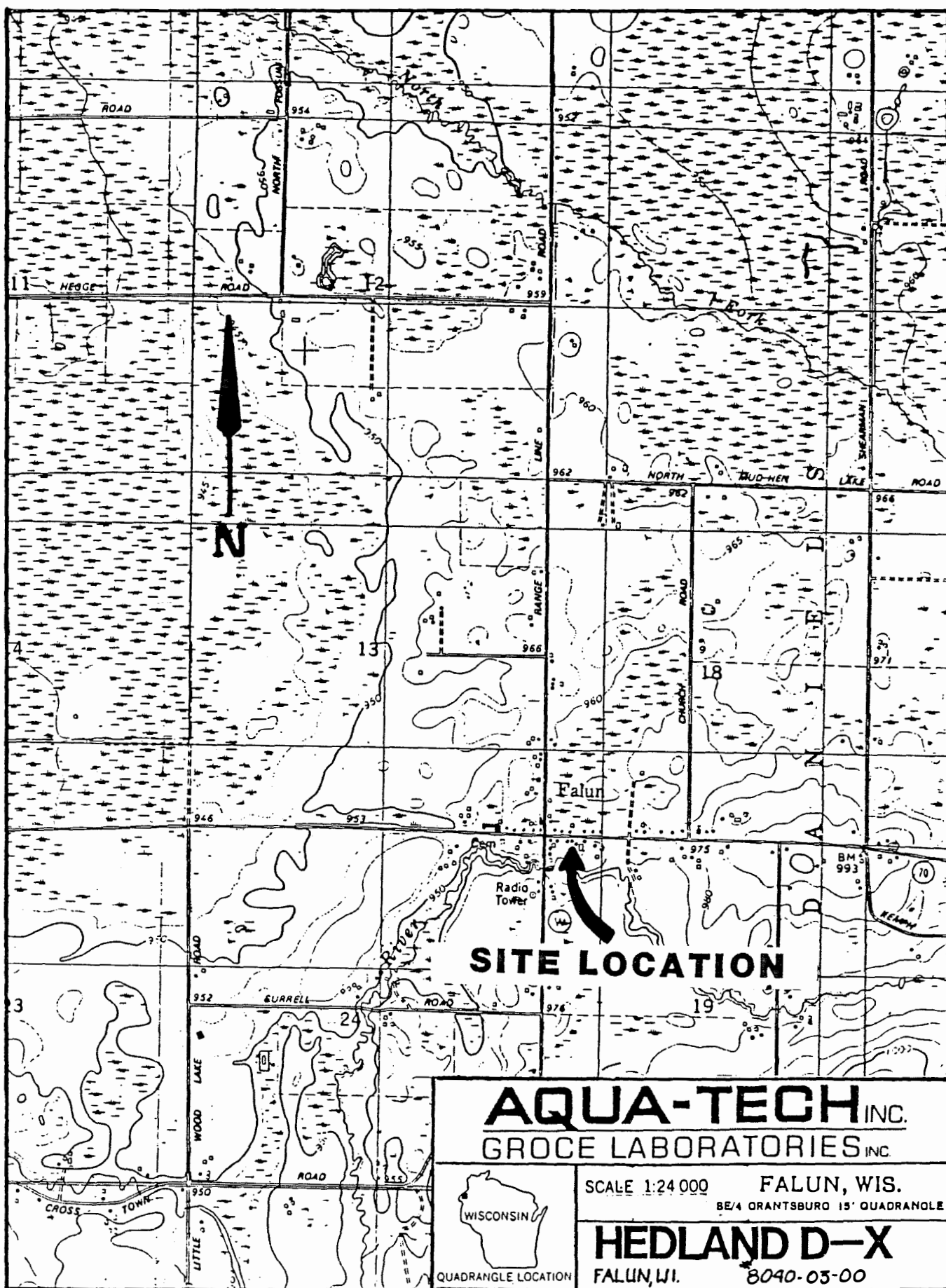
Glaciation has been an important agent in determining the geology and physiography of the site. The site forms part of the pitted outwash left behind by the retreat of the Wisconsinan (Woodfordian) ice sheets. The site occupies what became Glacial Lake Duluth as glaciation waned.

The soils encountered in the test borings consist of glacially derived medium-coarse sands and stiff gray clays.

Bedrock in the area is buried to varying depths by glacial deposits. Regionally, it consists of a series of undivided Cambrian Age sandstones with some dolomite and shale.

Surface topography at the site is flat (less than 1 percent slope) with adjacent topography sloping gently to

FIGURE 2-1  
SITE LOCATION



the south toward the Wood River, approximately 400 feet from the site.

Groundwater was encountered in one test boring at a depth of 11.0 feet. No hydraulic gradient was established, however, based on the surface topography, groundwater appears to be flowing toward the south across the Hedlund DX Service Station site.

#### 2.4 Site History

The former service station site is owned by Gerald Hedlund of Grantsburg, Wisconsin. Delores Anderson, co-owner of Andy's Bait Shop, a business adjoining the Hedlund property to the west, stated that the site was used as a service station from 1929 until approximately 1980 when the service station closed. See Appendix A for telephone records.

Two underground storage tanks were removed from the site in 1980. The tank closest to the Anderson property was observed to be leaking by the Andersons at that time. There are no petroleum tank inventory records on file with the Wisconsin Department of Industry, Labor, and Human Relations.

Prior to 1980, the Anderson's noted that their well water had a gasoline odor. After the tank was removed and the leak noted by the Andersons, they contacted the Wisconsin Department of Natural Resources (WDNR).

David Herrick, WDNR District Sanitarian reported to Mr. Otmar Anderson in a letter dated February 17, 1981 (See Appendix B) that laboratory analysis of groundwater samples

taken by the WDNR on February 3, 1981, indicated the presence of gasoline contaminants in the water. The Andersons were cautioned about the use of their water for human consumption.

The Andersons do not consume the water, but melt ice cubes from a separate source for potable water. Water from their well still has an odor of petroleum products.

## 2.5 Regulatory Review

The Hedlund DX site is not listed on the U.S. Environmental Protection Agency's CERCLIS inventory of potential uncontrolled hazardous waste sites. In addition, there are no regulatory response records of the site in the Wisconsin Department of Natural Resources files. These files include Wisconsin's List of Active and Abandoned Landfills, the Wisconsin Environmental Repair Fund List and the Statewide Spills and Hazardous Incident Report from January 1978 to June 1989. However, as previously noted, District WDNR files do include records of water well testing due to the Anderson's 1980 complaint.

### 3.0 SITE ASSESSMENT PROCEDURES AND FIELD OBSERVATIONS

#### 3.1 Introduction

This section outlines site assessment procedures and field observations for the environmental site assessment at the Hedlund DX site. Individual subsections address the site representative interview, reconnaissance inspection, and sampling procedures. Rationales for specific assessment activities are also provided.

#### 3.2 Reconnaissance Inspection

A reconnaissance inspection of the Hedlund DX site and surrounding areas was conducted on November 7, 1989 by James J. Mertes of Aqua-Tech. The reconnaissance inspection included a walk through of the site to determine appropriate sampling locations, taking into consideration the former tank bed locations, underground and overhead utilities, and site accessibility.

##### Reconnaissance Inspection Observations

The Hedlund DX site is located in a rural commercial district interspersed with residential housing in Falun, Wisconsin. The site is bounded to the north by State Highway 70. The boundaries to the south, west and east are surveyed property lines. The site is surrounded by adjacent business and residential properties, with the nearest business located approximately 20 feet west and the nearest residence approximately 100 feet north across State Highway 70. The adjacent property to the east, Bob's Service Station was also the object of an environmental assessment

and report as part of WDOT Project 8040-03-00.

The former underground storage tanks were located at the northeast and northwest corners of the station building. The former pump island platform is located north of the building approximately 25 feet from the existing edge of pavement of STH 70. See Appendix C for a site photorgraph.

### 3.3 Sampling Procedures

Samples were collected from borings at locations selected during the reconnaissance inspection to determine whether gasoline is present in the soil and/or groundwater surrounding the underground storage tank site.

On November 7, 1989, Aqua-Tech collected two subsurface soil samples and one groundwater sample within the boundaries of WDOTs proposed right-of-way acquisition. No samples were collected on the portion of the Hedlund DX property which is not being considered for right-of-way purchase. See Figure 3-1 for sampling locations.

#### Soil Sampling Procedures

Subsurface soil sample DX-1 was collected at the 5-to-7 foot depth interval approximately 5 feet north of the pump island.

Subsurface soil sample DX-2 was collected at the 4-to-6 foot depth interval, 40 feet west of sample DX-1 at the northwest corner of the station building.

#### Soil Sampling Procedures

Subsurface soil samples were collected with a truck-mounted rotary drill equipped with hollow stem augers and two inch diameter, 24 inch split spoon sampler. The split

spoon sampler was advanced by conventional methods, including the attachment of the sampler to an AW rod and standard 140 pound hammer.

All drilling tools and equipment were washed with high-pressure steam equipment prior to the start of sampling work. All sampling tools were washed with an alconox and reagent water solution between sample points to prevent cross contamination within the boring.

A preliminary survey was conducted by screening samples with a photoionization meter immediately upon opening the split spoon sampling tube. Results from the survey were used to select the most contaminated soils from each boring for laboratory analysis. Data from the preliminary survey is recorded on the soil profile logs in Appendix D.

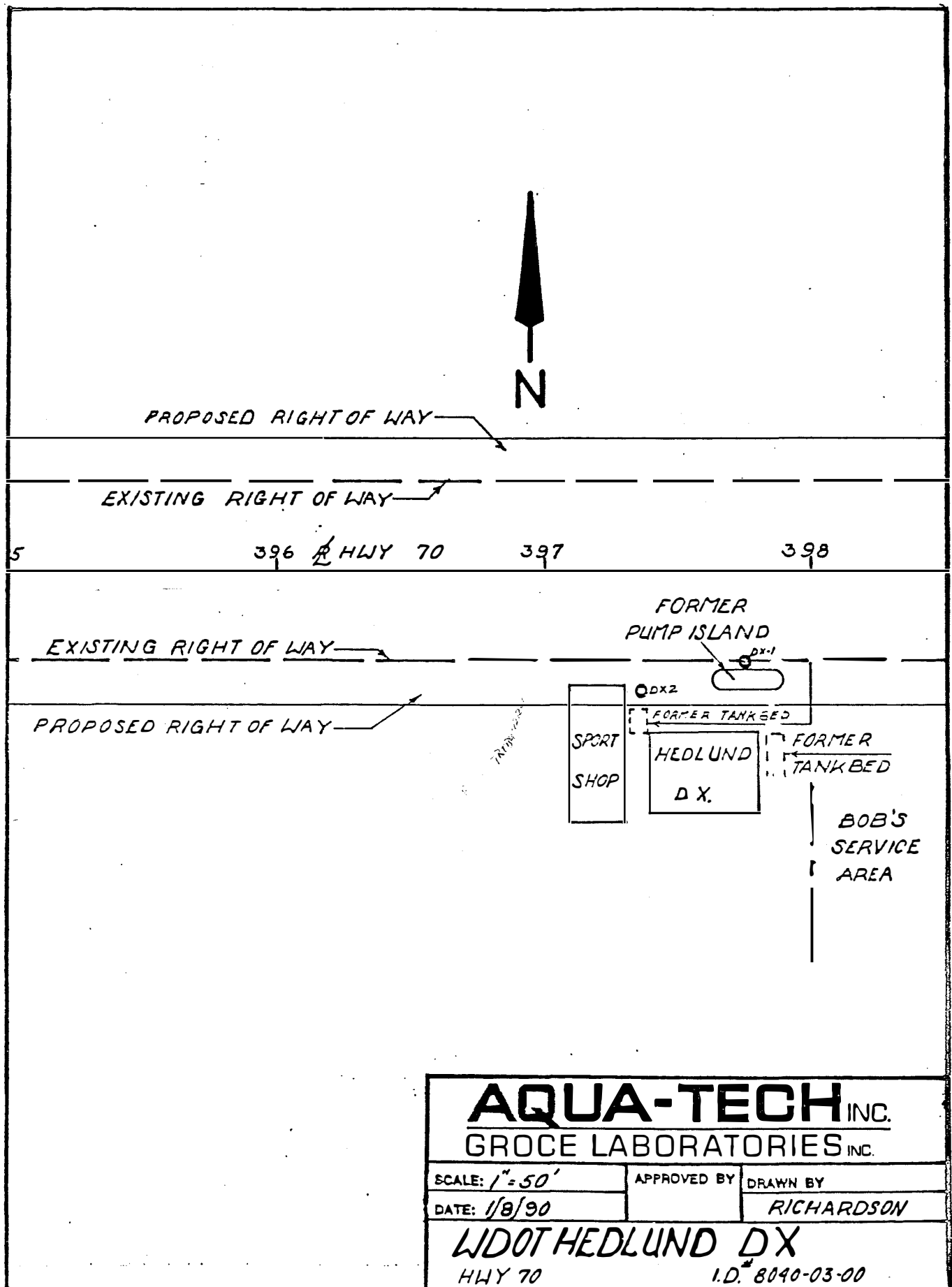
After lithologic logging (See Appendix D), the selected samples were stored in clean 4 ounce jars and cooled to 4°C for transport to the laboratory.

Upon completion of sampling, the boreholes were backfilled with bentonite mixture and surface concrete was patched where necessary.

#### Groundwater Sampling Procedures

Groundwater sample WDX-1 was collected to determine whether any gasoline components had migrated from the tank bed area via groundwater (See Figure 3-1). Samples were collected by inserting a clean stainless steel bailer down the hollow stem augers and transferring the contents to two 40 ml. glass vials. The vials were then sealed, taking care

FIGURE 3-1  
SITE FEATURES AND SAMPLING LOCATIONS





to insure no air was included, and cooled to 4°C for transport to the laboratory. In addition, reagent water field and trip blanks were collected in accordance with Aqua-Tech's quality control procedures.

#### 3.4 Chain of Custody Procedures

This section describes procedures used for sample identification and chain of custody. The purpose of these procedures was to ensure that the quality of the samples was maintained during their collection, transportation, storage, and analysis.

Sample identification documents were carefully prepared so that sample identification and chain of custody was maintained and sample disposition controlled. Sample identification documents included:

- \* Field Notebooks
- \* Sample Labels
- \* Chain of Custody Records

Each sample was labeled, physically preserved, and sealed immediately after collection. To minimize handling of sample containers, labels were filled out prior to sample collection. The sample label was completed using waterproof ink and was firmly affixed to the sample containers. The sample label provided the following information:

- \* Location
- \* Sample Number
- \* Date and Time of Collection

\* Analysis Required

\* Name of Sampler

A Chain of Custody Record (See Appendix E) was fully completed in duplicate by the Aqua-Tech sampler immediately following sample collection.

#### Transfer of Custody Shipment

The coolers in which the samples were packed were accompanied by the Chain of Custody Record. When transferring samples, the individuals relinquishing and receiving them signed, dated, and noted the time on the Chain of Custody Record. This record documents sample custody.

#### Laboratory Custody Procedures

A designated sample custodian accepted custody of the shipped samples and verified that the sample identification number matched that on the Chain of Custody Record. A copy of the completed Chain of Custody Record was retained by the laboratory until analyses were completed. The record was then transferred to the site file with the analytical results.

#### 4.0 ANALYTICAL PROCEDURES AND RESULTS

##### 4.1 Introduction

This section includes results of chemical analysis of soil samples for total petroleum hydrocarbons (TPH) and E.P. Toxicity Metals, and of groundwater for volatile organic compounds (VOC's).

##### 4.2 Analytical Procedures

Subsurface soil samples DX-1 and DX-2 were analyzed for total petroleum hydrocarbons (TPH) as gasoline at the NET Midwest laboratory in Rockford, Illinois by the California GC Method. Additionally, soil sample DX-2 was analyzed for E.P. Toxicity Metals by EPA Method 1310.

All water samples were analyzed for volatile organic compounds by the NET Midwest laboratory in Rockford, Illinois by EPA Methods 601 and 602.

Methodology references contain specific QC criteria associated with the particular methods. These specific requirements include calibration and QC samples and are described in detail within the methods. Daily performance tests and demonstration of precision and accuracy are required.

##### 4.3 Results of chemical Analysis of Aqua-Tech Collected Samples

Chemical analysis of the soil samples yielded the following results.

- \* Subsurface sample DX-1 was contaminated at the level of 24 ug/g TPH as gasoline.

- \* Subsurface sample DX-2 was contaminated at the level of 56 ug/g TPH as gasoline.
- \* Only trace amounts of E.P. Toxic Metals were indicated in subsurface sample DX-2.

All results for TPH are calculated on a dry weight basis, as required by the Wisconsin Department of Industry, Labor and Human Relations. See Table 4-1 for complete soil sample analyses results. Appendix F contains the laboratory data reports for the samples.

Chemical analysis of groundwater samples yielded the following results.

- \* Groundwater sample WDX-1 was contaminated at the level of 120 ug/l as benzene, 11 ug/l as 1,2-Dichloroethane, 58 ug/l ethylbenzene, 140 ug/l as toluene, and 140 ug/l as xylene.

See Table 4-2 for groundwater sample analyses results. Appendix F contains the laboratory data reports for samples.

TABLE 4-1

## HEDLAND DX SERVICE STATION

## SOIL SAMPLE ANALYSIS:

## E.P. TOXICITY METALS

## TOTAL PETROLEUM HYDROCARBONS

DATE SAMPLED: NOVEMBER 7, 1989

<u>Parameter</u>	<u>Soil Sample DX-2 4' - 6' Interval</u>	<u>Soil Sample DX-1 5' - 7' Interval</u>	<u>40 CFR Maximum Concentration</u>
Arsenic (mg/l)	0.01	----	5.0
Barium (mg/l)	0.15	----	100.0
Cadmium (mg/l)	0.002	----	1.0
Chromium (mg/l)	0.009	----	5.0
Lead (mg/l)	0.05	----	5.0
Mercury (mg/l)	0.01	----	0.2
Selenium (mg/l)	0.01	----	1.0
Silver (mg/l)	0.001	----	5.0
Total Petroleum* Hydrocarbons**	56	24	---
As Gasoline (ug/g)			

\* All results reported on a dry weight basis

\*\* 10 ug/g is the maximum level of petroleum contamination allowed in soil before remediation is required by the Wisconsin Department of Industry, Labor and Human Relations.

TABLE 4-2

## HEDLUND DX SERVICE STATION

## GROUNDWATER ANALYSIS

DATE SAMPLED: NOVEMBER 7, 1989

<u>Parameter</u>	<u>Groundwater Sample WDX-1 11.0' - 12.0' Interval</u>
Benzene	120 ug/l
1,2-Dichloroethane	11 ug/l
Ethylbenzene	58 ug/l
Toluene	140 ug/l
Xylenes	140 ug/l

## 5.0 DISCUSSION OF ASSESSMENT RESULTS

### 5.1 Introduction

This section discusses data and information that apply to observed and potential contamination that may be attributable to the Hedlund DX site.

### 5.2 Soil

Field screening of soil samples indicated concentrations of volatile organic compounds in the 225 - 250 ppm range in soil samples DX-1 and DX-2. Laboratory analysis of these samples revealed TPH levels of 24 ug/g and 56 ug/g, respectively. TPH in both samples exceeds the 10 ug/g remedial action level set by the Wisconsin DILHR. E.P. Toxicity concentration levels in sample DX-2 were below the Chapter 40 CFR Maximum Concentration levels.

Based on the results of field screening and laboratory analysis of soil samples collected at the Hedlund DX site, petroleum contamination above the Wisconsin DILHR 10 ug/g action level appears to be the highest around the old tank bed at the northwest corner of the building.

Contaminated soil was identified at the surface and to a depth of 11.0 feet below ground surface. The areal extent of soil contamination has not been defined, however, Aqua-Tech believes that the contaminated soil extends beneath STH 70.

### 5.3 Groundwater

The groundwater table was encountered in one test boring at a depth of 11.0 feet. Laboratory analysis of

sample WDX-1 revealed a benzene level of 120 ug/l, 1,2-dichloroethane level of 11 ug/l, ethylbenzene level of 58 ug/g, toluene level of 140 ug/l, and a xylene level of 140 ug/l.

The toluene and xylene levels are above the Preventative Action Limits and benzene and 1,2-dichloroethane concentrations are above the Enforcement Standards set by Wisconsin Administrative Code NR 140.10 - Groundwater Quality Standards.

The BTEX compounds encountered are commonly associated with gasoline contamination. 1,2-dichloroethane is also included in some gasolines as a detergent additive. However, it is also present in solvents used at many service stations and may be present due to spillage of dumping of solvents.



TABLE 4-3

WISCONSIN ADMINISTRATIVE CODE

CHAPTER N.R. 140

GROUNDWATER QUALITY STANDARDS

<u>Substance</u>	<u>Enforcement Standard (micrograms per liter)</u>	<u>Preventative Action (micrograms per liter)</u>
Benzene	0.67	0.067
Ethylbenzene	1360	272
Toluene	343	68.6
Xylene	620	124
1,2-Dichloroethane	0.5	0.05

## 6.0 RECOMMENDATIONS

After completing the environmental site assessment for the Hedlund DX site, Aqua-Tech concludes that soil and groundwater within the existing and proposed WDOT right-of-way are contaminated by petroleum hydrocarbons.

Aqua-Tech recommends that additional investigation be conducted to determine the source and extent of contamination. The additional work at the site should include exploratory soil borings and the installation of groundwater monitoring wells as needed to develop a remedial action plan.

If WDOT determines to purchase the proposed right-of-way, it will be desirable to conclude agreements with adjacent property owners defining remedial action responsibilities prior to beginning construction operations. Adjacent sites evaluated as part of WDOT Project 8040-03-00 were also found to be contaminated by petroleum products, and Aqua-Tech suggests that WDOT arrange concurrent remedial operations with adjacent property owners. No cost of remedial actions can be given at this time.

## APPENDIX A



AQUA-TECH, INCORPORATED  
180 South Park Street, Port Washington, NY 11051

## TELEPHONE LOG

REFERENCE

CONTACT.

DELORDES ANDERSON

COMPANY or AGENCY

ANDY'S BAIT SHOP

POSITION

CO-OWNER

CONTACT ADDRESS

RT. 1 FALON

CONTACT PHONE NUMBER

715 689 2265

EMPLOYEE

ROB EHLEST

DATE

1/4/80

TIME

11 15 AM

PROJECT NUMBER

91036

SITE NAME and LOCATION

MEADOW OX - FALON

DISCUSSION

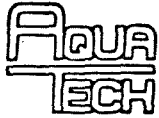
- Owns w/ Otmar
- operated as gas station 1929 → ~'80
- removed tanks ~'80, tanks were leaking badly
- reported to DNR - DNR said not to drink water
- they melt ice cubes for water to drink
- haven't drunk water since 1980, water still smells

SIGNATURE

*Rob Ehlest*

PAGE

1 OF 1



AQUA-TECH, INCORPORATED  
180 South Park Street, Port Washington, WI 53074

## TELEPHONE LOG

REFERENCE

CONTACT.

Tom KENDZERSKI

COMPANY or AGENCY

WDNR - Spooner

POSITION

CONTACT ADDRESS

SPooner, WI

CONTACT PHONE NUMBER

EMPLOYEE

Rob EHLERT

DATE

1/4/90

TIME

11:45 AM

PROJECT NUMBER

91036

SITE NAME and LOCATION

HEDLAND DR - FALLON

DISCUSSION

The Andersons reported a leak from a OST, well water smelled, and they wanted an investigation.

He will forward a copy of the letter/report generated by the DNR on 2/17/81.

SIGNATURE

*Rob Ehlert*

PAGE

1 OF 1

## APPENDIX B



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Northwest District Headquarters  
Box 309  
Spooner, WI 54801

Anthony S. Earl  
Secretary

February 17, 1981

IN REPLY REFER TO: 3320

Mr. Otmar Anderson  
Andy's Bait Shop  
Rt. 1  
Siren, WI 54872

Dear Mr. Anderson:

Reference is made to the samples collected recently from your water supply. The laboratory analysis showed the presence of weathered gasoline in the water based on the detection of the aromatic hydrocarbons benzene, toluene and xylene, and the lack of saturated hydrocarbons (alkanes). Apparently the alkanes are more readily lost through contact with the soil while moving through it, hence the "weathered" aspect.

I must caution you about the use of this water. The substances detected can be considered hazardous to health, and I recommend that you do not use this water for consumption. Water for drinking and cooking should be obtained from some other uncontaminated source.

It is difficult to say how long the well will be contaminated. Once a petroleum product has gotten into the groundwater it is usually there for long periods of time. Usually the source is not known, or that a problem even exists until gasoline is already in the groundwater and has shown up in someone's well. Groundwater flows very slowly through the ground, usually in the tens of feet per year. As you can see, based on these reasons the problem can persist for long periods of time, sometimes years as in the case of an undetected continuous leak. Oftentimes a new well, drilled to a deeper depth that has not been contaminated with the product, is the only answer.

I have contacted Mr. Jim Conner of the Department of Industry Labor and Human Relations in Superior regarding this problem. He will be looking into the problem of unused and improperly abandoned buried gasoline tanks in your area with the local fire chief. Hopefully this approach will eliminate the source of the problem.

If you have any question's on this please feel free to contact me. My telephone number is 715 635-2101.

Sincerely,

*David W. Herrick*

David W. Herrick  
District Sanitarian

cc: Bill Sachliben - Zoning Administrator  
Burnett Co. Courthouse  
Webster, WI. 54893

Jim Connor - DILHR Superior, WI ( Safety & Buildings)

→ Kevin Kessler, Chief, Private Water Supply Section  
Dair Stewart, Fire Chief, Siren Fire Department

DWH:klh



## DEPARTMENT OF NATURAL RESOURCES

ATTN: PAUL PETERMAN

## WATER CHEMISTRY - WATER SUPPLY

FORM 3200-36

REV. 6/78

UTILITY I.D.  
NUMBER

COUNTY

Burnett

COUNTY  
CODE

07

COLLECTION  
DATE02/03/81  
M M D D Y YTIME  
(24 HR. CLOCK)1:30  
H M

FIELD NO.

SAMPLE SOURCE  
AND ADDRESS

2 Bottles (1 with air space, 1 without)

WATER SYSTEM  
NAME

And's Bait Shop

P.O. OR  
MUNICIPALITY

Rt 1 Siren

SEND  
REPORT  
TO:

NAME Dept. of Natural Resources  
Northwest District Headquarters  
ADDRESS Box 309  
CITY Spooner, Wisconsin 54801

PUBLIC WATER SYSTEM TYPE (ONE)

IF SURFACE SOURCE  
(/HERE) ☐

- ☐ M COMMUNITY-MUNICIPAL  
☐ O COMMUNITY-OTHER THAN MUNICIPAL  
☐ N NON-COMMUNITY

COLLECTED BY

DAVE HECKICK

PRIMARY STATION  
NUMBER

STORET ONLY

ACCOUNT  
NUMBER

FOR LAB USE ONLY

SAMPLE TYPE (ONE)

SDWA:

☐ D REGULAR DISTRIBUTION SAMPLE☐ C CHECK SAMPLE

DATE INITIAL SAMPLE COLLECTED

M M D D Y Y

SPECIAL PURPOSE:

☐ W NEW WELL SAMPLE

WELL NO. \_\_\_\_\_

☒ I INVESTIGATIONS & COMPLAINTS

MAXIMUM CONTAMINANT LEVELS ARE INDICATED IN BRACKETS [ ]

ALL MCL'S ARE HEALTH LIMITS EXCEPT THOSE INDICATED BY [\*] WHICH ARE AESTHETIC LIMITS.

## INORGANICS

- 131 TEMPERATURE (°C) FIELD  
096 pH - FIELD  
☐ 002 ALKALINITY, TOTAL (as CaCO<sub>3</sub>)  
☐ 022 ARSENIC (As) [50.]  
☐ 023 BARIUM (Ba) [1000.]  
☐ 031 CADMIUM (Cd) [10.]  
☐ 032 CALCIUM (Ca)  
☐ 035 CHLORIDE (Cl) [250.\*]  
☐ 040 CHROMIUM, TOTAL (Cr) [50.]  
☐ 043 COLOR [15\*]  
☐ 044 COPPER (Cu) [1000.\*]  
☐ 065 FLUORIDE (F) [2.2]  
☐ 139 FOAMING AGENTS (MBAS) [0.5\*]  
☐ 068 HARDNESS, TOTAL (as CaCO<sub>3</sub>)  
☐ 073 IRON (Fe) [0.3\*]  
☐ 074 LEAD (Pb) [50.]  
☐ 076 MAGNESIUM (Mg)  
☐ 079 MANGANESE (Mn) [50.\*]  
☐ 080 MERCURY (Hg) [2.]  
☐ 085 NO<sub>3</sub> + NO<sub>2</sub> (as N) [10.]  
☐ 097 pH - LAB  
☐ 110 SELENIUM (Se) [10.]

- ☐ 112 SILVER (Ag) [50.]  
☐ 113 SODIUM (Na)  
☐ 116 SULFATE (SO<sub>4</sub>) [250\*]  
☐ 138 TOTAL RESIDUE  
☐ 119 TURBIDITY [1.]  
☐ 120 ZINC (Zn) [5000.\*]

## ORGANICS

- ☐ 064 ENDRIN [0.2]  
☐ 075 LINDANE [4.]  
☐ 012 METHOXYCHLOR [100.]  
☐ 152 TOXAPHENE [5.]  
☐ 123 2,4-D [100.]  
☐ 153 2,4,5-TP SILVEX [10.]

RADIOACTIVITY

date 2/6/81

☐ 140 GROSS ALPHA [15.]☐ 141 GROSS BETA

Weathered = Primarily benzene, toluene + xylene

☒ GASOLINE (LEADED?) weathered☒ GASOLINE (UNLEADED?) can't specify better☒ FUEL OIL? or 1 mg/lDATE RECEIVED  
AND LAB. NO.

481050137

DATE REPORTED

FEB 9'8114

FACILITY I.D.  
NUMBER

COUNTY

COLLECTION  
DATESAMPLE SOURCE  
AND ADDRESSCOUNTY  
CODETIME  
(24 HR. CLOCK)WATER SYSTEM  
NAMEP.O. OR  
MUNICIPALITY

FIELD NO.

SEND  
REPORT  
TO:

NAME

ADDRESS

CITY, STATE, ZIP CODE

COLLECTED BY

PRIMARY STATION  
NUMBERACCOUNT  
NUMBER

STORET ONLY

FOR LAB USE ONLY

PUBLIC WATER SYSTEM TYPE (ONE)

IF SURFACE SOURCE  
(HERE).....☐

M COMMUNITY-MUNICIPAL

☐

O COMMUNITY-OTHER THAN MUNICIPAL

☐

N NON-COMMUNITY

SAMPLE TYPE (ONE)

SDWA:

☐

D REGULAR DISTRIBUTION SAMPLE

☐

C CHECK SAMPLE

DATE INITIAL SAMPLE COLLECTED

M

M

D

D

Y

Y

SPECIAL PURPOSE:

☐

W NEW WELL SAMPLE

WELL NO.

☒

I INVESTIGATIONS &amp; COMPLAINTS

MAXIMUM CONTAMINANT LEVELS ARE INDICATED IN BRACKETS [ ]

ALL MCL'S ARE HEALTH LIMITS EXCEPT THOSE INDICATED BY [\*] WHICH ARE AESTHETIC LIMITS.

## INORGANICS

131	TEMPERATURE (°C) FIELD	—	—	—
096	pH - FIELD	—	—	—
002	ALKALINITY, TOTAL (as CaCO <sub>3</sub> )	—	—	— mg/l
022	ARSENIC (As) [50.]	—	—	— µg/l
023	BARIUM (Ba) [1000.]	—	—	— µg/l
031	CADMIUM (Cd) [10.]	—	—	— µg/l
032	CALCIUM (Ca)	—	—	— mg/l
035	CHLORIDE (Cl) [250.*]	—	—	— mg/l
040	CHROMIUM, TOTAL (Cr) [50.]	—	—	— µg/l
043	COLOR [15*]	—	—	— cu
044	COPPER (Cu) [1000.*]	—	—	— µg/l
065	FLUORIDE (F) [2.2]	—	—	— mg/l
139	FOAMING AGENTS (MBAS) [0.5*]	—	—	— mg/l
068	HARDNESS, TOTAL (as CaCO <sub>3</sub> )	—	—	— mg/l
073	IRON (Fe) [0.3*]	—	—	— mg/l
074	LEAD (Pb) [50.]	—	—	— µg/l
076	MAGNESIUM (Mg)	—	—	— mg/l
079	MANGANESE (Mn) [50.*]	—	—	— µg/l
080	MERCURY (Hg) [2.]	—	—	— µg/l
085	NO <sub>3</sub> + NO <sub>2</sub> (as N) [10.]	—	—	— mg/l
097	pH - LAB	—	—	—
110	SELENIUM (Se) [10.]	—	—	— µg/l

<input type="checkbox"/>	112	SILVER (Ag) [50.]	—	—	— µg/l
<input type="checkbox"/>	113	SODIUM (Na)	—	—	— mg/l
<input type="checkbox"/>	116	SULFATE (SO <sub>4</sub> ) [250*]	—	—	— mg/l
<input type="checkbox"/>	138	TOTAL RESIDUE	—	—	— mg/l
<input type="checkbox"/>	119	TURBIDITY [1.]	—	—	— NTU
<input type="checkbox"/>	120	ZINC (Zn) [5000.*]	—	—	— µg/l

## ORGANICS

<input type="checkbox"/>	064	ENDRIN [0.2]	—	—	— µg/l
<input type="checkbox"/>	075	LINDANE [4.]	—	—	— µg/l
<input type="checkbox"/>	012	METHOXYCHLOR [100.]	—	—	— µg/l
<input type="checkbox"/>	152	TOXAPHENE [5.]	—	—	— µg/l
<input type="checkbox"/>	123	2,4-D [100.]	—	—	— µg/l
<input type="checkbox"/>	153	2,4,5-TP SILVEX [10.]	—	—	— µg/l

## RADIOACTIVITY

<input type="checkbox"/>	140	GROSS ALPHA [15.]	—	—	— pCi/l
<input type="checkbox"/>	141	GROSS BETA	—	—	— pCi/l

☒ Gasoline Not Analyzed since  
☒ Fuel Oil Mason Jar had  
☒ Gasoline Type? leaked → sent him  
☐ New septa sealed bottles

DATE RECEIVED  
AND LAB. NO.

DATE REPORTED

JAN 27 10 48 493

FEB 9 '81 14

## APPENDIX C

## APPENDIX C

## FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: Hedland DX

PAGE1 OF1

U.S. EPA ID: N/A

DATE: &gt; 11/7/89

TIME: &gt; 1:30 P.M.

DIRECTION OF  
PHOTOGRAPH:

&gt; Southwest

WEATHER  
CONDITIONS:

&gt; Clouds

&gt; 45°F

PHOTOGRAPHED BY:

&gt; Mitch Evenson

SAMPLE ID  
(if applicable):

&gt; N/A



DESCRIPTION: &gt; Hedlund DX located west of Bob's Service Station (not shown)

&gt; Andy's Bait Shop is in the right background.

&gt;

DATE: &gt;

TIME: &gt;

DIRECTION OF  
PHOTOGRAPH:

&gt;

WEATHER  
CONDITIONS:

&gt;

&gt;

PHOTOGRAPHED BY:

&gt;

SAMPLE ID  
(if applicable):

&gt;

DESCRIPTION: &gt;

&gt;

&gt;

## APPENDIX D

**AQUA-TECH, INC**

140 S. PARK ST.  
 PORT WASHINGTON, WI 53074  
 TELEPHONE:  
 (414) 284-5746  
 (414) 375-0407 (MILW METRO)

**SOIL PROFILE LOG**

PROJECT: DOT-HEDLUND DX  
 LOCATION: FALUN, WI  
 PROJECT#: DOT-8040-03-00  
 ATI WO#:

**BORING # 1**

SURFACE ELEVATION -----

SAMPLES					DESCRIPTION AND REMARKS
NO.	MOISTURE	R E C	HNU LEVELS (PPM)	DEPTH (FT)	
				0.0	
	DRY		180	3.0	0.0 - 3.0' SAND & GRAVEL
			200	5.0	3.0 - 5.0' SAND & BLUE/GREY CLAY
DX-1			250	7.0	
			20	9.0	
			10	11.0	
WDX1	WET		1	12.0	5.0 - 12.0' GREY CLAY
				13.0	12.0 - 13.0' SAND
					TERMINATED BORING AT 13.0'
					NO BEDROCK ENCOUNTERED GROUNDWATER ENCOUNTERED AT 11.0' SOIL SAMPLE DX-1 TAKEN AT 5.0 - 7.0' GROUNDWATER SAMPLE WDX-1 TAKEN AT 11.0 - 13.0' GROUNDWATER HNU LEVEL: 20 PPM

**WATER LEVEL OBSERVATIONS****GENERAL INFORMATION**

WHILE DRILLING -----

START DATE: 11/7/89 COMPLETION DATE: 11/7/89

DEPTH TO WATER 11.0'

DRILLING METHOD: HOLLOW STEM AUGER; SPLIT SPOON SAMPLER;  
HNU

DEPTH TO CAVE-IN -----

LOGGER: \_\_\_\_\_

**AQUA-TECH, INC**

140 S. PARK ST.  
 PORT WASHINGTON, WI 53074  
 TELEPHONE:  
 (414) 284-5746  
 (414) 375-0407 (MILW METRO)

**SOIL PROFILE LOG**

PROJECT: DOT-HEDLUND DX  
 LOCATION: FALUN, WI  
 PROJECT#: DOT-8040-03-00  
 ATI WO#:

BORING # 2

SURFACE ELEVATION -----

SAMPLES					DESCRIPTION AND REMARKS
NO.	MOISTURE	R E C	HNU LEVELS (PPM)	DEPTH (FT)	
				0.0	0.0 - 6.0' SAND (GASOLINE SATURATED)
	MOIST		200	2.0	
				4.0	
DX-2			250	5.0	TERMINATED BORING AT 6.0'  BORING ENDED DUE TO EXTENSIVE CONTAMINATION NO BEDROCK ENCOUNTERED NO GROUNDWATER ENCOUNTERED SOIL SAMPLE DX-2 COLLECTED AT 4.0 - 6.0'
				6.0	
				10.0	
				15.0	

WATER LEVEL OBSERVATIONS	GENERAL INFORMATION
WHILE DRILLING -----	START DATE: 11/7/89      COMPLETION DATE: 11/7/89
DEPTH TO WATER -----	DRILLING METHOD: HOLLOW STEM AUGER; SPLIT SPOON SAMPLER; HNU
DEPTH TO CAVE-IN -----	LOGGER: _____

APPENDIX E





## CHAIN OF CUSTODY RECORD

[illegible]

## APPENDIX F



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Rockford Division  
3548 35th Street  
Rockford, IL 61109  
Tel: (815) 874-2171  
Fax: (815) 874-5622

## ANALYTICAL REPORT

Mr. Mitch Evenson  
AQUA-TECH INC.  
140 South Park Street  
Port Washington WI 53074

11-30-89

Sample No: 67908

SAMPLE DESCRIPTION: WDX-1, Grab Water  
DOT-Headland DX

Date Taken: 11-07-89

Date Received: 11-09-89 1230

### VOLATILE COMPOUNDS

Acrolein	<50.	ug/L
Acrylonitrile	<50.	ug/L
Benzene	120.	ug/L
Bromodichloromethane	<5.0	ug/L
Bromoform	<5.0	ug/L
Bromomethane	<50.	ug/L
Carbon tetrachloride	<5.0	ug/L
Chlorobenzene	<5.0	ug/L
Chloroethane	<50.	ug/L
2-Chloroethyl vinyl ether	<5.0	ug/L
Chloroform	<5.0	ug/L
Chloromethane	<50.	ug/L
Dibromochloromethane	<5.0	ug/L
1,2-Dichlorobenzene	<5.0	ug/L
1,3-Dichlorobenzene	<5.0	ug/L
1,4-Dichlorobenzene	<5.0	ug/L
Dichlorodifluoromethane	<10.	ug/L
1,1-Dichloroethane	<5.0	ug/L
1,2-Dichloroethane	11.	ug/L
1,1-Dichloroethene	<5.0	ug/L
trans-1,2-Dichloroethene	<5.0	ug/L
cis-1,2-Dichloroethene	<5.0	ug/L
1,2-Dichloropropane	<5.0	ug/L
cis-1,3-Dichloropropene	<5.0	ug/L
trans-1,3-Dichloropropene	<5.0	ug/L

Toni Gartner, Manager  
Rockford Division



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Rockford Division  
3548 35th Street  
Rockford, IL 61109  
Tel: (815) 874-2171  
Fax: (815) 874-5622

## ANALYTICAL REPORT

Mr. Mitch Evenson  
AQUA-TECH INC.  
140 South Park Street  
Port Washington WI 53074

11-30-89


Sample No: 67908

SAMPLE DESCRIPTION: WDX-1, Grab Water  
DOT-Headland DX

Date Taken: 11-07-89

Date Received: 11-09-89 1230

Ethylbenzene	58.	ug/L
Methylene chloride	<25.	ug/L
1,1,2,2-Tetrachloroethane	<5.0	ug/L
Tetrachloroethene	<5.0	ug/L
Toluene	140.	ug/L
1,1,1-Trichloroethane	<5.0	ug/L
1,1,2-Trichloroethane	<5.0	ug/L
Trichloroethene	<5.0	ug/L
Trichlorofluoromethane	<1.0	ug/L
Vinyl chloride	<50.	ug/L
Xylenes	140.	ug/L

  
Toni Gartner, Manager  
Rockford Division



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Rockford Division  
3548 35th Street  
Rockford, IL 61109  
Tel: (815) 874-2171  
Fax: (815) 874-5622

## ANALYTICAL REPORT

Mr. Mitch Evenson  
AQUA-TECH INC.  
140 South Park Street  
Port Washington WI 53074

12-01-89

Sample No: 67909

SAMPLE DESCRIPTION: DX-1 5-7', Grab Soil  
DOT-Headland DX

Date Taken: 11-07-89

Date Received: 11-09-89 1230

Tot.Pet.Hydrocarbons (GC) 24. (as gasoline) ug/g

Tom Gartner, Manager  
Rockford Division



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Midwest, Inc.  
Rockford Division  
3548 35th Street  
Rockford, IL 61109  
Tel: (815) 874-2171  
Fax: (815) 874-5622

## ANALYTICAL REPORT

Mr. Mitch Evenson  
AQUA-TECH INC.  
140 South Park Street  
Port Washington WI 53074

12-01-89

Sample No: 67910

SAMPLE DESCRIPTION: DX-2, Grab Soil  
DOT-Headland DX

Date Taken: 11-07-89

Date Received: 11-09-89 1230

EP Tox - Arsenic	<0.01	mg/L
EP Tox - Barium	0.15	mg/L
EP Tox - Cadmium	0.002	mg/L
EP Tox - Chromium	0.009	mg/L
EP Tox - Lead	0.05	mg/L
EP Tox - Mercury	<0.01	mg/L
EP Tox - Selenium	<0.01	mg/L
EP Tox - Silver	<0.001	mg/L
Tot.Pet.Hydrocarbons (GC)	56. (as gasoline)	ug/g

Toni Gartner, Manager  
Rockford Division