BRRTS #
09-68-295703

WAUKESHA CO. - SEM BRAD WOLBERT SW/3

FEB 15 1991

Foth & Van Dyke

REPORT

IT MAY BE CLEAN

1/9/91

rec'd 6/14/91 BSKWM

Environmental Site Assessment
Highway Main Shop
Tank #000
Pewaukee, Wisconsin

Scope ID: 90W89

WAUKESHA CO. →

Waukesha County, Wisconsin

January 1991

RECEIVED
JUN 19 1991
BUREAU OF SOLID -
HAZARDOUS WASTE MANAGEMENT

Foth & Van Dyke

Two Park Plaza, Suite 950
10850 West Park Place
Milwaukee, WI 53224-3619
414/359-2500
FAX: 414/359-2519

Engineers
Architects
Planners
Scientists

Foth & Van Dyke

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10850 West Park Place
Milwaukee, WI 53224-3619
414/359-2500
FAX: 414/359-2519

January 25, 1991

Ms. Leslie Williams
Hazardous Material Coordinator
Waukesha County Department of Health
325 East Broadway
Waukesha, Wisconsin 53186

90W89

Dear Leslie:

RE: Environmental Site Assessment
Highway Main Shop - Tank No. 000
W254 N374 Grandview Road, Pewaukee, Wisconsin

Foth & Van Dyke is pleased to submit our report entitled *"Environmental Site Assessment, Highway Main Shop, Tank No. 000, Pewaukee, Wisconsin"*. Copies of this report have been submitted as indicated on the "Distribution List" following this page.

Please call if you have any questions or comments regarding this report.

Sincerely,

FOTH & VAN DYKE

Brian A. Hahn
Project Geologist

Thomas G. Ryan, P.E.
Project Manager

BAH:TGR:jaw

Enclosure

DISTRIBUTION LIST

No. of Copies	Sent To
1	Ms. Leslie Williams Hazardous Material Coordinator Waukesha County Department of Health 325 East Broadway Waukesha, Wisconsin 53186
1	Mr. Terry Moore Assistant Director Waukesha County Facilities Management Department 515 West Moreland Blvd. Waukesha, Wisconsin 53188
1	Mr. Jeff Fischer Wisconsin Department of Natural Resources Southeast District Office 2300 North Martin Luther King Jr. Drive P.O. Box 12436 Milwaukee, Wisconsin 53212
1	Ms. Elaine Waterman State of Wisconsin Department of Industry, Labor and Human Relations 201 East Washington Avenue P.O. Box 7969 Madison, Wisconsin 53707

UNDERGROUND STORAGE TANK MANAGEMENT PLAN

ENVIRONMENTAL SITE ASSESSMENT
HIGHWAY MAIN SHOP
TANK NO. 000
PEWAUKEE, WISCONSIN

SCOPE I.D. 90W89

Prepared for:

WAUKESHA COUNTY DEPARTMENT OF HEALTH
325 East Broadway
Waukesha, Wisconsin 53186

Prepared by:

FOTH & VAN DYKE & Associates Inc.
Two Park Plaza, Suite 950
10850 West Park Place
Milwaukee, Wisconsin 53224-3619

JANUARY 1991

REUSE OF DOCUMENTS

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Foth & Van Dyke
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Milwaukee, Wisconsin 53224-3619
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EXECUTIVE SUMMARY

One underground storage tank (UST), identified as Tank No. 000 in the Waukesha County Tank Management Plan, was removed from the Highway Main Shop site on January 9, 1991. The tank was excavated and removed by Midwest Petroleum Service, Inc., and site assessment activities were performed by Foth & Van Dyke.

The results of laboratory soil analyses found that total petroleum hydrocarbon (TPH) concentrations ranged from 0.24 parts-per-million (ppm) to 3.64 ppm in the three soil samples collected from the soils underlying the UST. Because the detects found in the soil samples were below Wisconsin Department of Natural Resources (WDNR) action limits, Foth & Van Dyke recommend that no further action be required at this site.

1.0 INTRODUCTION

Foth & Van Dyke has been retained by Waukesha County to provide engineering and environmental services for the underground storage tank (UST) management program. This work has included preparing a bid specification package, conducting environmental monitoring, and preparing site assessment reports for various tank locations.

This report has been prepared to comply with WDNR site assessment requirements for the removal of Tank No. 000 at the Highway Main Shop. This report has been prepared to document activities performed and conditions observed during the removal of Tank No. 000 from the site in the Town of Pewaukee. The following subsections discuss site conditions, laboratory analyses results of soil samples, and observations of the excavated soils.

2.0 PURPOSE AND SCOPE OF ASSESSMENTS

2.1 Purpose of Assessments

The purpose of this assessment was to document tank closure activities performed during the removal of Tank No. 000, for Waukesha County's records for this project and as required by the WDNR.

2.2 Scope of Assessments

The scope of the site assessment for this project included the following:

- Observe the removal of Tank No. 000 from the Highway Main Shop site located at W254 N374 Grandview Road, Pewaukee, Wisconsin.

- Use visual observations and olfactory techniques to assess whether petroleum contamination may be present in the surrounding soils at concentrations above WDNR action limits of 10.0 ppm TPH.

- Collect soil samples from the ends of the tank and piping and also from areas of suspected soil contamination for TPH analysis.

- If groundwater is encountered in the excavation, collect one groundwater sample from the excavation and analyze for benzene, ethylbenzene, toluene, and xylene (BETX).

- Describe the soil profile of the excavation identifying changes in soil color and textural characteristics.

- Provide chain-of-custody documentation and initiate laboratory analysis of soil and groundwater samples.

- Maintain client and regulatory agency communications throughout the duration of the project.

- Prepare a site assessment report presenting findings and conclusions.

- Complete and submit an Underground Petroleum Product Tank Inventory Form (SBD-7437) as required by the Wisconsin Department of Industry, Labor, and Human Relations (DILHR), if necessary. In regard to this assessment, however, no product tank inventory form was filed with DILHR. A letter of notification of tank removal was sent to DILHR on January 18, 1991 (see Appendix A).

3.0 REGIONAL AND LOCAL GEOLOGY/HYDROGEOLOGY

The geology of Waukesha County is characterized by Quaternary aged unconsolidated glacial deposits (i.e. clayey, silty tills, and sand and gravel outwash) ranging in thickness from 35 to 200 feet overlying a thick (greater than 2,000 feet) sequence of Silurian, Ordovician, and Cambrian aged dolomite, shale, and sandstone. Precambrian granitic rocks underlie the sedimentary sequence. Subsurface conditions of native soils encountered at the site consisted of brown silty clays with gray mottling to a depth of 6 feet. Topographic and sedimentological evidence seem to indicate that soils in the local area were developed on glacial drift, most of which were derived from the calcareous bedrock, and include up to 4 feet of loess (wind blown glacial silt).

Groundwater was not encountered within the excavation. Well construction logs were obtained from the Wisconsin Geological & Natural History Survey and show the depth to groundwater near the site ranging from 18 feet to 156 feet below the ground surface. A copy of the well logs is provided in Appendix B.

4.0 SITE ASSESSMENT ACTIVITIES

4.1 Tank Excavation

Midwest Petroleum Service, Inc. personnel were mobilized to the site on January 9, 1991 to complete the UST removal, and a project geologist from Foth & Van Dyke conducted environmental monitoring and sample collection. The excavation was completed by removing surface asphalt and sand and gravel fill surrounding the tank. Soils were excavated from around the tank, exposing the sides and top of the tank. Any remaining product in the tank was pumped and taken off-site by Waukesha County prior to removing the tank from the excavation. The Town of Pewaukee Fire Department was notified prior to January 9th and a representative was present on-site to document the tank removal. Photographs were taken by a Foth & Van Dyke geologist documenting the tank removal and site conditions. Photovac TIP readings during soil excavation were not recorded because constituents of the waste oil were not likely to be detected using this equipment.

4.2 Soil Sampling

Three soil samples were collected from the tank excavation area. The soil samples were submitted to a Wisconsin Department of Natural Resources approved laboratory and analyzed for TPH. In accordance with WDNR sampling protocol, one soil sample was collected from both the east and west end of the tank at a depth of 5-1/2 feet and the third soil sample was collected from the north tank sidewall at a depth of 4 feet.

All samples were collected with a decontaminated stainless steel sampling spoon, transferred to 120-ml glass sample jars, and sealed to prevent loss of volatile compounds. The samples were labeled, packaged, placed on ice, and sent to MacDonald Research Group, Inc. accompanied by proper chain-of-custody

documentation. The samples were analyzed by the gas chromatographic laboratory method. Chain-of-custody documentation and laboratory results are presented in Appendix C.

5.0 SITE ASSESSMENT RESULTS

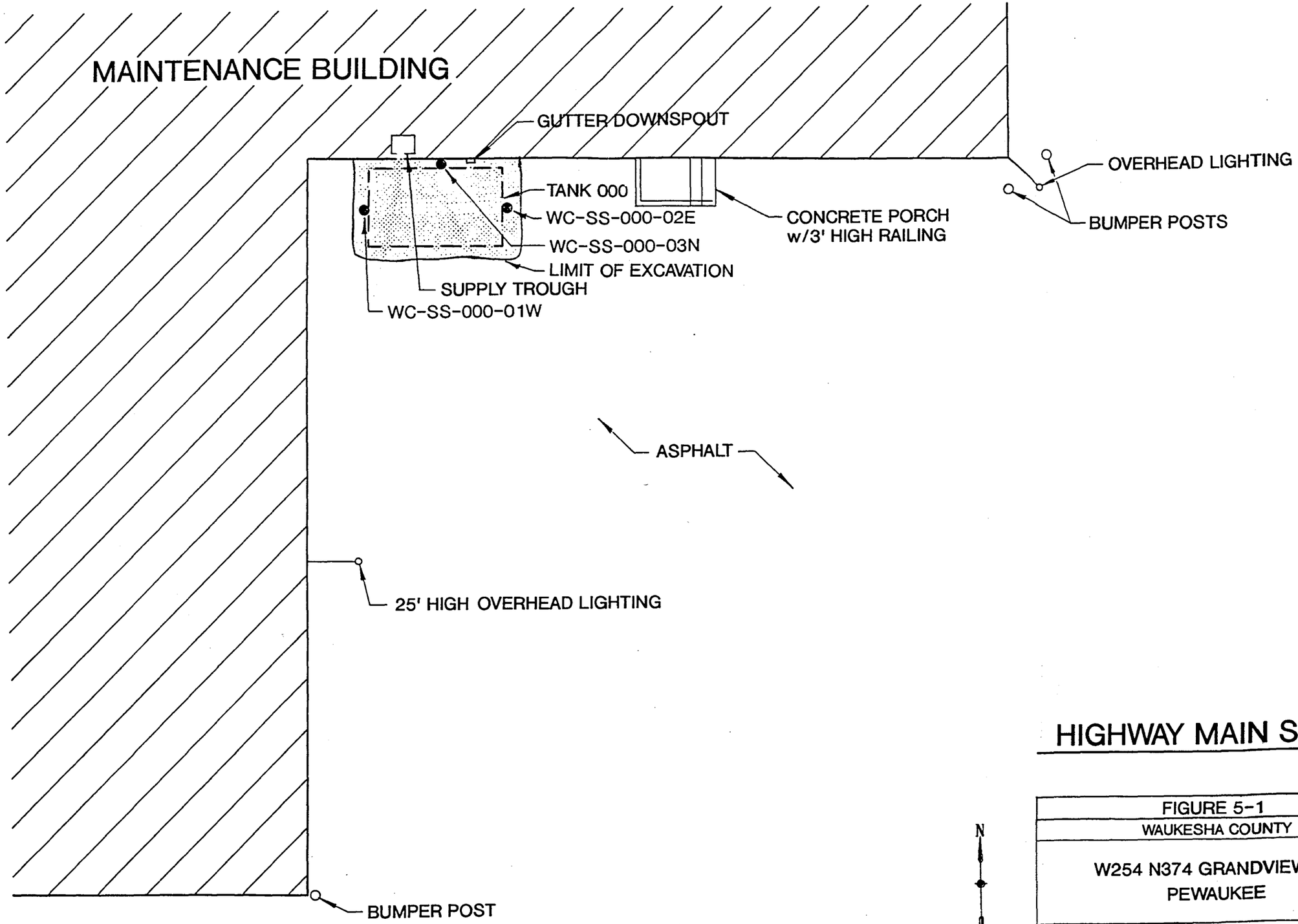
5.1 Site Description and Background

The site at which Tank No. 000 was located is an active Waukesha County Highway Maintenance facility located at W254 N374 Grandview Road, Pewaukee, Wisconsin. The legal description of the property is the southeast quarter of Section 28, Town 7 North, Range 19 East, in Waukesha County, Wisconsin. Information available concerning Tank No. 000 was obtained from Waukesha County and indicated that this tank was a single-wall steel waste oil tank of unknown size. Waste oil was deposited into this tank through a floor drain inside the Highway Main Shop building and underground piping system leading to the waste oil tank. The tank was equipped with a vent riser and access pipe for removal of the waste oil. During removal, the tank was identified as approximately 1,000 gallons in size with a diameter of 5 feet 4 inches and a length of 6 feet. Figure 5-1 shows the location of Tank No. 000 in relation to other features on the site.

5.2 Excavation Activities

The top of Tank No. 000 and associated piping were located approximately 1.0 foot below the existing ground surface. The removal of the UST resulted in a 12-foot by 10-foot by 6-foot deep excavation. Tank No. 000 did not contain remaining product during removal.

Soil excavated from around the tank was stockpiled immediately adjacent to the tank excavation site. After laboratory results were received and TPH concentrations of soil samples documented to be below the 10 ppm action limit, the soils were replaced in the excavation.



HIGHWAY MAIN SHOP

FIGURE 5-1	
WAUKESHA COUNTY	
W254 N374 GRANDVIEW RD. PEWAUKEE	
SCALE: 1" = 10'	DATE: JULY, 1990
PREPARED BY: FOTH & VAN DYKE	BY: MWM

Photographic documentation presented in Appendix D shows the removal of the UST. Inspection of the tank upon removal showed several approximately 1/8 inch diameter holes present in the tank sidewalls and ends. The tank did not, however, appear to be corroded. The piping removed from the site was in good condition with no visible staining or excessive corrosion present.

5.3 Soil Analytical Results

Upon defining the limits of the excavation, one confirmatory soil sample was collected from the west end and east end and from beneath the north tank sidewall. The samples were submitted for laboratory analysis for TPH by gas chromatographic methods (TPH-GC).

Laboratory analytical results of the three soil samples showed that TPH-GC concentrations ranged from 0.24 to 3.64 ppm.

A copy of the laboratory analysis sheets are provided in Appendix C.

5.4 Summary and Recommendations

Following the UST removal, soil samples were collected from the sidewalls and bottom of the excavation. Laboratory analysis for TPH found concentrations in the three samples to be below 4 ppm. Based on the field observations and laboratory results, petroleum contamination of soils within the excavation above WDNR action limits was not detected. Therefore, Foth & Van Dyke recommends that no further action be required at the site.

6.0 LIMITATIONS OF ASSESSMENT

This report was prepared under constraints of cost, time, and scope, and reflects a limited assessment and evaluation rather than a full, total, complete or extensive assessment and evaluation.

Our assessment was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by Professional Consultants practicing in this or similar localities. No other warranty or guarantee, expressed or implied, is made as to the conclusion and professional advice included in this report.

The findings of this report are valid as of the present date of the assessment. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, from the broadening of knowledge, or from other reasons. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control.

If the interpretations and conclusions contained in this report are based upon the result of independent laboratory tests and analysis intended to detect the presence and/or concentration of certain chemical constituents in samples taken from the subject property, such testing and analysis have been conducted by an independent testing laboratory. Foth & Van Dyke has no control over such testing and analysis and, therefore, disclaims any responsibility for any errors and omissions arising therefrom.

If the assessment contained in this report is based upon observation of conditions at the facility/site and/or information provided by the client and/or investigation of

records, and it does not include sampling of soil, rock, groundwater, surface water, air, on-site substances or materials, it is, therefore, not possible to confirm the presence or absence or toxic or hazardous substances, wastes or materials in the environments associated with the facility/site.

If subsurface exploration was performed and presented in the report, any subsurface exploration cannot reveal totally what is below the surface. Depending upon the sampling method and frequency, every soil condition may not be observed, and some materials or layers which are present in the subsurface may not be noted.

This report is issued with the understanding that it is the responsibility of the owner(s) to ensure that the information and recommendations contained herein are brought to the attention of the appropriate regulatory agency(ies).

APPENDIX A

DILHR Notification of Tank Removal

Foth & Van Dyke

Two Park Plaza, Suite 950
10850 West Park Place
Milwaukee, WI 53224-3619
414/359-2500
FAX: 414/359-2519

LETTER OF TRANSMITTAL

DATE: 1-18-91
JOB NO.: 40W89
ATTENTION: Elaine Waterman
RE: Tank closure of 1000 gallon waste oil tank at Waukesha County Highway main shop at W254 N374 Grandview Road, Pewaukee WI.

TO: DILHR

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☐ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies.
☐ For review and comment ☐ Other _____
☐ FOR BIDS DUE _____ 19 ____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: No underground petroleum product tank inventory form was filed with DILHR. The tank was removed on 1-9-91. A tank closure assessment is being prepared and a copy will be sent to the WDNR.

COPY TO: _____

A1

SIGNED: Brian Ahrens

FORM #134 (Rev. 12/89)

If enclosures are not as noted, kindly notify us at once.

APPENDIX B

Well Construction Logs

Wel 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

RECEIVED JAN 14 1964 SANITARY ENGINEERING

1. County Waukesha — Town [X] Village [ ] City [ ] Pewaukee (Check one and name)

2. Location N.1-W.25992 Northview Rd
Name of street and number of premise or Section, Town and Range numbers

3. Owner [X] or Agent [ ] Loriane Reis
Name of individual, partnership or firm

4. Mail Address W.25992 Northview Rd. Waukesha Wia.
Complete address required

5. From well to nearest: Building 15 ft; sewer ____ ft; drain 15 ft; septic tank 50 ft; dry well or filter bed 50 ft; abandoned well ____ ft.

6. Well is intended to supply water for: home

7. **DRILLHOLE:**

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	151			
5	124	255			

8. **CASING AND LINER PIPE OR CURBING:**

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Blk.std.	unknown	
5	blk.std.	124	155

9. **GROUT:**

Kind	From (ft.)	To (ft.)
dnknown		

10. **FORMATIONS:**

Kind	From (ft.)	To (ft.)
Old well		193
Shell lime-shale stks	193	217
limestone	217	240
shale -lime stks	240	253
limestone	253	255

Construction of the well was completed on: Jan.9 19 64

The well is terminated 8 inches [X] above, below [ ] the permanent ground surface.

Was the well disinfected upon completion? Yes x No ____

Was the well sealed watertight upon completion? Yes x No ____

11. **MISCELLANEOUS DATA:**

Yield test: 5 Hrs. at 10 GPM.

Depth from surface to water-level: 156 ft.

Water-level when pumping: 161 ft.

Water sample was sent to the state laboratory at: Madison (City) on 1/9 1964

Signature Garber & Son B. J. Garber 22386 W. Green Rd Waukesha 53186
Registered Well Driller — Complete Mail Address

Please do not write in space below

Rec'd ____ No. ____

Ans'd ____

Interpretation ____

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ____

B1

State of Wisconsin
Department of Natural Resources
Private Water Supply
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300–15 Rev. 2-79

1. COUNTY: Waukesha
CHECK (✓) ONE: [X] Town [ ] Village [ ] City
Name: Pewaukee

2. LOCATION: ¼ Section or Gov't. Lot: NW, SE, SW | Section: 28 | Township: 7N | Range: 19E
OR – Grid or Street No.: W255 N576 | Street or Road Name: Gradview Blvd.
AND – If available subdivision name, lot & block No.

3. NAME [ ] OWNER [X] AGENT AT TIME OF DRILLING CHECK (✓) ONE: David Acker
ADDRESS: 10981 W. Forest Homes Ave.
POST OFFICE: Hales Corner | ZIP CODE: 53130

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
6			not	in						

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Sewage Sump	Clearwater Dr.	Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit / Seepage Bed / Seepage Trench	Manure Hopper or Retention or Pnuematic Tank
							6							

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well / Pump / Tank	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit	Earthen Manure Basin

Temporary Manure Stack or Platform	Watertight Liquid Manure Tank or Basin	Manure Pressure Pipe	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Manure Storage Basin / Concrete Floor Only / Concrete Floor and Partial Concrete Walls	Other (Describe)

5. Well is intended to supply water for: small commercial

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	20	8	20	41
6	41	140			

7. CASING, LINER, CURBING AND SCREEN
Material, Weight, Specification

Dia. (in.)	Mfg. & Method of Assembly	From (ft.)	To (ft.)
6"	black steel pipe	Surface	
	welded joints		
	18.97 lb.ASTM A53		
	~~XXXXXX~~ Valley steel		41

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
clear cement & water	Surface	
5½ gals. to 1 bag		41

9. FORMATIONS

Kind	From (ft.)	To (ft.)
stoney clay	Surface	13
hardpan	13	22
limestone	22	140

10. TYPE OF DRILLING MACHINE USED
[ ] Cable Tool [X] Rotary-hammer w/drilling mud & air [ ] Jetting with [ ] Air [ ] Water
[ ] Rotary-air w/drilling mud [ ] Rotary-hammer & air
[ ] Rotary-w/drilling mud [ ] Reverse Rotary

Well construction completed on 12-24 19 82

11. MISCELLANEOUS DATA
Yield Test: 3 Hrs. at 15 GPM
Depth from surface to normal water level 21 Ft.
Depth of water level when pumping 29 Ft. Stabilized [X] Yes [ ] No

Well is terminated 8 inches [X] above [ ] below final grade
Well disinfected upon completion [X] Yes [ ] No
Well sealed watertight upon completion [X] Yes [ ] No

Water sample sent to Madison laboratory on 12-26 19 82

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature: Richard Roschi
B2 Registered Well Driller

Business Name and Complete Mailing Address
Roschi Bros. Well Drilling & Pumps, Inc.
12665 W. Lisbon Rd. Brookfield, Wis.5300

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

NOTE:
White Copy – Division's Copy
Green Copy – Driller's Copy
Yellow Copy – Owner's Copy

WELL CONSTRUCTOR'S REPORT
Form 3300–15 Rev. 12-76

AUG 22 1980

1. COUNTY: Waukesha
CHECK (✓) ONE: [X] Town [ ] Village [ ] City
Name: Waukesha (TOWN OF PEWAUKEE)

2. LOCATION
¼ Section: NE, SW, Section: 28, Township: 7N, Range: 19E
OR – Grid or Street No.: W255 N499
Street Name: Grandview ~~Ave.~~ Blvd?
AND – If available subdivision name, lot & block No.

3. NAME [X] OWNER [ ] AGENT AT TIME OF DRILLING CHECK (✓) ONE
Warden Builders, Inc.
ADDRESS: 2001 S West Ave.
POST OFFICE: Waukesha, Wisconsin

4. Distance in feet from well to nearest: (Record answer in appropriate block)

Building	Sanitary Bldg. Drain C.I.	Sanitary Bldg. Drain Other	Sanitary Bldg. Sewer C.I.	Sanitary Bldg. Sewer Other	Floor Drain Connected To: C.I. Sewer	Floor Drain Connected To: Other Sewer	Storm Bldg. Drain C.I.	Storm Bldg. Drain Other	Storm Bldg. Sewer C.I.	Storm Bldg. Sewer Other
15	Construction not		started on		septic		system			

Street Sewer San.	Street Sewer Storm	Other Sewers C.I.	Other Sewers Other	Foundation Drain Connected to: Sewer	Sewage Sump	Clearwater Dr.	Clearwater Sump	Sewage Sump C.I.	Sewage Sump Other	Clearwater Sump	Septic Tank	Holding Tank	Sewage Absorption Unit: Seepage Pit / Seepage Bed / Seepage Trench

Privy	Pet Waste Pit	Pit: Nonconforming Existing: Well / Pump / Tank	Subsurface Pumproom Nonconforming Existing	Barn Gutter	Animal Barn Pen	Animal Yard	Silo With Pit	Glass Lined Storage Facility	Silo w/o Pit	Earthen Silage Storage Trench Or Pit

Temporary Manure Stack	Watertight Liquid Manure Tank	Solid Manure Storage Structure	Subsurface Gasoline or Oil Tank	Waste Pond or Land Disposal Unit (Specify Type)	Other (Give Description)

5. Well is intended to supply water for:
Office building

6. DRILLHOLE

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	Surface	42			
6	42	200			

7. CASING, LINER, CURBING AND SCREEN

Dia. (in.)	Material, Weight, Specification & Method of Assembly	From (ft.)	To (ft.)
6	18.97 lbs. per ft. new steel plain end Sumitomo	Surface ASTM A-53	42

8. GROUT OR OTHER SEALING MATERIAL

Kind	From (ft.)	To (ft.)
Neat cement grout	Surface	42

9. FORMATIONS

Kind	From (ft.)	To (ft.)
Gravel and clay	Surface	28
Limestone	28	140
Limestone and shale	140	200

10. TYPE OF DRILLING MACHINE USED
[ ] Cable Tool [X] Rotary-hammer w/drilling mud & air [ ] Jetting with [ ] Air [ ] Water
[ ] Rotary-air w/drilling mud [ ] Rotary-hammer & air
[ ] Rotary-w/drilling mud [ ] Reverse Rotary

Well construction completed on July 29 1980

11. MISCELLANEOUS DATA
Yield Test: 5 Hrs. at 10 GPM
Depth from surface to normal water level 65 Ft.
Depth of water level when pumping 120 Ft. Stabilized [X] Yes [ ] No

Well is terminated 8 inches [X] above [ ] below final grade
Well disinfected upon completion [X] Yes [ ] No
Well sealed watertight upon completion [X] Yes [ ] No

Water sample sent to Madison laboratory on July 30 1980

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.

Signature Herr Well Drilling, Inc. B3
Registered Well Driller

Complete Mail Address 295 Marsh Rd., Dousman, Wis. 53118

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Waukesha { Town ☑ Village ☐ City ☐ } Pewaukee — Check one and give name

2. Location NE, NE, ~~NW~~ of S.W. 1/4 Sec 28 R 19E, T 7N
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☐ or Agent ☐ Forrest Florence Rt 1A
Name of individual, partnership or firm

4. Mail Address Rt. 1 Box 181A
Complete address required

5. From well to nearest: Building 10 ft; sewer 50 ft; drain - ft; septic tank 75 ft; dry well or filter bed 75 ft; abandoned well — ft.

6. Well is intended to supply water for: Home

7. **DRILLHOLE:**

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
6	0	96			

8. **CASING AND LINER PIPE OR CURBING:**

Dia. (in.)	Kind	From (ft.)	To (ft.)
6	Black Steel	0	38

9. **GROUT:**

Kind	From (ft.)	To (ft.)
Puddled clay	0	30

10. **FORMATIONS:**

Kind	From (ft.)	To (ft.)
Gravel	0	15
Clay	15	38
Limestone	38	96

11. **MISCELLANEOUS DATA:**

Yield test: 4 Hrs. at 10 GPM.

Depth from surface to water-level: 18 ft.

Water-level when pumping: 28 ft.

Water sample was sent to the state laboratory at: Madison (City) on Dec 18 1949

Construction of the well was completed on: May 14 1949

The well is terminated 6 inches ☑ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ✓ No

Was the well sealed watertight upon completion? Yes ✓ No

Signature Donald Weast — Registered Well Driller

304 N. St. Paul Ave. — Complete Mail Address

RECEIVED DEC 21 1949 BUREAU SAN. ENG.

Please do not write in space below

Rec'd ____ No. ____

Ans'd ____

Interpretation ____

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner ____

B4

(NE, SE, SW) T7N R19E Sec 26

Wel 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Waukesha { Town ☒ / Village ☐ / City ☐ } Pewaukee (Check one and give name)

W 255 N 326 Patricia Lane

2. Location Lot 10 Patricia Lane Lambert Heights Subdivision
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Dean Schoenwetter
Name of individual, partnership or firm

4. Mail Address R.F.D.1 Pewaukee Wisconsin W255 No 326 Patricia Lane
Complete address required

5. From well to nearest: Building 15 ft; sewer ____ ft; drain ____ ft; septic tank 55 ft; dry well or filter bed ____ ft; abandoned well ____ ft.

6. Well is intended to supply water for: Home

7. **DRILLHOLE:**

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	28	6	40	161
8	28	40			

8. **CASING AND LINER PIPE OR CURBING:**

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	20# Steel	0	40

9. **GROUT:**

Kind	From (ft.)	To (ft.)
Puddeled Clay	0	28
Cement	28	40

10. **FORMATIONS:**

Kind	From (ft.)	To (ft.)
Clay	0	24
Gravel	24	28
Lime Stone	28	156
Shale	156	161

Construction of the well was completed on: Dec 24 1962

The well is terminated 10 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes X No ____

Was the well sealed watertight upon completion? Yes X No ____

11. **MISCELLANEOUS DATA:**

Yield test: 5 Hrs. at 7½ GPM.

Depth from surface to water-level: 35 ft.

Water-level when pumping: 75 ft.

Water sample was sent to the state laboratory at: Madison (City) on Dec 30 1962

Signature Herbert Thomas (Registered Well Driller) 4187 N. 78 St. Milwaukee 22 Wisconsin (Complete Mail Address)

Please do not write in space below

Rec'd JAN 2 1963 No. 43

Ans'd

Interpretation 0.51

B5

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

(SE, SE, SW) T7N R19E SEC 06

Wel 6

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH

See Instructions on Reverse Side

1. County Waukesha (Town ☐ Village ☐ City ☐) of Pewaukee — Check one and give name

2. Location Patricia Lane Lot 2 Lambert Heights Subdivision
Name of street and number of premise or Section, Town and Range numbers

3. Owner ☒ or Agent ☐ Style Line Construction Incorporated
Name of individual, partnership or firm

4. Mail Address 3029 no. 35 St. Milwaukee Wisconsin
Complete address required

5. From well to nearest: Building 15 ft; sewer ____ ft; drain ____ ft; septic tank 50 ft; dry well or filter bed ____ ft; abandoned well ____ ft.

6. Well is intended to supply water for: Home

7. **DRILLHOLE:**

Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)
10	0	20			
6	20	170			

8. **CASING AND LINER PIPE OR CURBING:**

Dia. (in.)	Kind and Weight	From (ft.)	To (ft.)
6	Steel 20#	0	46

9. **GROUT:**

Kind	From (ft.)	To (ft.)
Puddeld Clay	0	20

10. **FORMATIONS:**

Kind	From (ft.)	To (ft.)
Clay	0	30
Gravel	30	38
Hard Pan	38	46
Lime Stone	46	170
Shale	170	

RECEIVED AUG 25 1960 SANITARY ENGINEERING

Construction of the well was completed on: August 10 1960

The well is terminated 10 inches ☒ above, below ☐ the permanent ground surface.

Was the well disinfected upon completion? Yes ☒ No ____

Was the well sealed watertight upon completion? Yes ☒ No ____

11. **MISCELLANEOUS DATA:**

Yield test: 8 Hrs. at 10 GPM.

Depth from surface to water-level: 32 ft.

Water-level when pumping: 70 ft.

Water sample was sent to the state laboratory at: Madison (City) on August 17 1960

Signature Herbert Thomas (Registered Well Driller) 4187 No. 78 St. Milwaukee 22 Wisconsin (Complete Mail Address)

Please do not write in space below

Rec'd AUG 18 1960 No. 31973

Ans'd

Interpretation ~~SAFE—BACTERIOLOGICALLY~~

B6

	10 ml	10 ml	10 ml	10 ml	10 ml
Gas—24 hrs.					
48 hrs.					
Confirm					
B. Coli					

Examiner

WK-18

WAUKESHA COUNTY FARM WELL, WAUKESHA, WIS.
SE¼SE¼ Sec. 28, T. 7 N., R. 19 E.
Joseph Egerer [illegible] Co., Contractors, 1930-1931
Samples examined by F. T. Thwaites, Nos. 85386-85513, 85518-85524
Elevation ~~[illegible]~~ 939. A.T.
C. S. Markin, Driller

DRIFT		0-10	10	No record
		10-20	10	Fill, gray, dolomitic
	35	20-35	15	Gravel, fine, gray
NIAGARA		35-70	35	Dolomite, light gray to gray
		70-100	30	Dolomite, light gray; chert, white
		100-120	20	Dolomite, light gray
		120-130	10	Dolomite, light gray; chert, white
		130-220	90	Dolomite, light gray
		220-230	10	Dolomite, gray, lt. gray, pink; chert, white
	205	230-240	10	Dolomite, dark red, some light gray
RICHMOND		240-280	40	Shale, blue-gray, dolomitic
		280-300	20	Shale, dark brown, bituminous; dolomite, br.
		300-405	105	Shale, blue-gray, dolomitic
	165			
GALENA-BLACK RIVER		405-560	155	Dolomite, gray and light gray
		560-580	20	Dolomite, light to dark gray, blue spots
		580-600	20	Dolomite, light gray
		600640	40	Dolomite, light and dark gray, some blue spots
		640-650	10	Ss., fine to med. lt. gray, dol; dol, gy; sh.
	250	650-655	5	Dolomite, light gray, soft
SPR[illegible]		655-690	35	Sandstone, medium to fine, light gray, slightly dolomitic
		690-820	130	Sandstone, medium, white

12½" drive pipe
42½
220 water level
12" hole
10" 40 lb g.w.i. pipe
432
10" hole
621
63'11" of 8" pipe
685

WK-18

165			
	820-830	10	Sandstone, fine, light gray, dolomitic
	830-840	10	Sandstone like above; shale, green, dol.
	840-850	10	Sandstone, fine, light gray, dol., glauconitic
	850-890	40	Sandstone, fine to medium, white, dolomitic
	890-900	10	Ss., fine, light gray, pink, dol., glauc.
	900-910	10	Shale, dark red, dolomitic
	910-920	10	Ss., fine, light gray, pink, dol., glauconitic
	920-990	70	Sandstone, fine to medium, light gray, dolomitic
	990-1040	50	Sandstone, medium, light gray and pink, dolomitic
	1040-1050	10	Sandstone, fine, light gray, dolomitic
	1050-1070	20	Sandstone, medium, white
260	1070-1080	10	Sandstone, fine to medium, light gray, dol.
	1080-1110	30	Sandstone, medium to fine, light gray
	1110-1140	30	Sandstone, medium, white
	1140-1150	10	Sandstone, medium to fine, light gray
	1150-1160	10	Sandstone, medium, white
	1160-1170	10	Sandstone, medium to fine, light gray
	1170-1180	10	Sandstone, medium, white
	1180-1200	20	Sandstone, medium to fine, white
	1200-1210	10	Sandstone, medium to fine, light gray, dol.
	1210-1220	10	Sandstone, medium to coarse, light pink
	1220-1250	30	Sandstone, fine to medium, pink
	1250-1260	10	Sandstone, medium to fine, white
	1260-1270	10	Sandstone, coarse to fine, light gray
	1270-1280	10	Sandstone, fine, gray
	1280-1320	40	Sandstone, coarse to medium, light gray.
245	1320-1325	5	Sandstone, fine to medium, gray, dolomitic

8" hole

1195

73'11" of 6" pipe

1269

6" hole

Samples from well at Waukesha County Farm, near — WK-171 10342-10344

Pewaukee, Wis. SE 28, T. 7, R. 19 E.

(These samples are placed in 3 milk bottles with the depths indicated on the sides)

	Depth.	Material.
10342	224 ?	Reddish "sandy" limestone (Niagara)
	234	Same, grayish color.
	240 ?	Fine greenish limestone.
	254 ?	Same.
	267	Gray-brown shale (?) (Cincinnati?)
	284	Same, harder.
	290	Same.
	295	"
	300	"
10343	305	"
	317	"
	323	"
	355	" , light gray
	368	" , slightly brownish.
	380	" , gray.
	395	"
10344	400	Gray, shaley limestone.
	410	Brownish limestone (Galena)
	420	Gray limestone.
	430	" "
	440	Lighter gray limestone.
	450	Gray limestone.

Depth of well 458'. Alden (see Wisconsin Geological Survey records) says that last 95 feet is Galena, 80 feet above Cincinnati, remainder Niagara. But the samples appear to indicate nothing but shale between 267 and 410.

APPENDIX C

Laboratory Results and Chain-of-Custody Forms

Mac Donald Research Group, Inc.

1441 North Mayfair Road
Milwaukee, Wisconsin 53226

11 January 1991

Foth & Van Dyke
10850 W. Park Place Suite 950
Milwaukee, WI 53224

Project: Waukesha County
Invoice # 3588

I.D.	Date	Location	Total Petroleum Hydrocarbon mg/kg (ppm)	% Total solid
WC SS 000 01W	1-10	W. end	1.04 (G) 2.60 (D)	82%
WC SS 000 02E	1-10	W. end	0.30 (G) 0.75 (D)	87%
WC SS 000 03N	1-10	W. end	0.19 (G) 0.05 (D)	86%

(G) gasoline standard
(D) Diesel standard

Limits of Quantitation:
soil TPH 0.02ppm each
water TPH 0.4ppb each
lead 1ppm
soil BETX 0.3ppb each
water BETX 0.06ppb
chlorides 0.05mg/L
water VOC's 0.04ppb each

H. S. MacDonald
~~Hector S. MacDonald, Analyst~~

Mac Donald Research Group, Inc.

(414) 491-2949 Office — (414) 771-7151
1441 North Mayfair Road
Milwaukee, Wisconsin 53226

CHAIN OF CUSTODY RECORD

SAMPLE COLLECTOR Brian Huhn TITLE/WORK STATION Highway main shop TELEPHONE NO. ~
PROPERTY OWNER Washington County PROPERTY ADDRESS ~ TELEPHONE NO. ~
Fond Du Lac Van Dyke

PHOTOGRAPHS: YES NO (Circle One)

SAMPLE ID NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	120 ml	Filt-Lab				COMMENTS
WC-SS-000-01W	1/10	1003		X	West End	1	X	X				Quiet Area
WC-SS-000-02E		1006		X	East End	1	X	X				
WC-SS-000-03N		1009		X	North Sidewall	1	X	X				

C2

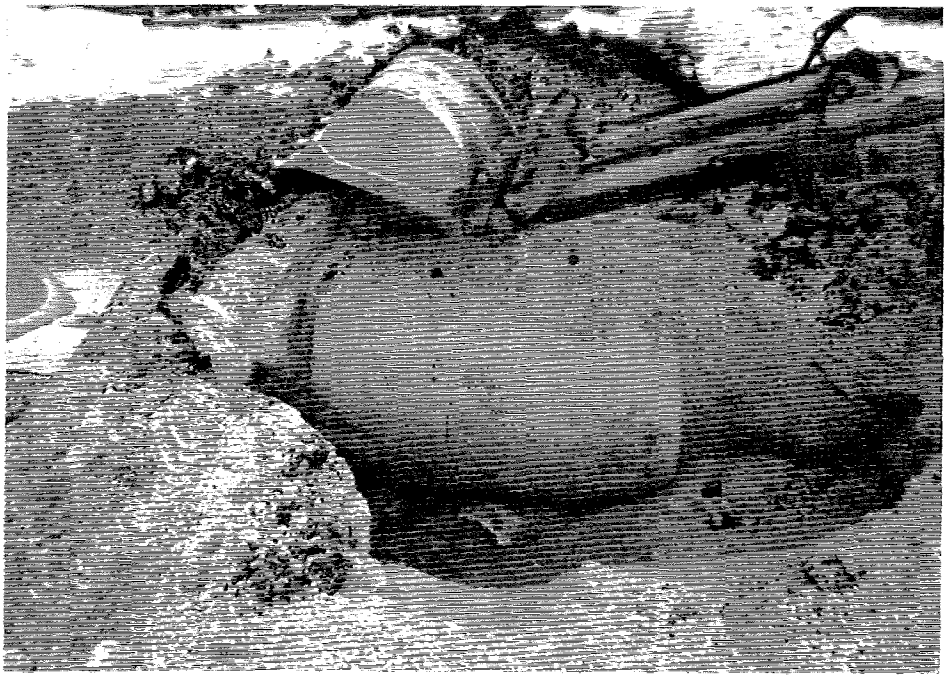
I hereby certify that I received these samples and disposed of them as noted below:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: Signature)	Date/Time	Received by: (Signature)
Brian Huhn	1/10 1111	[illegible]			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for Laboratory by (Signature)	Date/Time	Remarks

APPENDIX D

Photograph Documentation



Photograph No. 1 January 9, 1991
Excavation of unconsolidated material surrounding tank. View looking north.

Photograph No. 2 January 9, 1991
Tank being removed from excavation. View looking north.