

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
SOUTHEAST DISTRICT

Headquarters: 2300 N. Dr. Martin Luther King Jr. Drive
P. O. Box 12436
Milwaukee, WI 53212

FAX #:(414) 263-8483 Resource Management, Wastewater, Water Resources, Library, Environmental Analysis/Review

FAX #:(414) 263-8716 Air Management, Environmental Enforcement, Water Regulations & Zoning

FAX #:(414) 263-8606 District Director, Assistant District Directors, District Management, Finance, Purchasing,
Personnel, Payroll, Public Information Officer, Information Center/License Sales

Richards Street Annex: 4041 N. Richards Street
P. O. Box 12436
Milwaukee, WI 53212

FAX #:(414) 961-2770 Solid & Hazardous Waste, Environmental Response & Repair, Water Supply

To: MICHAEL WINKLER Telephone: 1-800-437-3535

Agency/Region: PRUDENTIAL CLAMS OFFICE

Telefax Machine Telephone Number: 612 - 557 - 8740

Subject: ZYDUCK RESIDENCE. FID# 241722800

Project Manager: MARGARET GRAEFE 961-2725

Responsible Party letter dated 5/2/94

From: (Name) LINDA MICHAELS

Office Phone Number: (414) 961-2773

Date: ~~5/6/94~~ → 5/17/94

Number of Pages to Follow (Including Cover Sheet): 4

Cost for FAX = \$1.00 per page plus 5.5% tax

Pages plus cover () x \$1.00 = \$ _____

Tax 5.5% = \$ _____

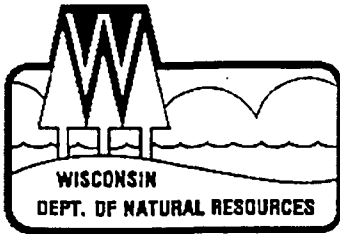
Please make check payable to: The Department of Natural Resources

Send along with a copy of this page to:

Address:

Prudential
P.O. Box 9314
Minneapolis, MN 55440

Wisconsin Department of Natural Resources
2300 N. Dr. Martin Luther King Jr. Drive
P. O. Box 12436
Milwaukee, WI 53212
ATTN: _____



George E. Meyer
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Southeast District - Annex Building
Post Office Box 12436
4041 N. Richards St.
Milwaukee, Wisconsin 53212
TELEPHONE: 414-961-2727
TELEFAX #: 414-961-2770

May 2, 1994

File Ref: FID# 241722800
ERR/ERP

Ms. Josephine Zyduck
4905 South 34th Street
Greenfield, WI 53221

Dear Ms. Zyduck:

RE: Heating oil spill, 4905 South 34th Street, Greenfield

The Wisconsin Department of Natural Resources (WDNR) has been notified that petroleum contamination was discovered at the above referenced location. The purpose of this letter is to inform you of your legal responsibilities to address this situation.

The WDNR proceeds in contamination cases under the authority of s. 144.76, Wisconsin Statutes, commonly referred to as Wisconsin's Hazardous Substance Spill Law. The definition of "hazardous substance" as found in s. 144.01(4m), Wisconsin Statutes, includes any discharged solid, semisolid, liquid or gaseous substance, such as petroleum products, that can cause harm to the environment or human health.

Wisconsin Statute 144.76(2a) states: "A person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance shall notify the Department immediately of any discharge not exempt under sub. (9)."

Wisconsin Statute 144.76(3) states: A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of this state."

Because you are the legal owner of a property where a hazardous substance has been released to the environment, the WDNR identifies you as the party responsible for taking the actions necessary to restore the environment. You are required to:

1. Immediately identify any risks of explosive vapors, free product and/or well contamination, notify the WDNR of those risks and undertake measures to remedy any emergency conditions.
2. Conduct an investigation to determine the extent of contamination, the potential for groundwater impacts and the remedial action(s) necessary to cleanup contaminated soil and groundwater.
3. Develop and carry out a remedial action plan for the site in accordance with state laws, regulations and guidance.
4. Treat or dispose of all products, soils, wastewater or sludges in compliance with all applicable federal, state and local laws and regulations.

According to the subsurface site assessment submitted to the WDNR by your consultant, Rust Environmental, heating oil tank piping leaked oil beneath the basement floor of the house. Oil has since collected in the sump and has been pumped to the surface and onto the grass at the sump outfall. The release was discovered on June 24, 1993 and as of the December 12th sampling there was still .12 parts per million of Diesel Range

Organics (DRO) being collected in the sump. According to your consultants estimates, approximately 110 to 220 gallons of heating oil may have been released beneath the basement. The conditions present at this site may pose a serious threat to human health and/or the environment. The site specific information known to the WDNR at this time, pertaining fuel oil remaining beneath the floor, is not adequate to evaluate the relative potential threat from this site.

Due to the WDNR workload, it is necessary to rank all contamination cases for review priority. The highest priority sites have assigned WDNR project managers who are actively reviewing and approving investigation and remediation plans. Lower priority cases do not always have assigned project managers, however, responsible parties are required to proceed with investigation and clean-up efforts. Due to the lack of complete information about this site, it's relative priority cannot be determined. Therefore, the priority ranking of this site is considered unknown. Until a priority has been assigned to this site, you should proceed with the required response work, submitting all plans and reports, along with quarterly status reports, to this office. The WDNR will notify you if active oversight for your site will be given.

Within 15 days of receiving this letter, you should provide the WDNR with the following information:

1. Any site information you have that would clarify the nature of the potential environmental and/or human health threat from this site.
2. The name of the individual/firm who will direct a remedial investigation for you.
3. The date the remedial investigation will begin, or the date the next work phase will begin, if applicable.

Please be advised that, if you fail to respond within the time period stated above, or if you fail to take appropriate action, the WDNR has the authority to proceed with any of the following actions:

1. The WDNR may pursue further enforcement actions to require the appropriate remedial response to comply with s. 144.76, Wis. Stats. Violation of s. 144.76, Wis. Stats. may ultimately result in forfeitures of up to \$5,000 per day of violation.
2. The WDNR has the authority, under s.144.76(7), Wis. Stats., to take actions necessary to remediate the site and to seek reimbursement for all actual and necessary expenditures from responsible parties.

Submit the requested information and future submittals to:

Ms. Margaret Graefe
c/o ERR/ERP
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, Wisconsin 53212

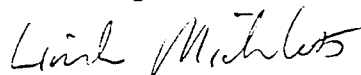
The WDNR suggests that you have a qualified environmental engineer or hydrogeologist direct the remedial investigation, assess the environmental impact and coordinate the implementation of a cleanup program. Although you may have a consultant already working on your site, a document titled "Selecting an Environmental Consultant" and a consultant listing are enclosed for your convenience. Your investigation should follow the requirements contained in the WDNR's latest "Remedial Investigation Checklist" (enclosed). You or your consultant may also request additional remedial response guidance documents from this office.

You are encouraged to contact the Department of Industry, Labor and Human Relations (DILHR), the state agency that administers the Petroleum Environmental Cleanup Fund (PECFA). This fund may reimburse you for eligible costs associated with remedial investigation and clean-up. There is a slight possibility that the spill may be PECFA

eligible because it resulted from the underground piping. DILHR should be contacted at (608) 267-4545 to obtain current information regarding the PECFA program. Please be aware that your ability to use PECFA funds is dependent on your progress in adequately addressing contamination at your site.

Your cooperation in this matter will be appreciated. If you have any questions about this letter, please contact me at (414) 961-2773. In addition, please reference all correspondence for this site to the FID# (Facility Identification number) ERR/ERP, referenced at the top of this letter.

Sincerely,

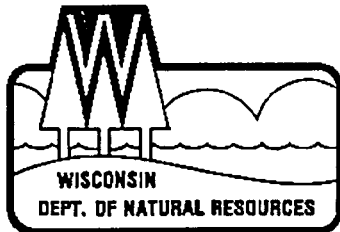


Linda Michalets
Environmental Repair Specialist

Enclosures: Selecting an Environmental Consultant
 Consultants Listing
 Remedial Investigation Checklist

c: SED Case File

FILE



George E. Meyer
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Southeast District - Annex Building

Post Office Box 12436
4041 N. Richards St.
Milwaukee, Wisconsin 53212
TELEPHONE: 414-961-2727
TELEFAX #: 414-961-2770

May 2, 1994

File Ref: FID# 241722800
ERR/ERP

Ms. Josephine Zyduck
4905 South 34th Street
Greenfield, WI 53221

Dear Ms. Zyduck:

RE: Heating oil spill, 4905 South 34th Street, Greenfield

The Wisconsin Department of Natural Resources (WDNR) has been notified that petroleum contamination was discovered at the above referenced location. The purpose of this letter is to inform you of your legal responsibilities to address this situation.

The WDNR proceeds in contamination cases under the authority of s. 144.76, Wisconsin Statutes, commonly referred to as Wisconsin's Hazardous Substance Spill Law. The definition of "hazardous substance" as found in s. 144.01(4m), Wisconsin Statutes, includes any discharged solid, semisolid, liquid or gaseous substance, such as petroleum products, that can cause harm to the environment or human health.

Wisconsin Statute 144.76(2a) states: "A person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance shall notify the Department immediately of any discharge not exempt under sub. (9)."

Wisconsin Statute 144.76(3) states: A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of this state."

Because you are the legal owner of a property where a hazardous substance has been released to the environment, the WDNR identifies you as the party responsible for taking the actions necessary to restore the environment. You are required to:

1. Immediately identify any risks of explosive vapors, free product and/or well contamination, notify the WDNR of those risks and undertake measures to remedy any emergency conditions.
2. Conduct an investigation to determine the extent of contamination, the potential for groundwater impacts and the remedial action(s) necessary to cleanup contaminated soil and groundwater.
3. Develop and carry out a remedial action plan for the site in accordance with state laws, regulations and guidance.
4. Treat or dispose of all products, soils, wastewater or sludges in compliance with all applicable federal, state and local laws and regulations.

According to the subsurface site assessment submitted to the WDNR by your consultant, Rust Environmental, heating oil tank piping leaked oil beneath the basement floor of the house. Oil has since collected in the sump and has been pumped to the surface and onto the grass at the sump outfall. The release was discovered on June 24, 1993 and as of the December 12th sampling there was still .12 parts per million of Diesel Range

Organics (DRO) being collected in the sump. According to your consultants estimates, approximately 110 to 220 gallons of heating oil may have been released beneath the basement. The conditions present at this site may pose a serious threat to human health and/or the environment. The site specific information known to the WDNR at this time, pertaining fuel oil remaining beneath the floor, is not adequate to evaluate the relative potential threat from this site.

Due to the WDNR workload, it is necessary to rank all contamination cases for review priority. The highest priority sites have assigned WDNR project managers who are actively reviewing and approving investigation and remediation plans. Lower priority cases do not always have assigned project managers, however, responsible parties are required to proceed with investigation and clean-up efforts. Due to the lack of complete information about this site, it's relative priority cannot be determined. Therefore, the priority ranking of this site is considered unknown. Until a priority has been assigned to this site, you should proceed with the required response work, submitting all plans and reports, along with quarterly status reports, to this office. The WDNR will notify you if active oversight for your site will be given.

Within 15 days of receiving this letter, you should provide the WDNR with the following information:

1. Any site information you have that would clarify the nature of the potential environmental and/or human health threat from this site.
2. The name of the individual/firm who will direct a remedial investigation for you.
3. The date the remedial investigation will begin, or the date the next work phase will begin, if applicable.

Please be advised that, if you fail to respond within the time period stated above, or if you fail to take appropriate action, the WDNR has the authority to proceed with any of the following actions:

1. The WDNR may pursue further enforcement actions to require the appropriate remedial response to comply with s. 144.76, Wis. Stats. Violation of s. 144.76, Wis. Stats. may ultimately result in forfeitures of up to \$5,000 per day of violation.
2. The WDNR has the authority, under s.144.76(7), Wis. Stats., to take actions necessary to remediate the site and to seek reimbursement for all actual and necessary expenditures from responsible parties.

Submit the requested information and future submittals to:

Ms. Margaret Graefe
c/o ERR/ERP
Wisconsin Department of Natural Resources
P.O. Box 12436
Milwaukee, Wisconsin 53212

The WDNR suggests that you have a qualified environmental engineer or hydrogeologist direct the remedial investigation, assess the environmental impact and coordinate the implementation of a cleanup program. Although you may have a consultant already working on your site, a document titled "Selecting an Environmental Consultant" and a consultant listing are enclosed for your convenience. Your investigation should follow the requirements contained in the WDNR's latest "Remedial Investigation Checklist" (enclosed). You or your consultant may also request additional remedial response guidance documents from this office.

You are encouraged to contact the Department of Industry, Labor and Human Relations (DILHR), the state agency that administers the Petroleum Environmental Cleanup Fund (PECFA). This fund may reimburse you for eligible costs associated with remedial investigation and clean-up. There is a slight possibility that the spill may be PECFA

eligible because it resulted from the underground piping. DILHR should be contacted at (608) 267-4545 to obtain current information regarding the PECFA program. Please be aware that your ability to use PECFA funds is dependent on your progress in adequately addressing contamination at your site.

Your cooperation in this matter will be appreciated. If you have any questions about this letter, please contact me at (414) 961-2773. In addition, please reference all correspondence for this site to the FID# (Facility Identification number) ERR/ERP, referenced at the top of this letter.

Sincerely,



Linda Michalets
Environmental Repair Specialist

Enclosures: Selecting an Environmental Consultant
 Consultants Listing
 Remedial Investigation Checklist

c: SED Case File

April 6, 1994

Received
APR 07 1994
CL

Ms. Candice Lindstrom
Wisconsin Department of Natural Resources
Bureau of Hazardous and Solid Waste
4041 N. Richards St.
Milwaukee, Wisconsin 53212

Re: Site Investigation of a Home Heating Oil Release to the Environment

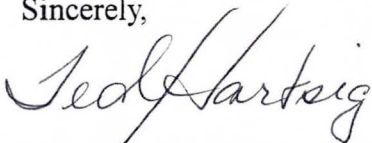
Dear Ms. Lindstrom:

Following our conversation of Monday, March 28, on behalf of the Prudential Insurance Company, I am sending to you a copy of the site investigation report for a home heating fuel oil release from the residence of Ms. Josephine Zyduck, 4905 S. 34th St., Greenfield, Wisconsin. As we discussed, please forward the report to the responsible WDNR person who will oversee this case.

This report presents the sampling conducted to evaluate the extent of contaminated soil, and presents recommendations for the cleanup of the area affected. We will await your review and comment of the report and site in general, and would appreciate the opportunity to discuss with the WDNR the status of the site.

If you have any questions or comments, please call me any time. We appreciate your assistance with this report.

Sincerely,



Theodore A. Hartsig, C.P.S.S.
Senior Scientist

enc./

cc: Mr. Mike Winkler, Prudential
Project File

APR 07 1994

SUBSURFACE INVESTIGATION
JOSEPHINE ZYDUCK PROPERTY
GREENFIELD, WISCONSIN
January 1994

Prepared for

PRUDENTIAL INSURANCE COMPANY
MINNEAPOLIS, MINNESOTA

RUST Environment & Infrastructure
4738 North 40th Street
Sheboygan, Wisconsin 53083

TABLE OF CONTENTS

<u>Chapter</u>		<u>Page</u>
1.0	INTRODUCTION	1-1
2.0	SITE HISTORY	2-1
2.1	SITE DESCRIPTION	2-1
2.2	SITE HISTORY	2-1
3.0	INVESTIGATION PROCEDURES	3-1
4.0	DATA EVALUATION	4-1
5.0	REMEDIAL ACTION PLAN	5-1
5.1	SCREENING OF REMEDIAL ALTERNATIVES	5-1
5.2	EVALUATION	5-2
6.0	CONCLUSION AND RECOMMENDATION	6-1

LIST OF FIGURES

<u>Figure</u>		<u>Follows Page</u>
1	Site Location	2-1
2	Josephine Zyduck Property and Fuel Oil Spill Location	2-1
3	Sample Collection Locations	3-1
4	DRO Concentration at Sampling Locations	4-1

LIST OF TABLES

<u>Table</u>		<u>Follows Page</u>
1	DRO Analytical Results	4-1

LIST OF APPENDICES

Appendix

- A Laboratory Report of Analytical Results
- B Remedial Alternatives Cost Estimate

1.0 INTRODUCTION

RUST E&I has been retained by Prudential Insurance Company to perform a site investigation of potential soil contamination at the residence of Ms. Josephine Zyduck, located at 4905 South 34th Street, Greenfield, Wisconsin 53221. The site investigation is being performed to identify the nature and extent of possible soil contamination north of the residence which may have resulted from a fuel oil tank leak.

A subsurface investigation was performed at the Zyduck residence December 7, 1993. The investigation included soil sample collection and analysis for Diesel Range Organic (DRO) Compounds at four locations. The following sections of this report summarize the site history, sampling procedures, analytical results, an evaluation of the results, and a remedial action plan.

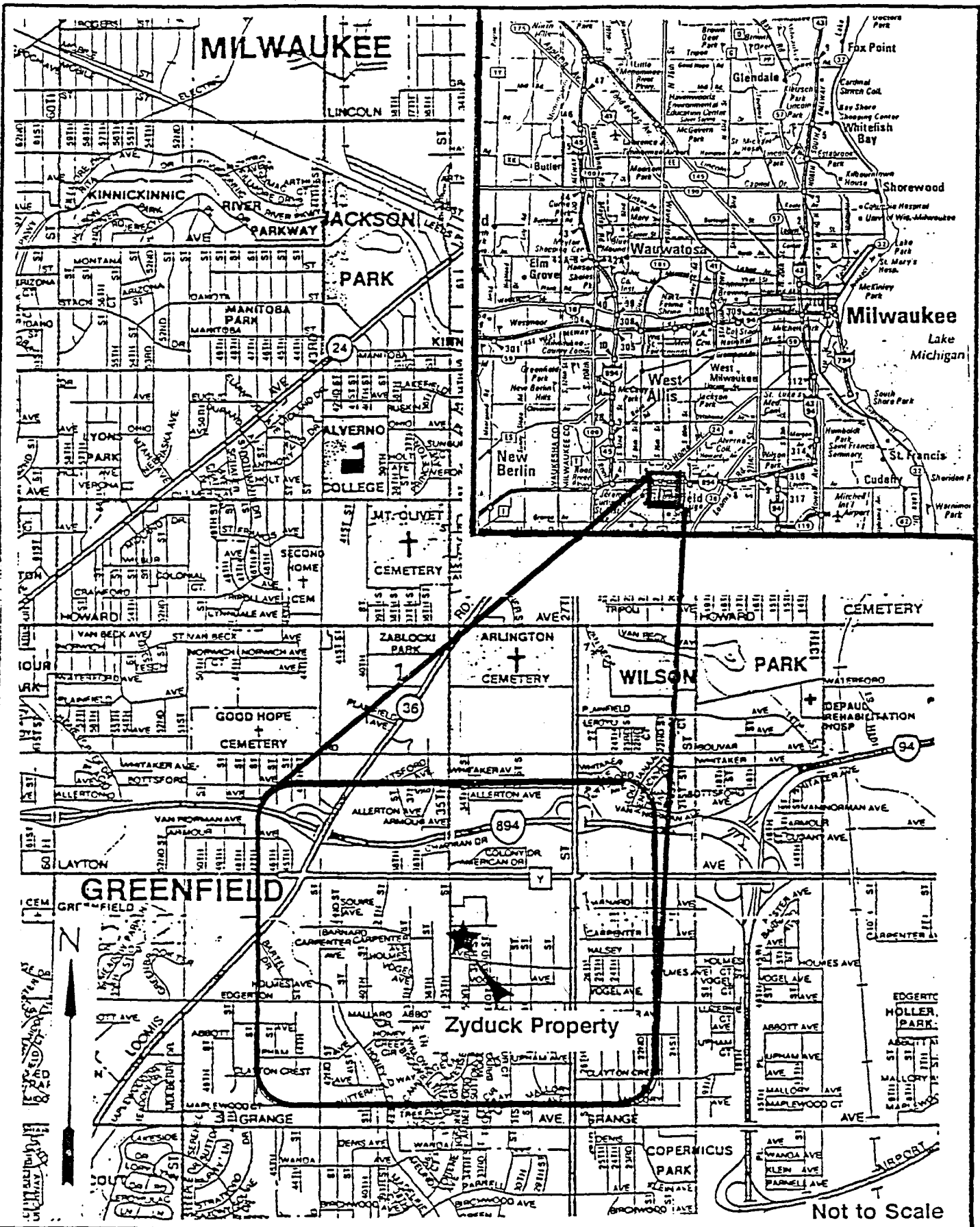


FIGURE 1
 SITE LOCATION
 Josephine Zyduck Property
 Greenfield, Wisconsin

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

The Josephine Zyduck residence (herein referred to as the site) is located at 4905 South 34th Street in Greenfield, Wisconsin, located southwest of downtown Milwaukee (Figure 1). The site is located at the end of South 34th Street which terminates at the grounds of the Greenfield Middle School. The residence is a single story home approximately 40 years old on an approximately one-third acre city lot. The surrounding area is predominantly residential with similarly aged homes. The school grounds north of the property consist of a large undeveloped area with the actual school building located approximately one-quarter mile northeast of the site. No known wells used for drinking water are in the area, nor are there any surface water features within 1/4-mile.

2.2 SITE HISTORY

A preliminary site survey was conducted by RUST Environment & Infrastructure at the residence of Ms. Josephine Zyduck on July 31, 1993. Mrs. Zyduck reported that oil was first observed on June 24, 1993, flowing from the discharge of the basement sump pump onto a grassy area, located just north of the Zyduck property. From that time until the time of the site survey, she reported that oil was visible on the surface of water in the sump. On June 25, 1993, Mrs. Zyduck contacted Hometown, Inc., an oil supplier which also services heating units, who sent someone to check the property. The system was repaired by replacing the existing tubing below the basement floor with overhead tubing on July 16. At the time of the preliminary site survey, no oil stains from heating oil were observed in the vicinity of the tank or the furnace. There was also no oil on the surface of water in the basement sump, but Mrs. Zyduck reported that it was visible a few days previous to the site survey. No odor of fuel oil was noted in the basement during the inspection.

It was noted that a strip of concrete had been replaced around the entire periphery of the basement. Mrs. Zyduck was not able to provide any information on the nature of the work done to this part of the building which was completed reportedly more than 20 years ago. Presently, the discharge line for the basement sump pump passes through the basement wall above grade, and then drops below grade through an insulated section, running underground to the point of discharge at the north edge of the property.

A review of Mrs. Zyduck's records, confirmed by information obtained by phone from Hometown, Inc., indicates that between 110 and 220 gallons of oil from the tank was unaccounted for between April 23, 1993, the last regular fill for the heating season and a special July 13 oil fill. It is not known if the entirety of oil was released or some of it was burned for heating the home. Hometown, Inc., reports that the K-factor for oil usage at the residence was extremely constant for the period prior to April 23, when 158 gallons were added to the tank. Consequently, it is unlikely that there was any significant loss prior to that date. The K-factor relates the degree-days of heating requirements to oil usage.

Greenfield Middle School Grounds

underground utility

Sump Outfall

house

sump location

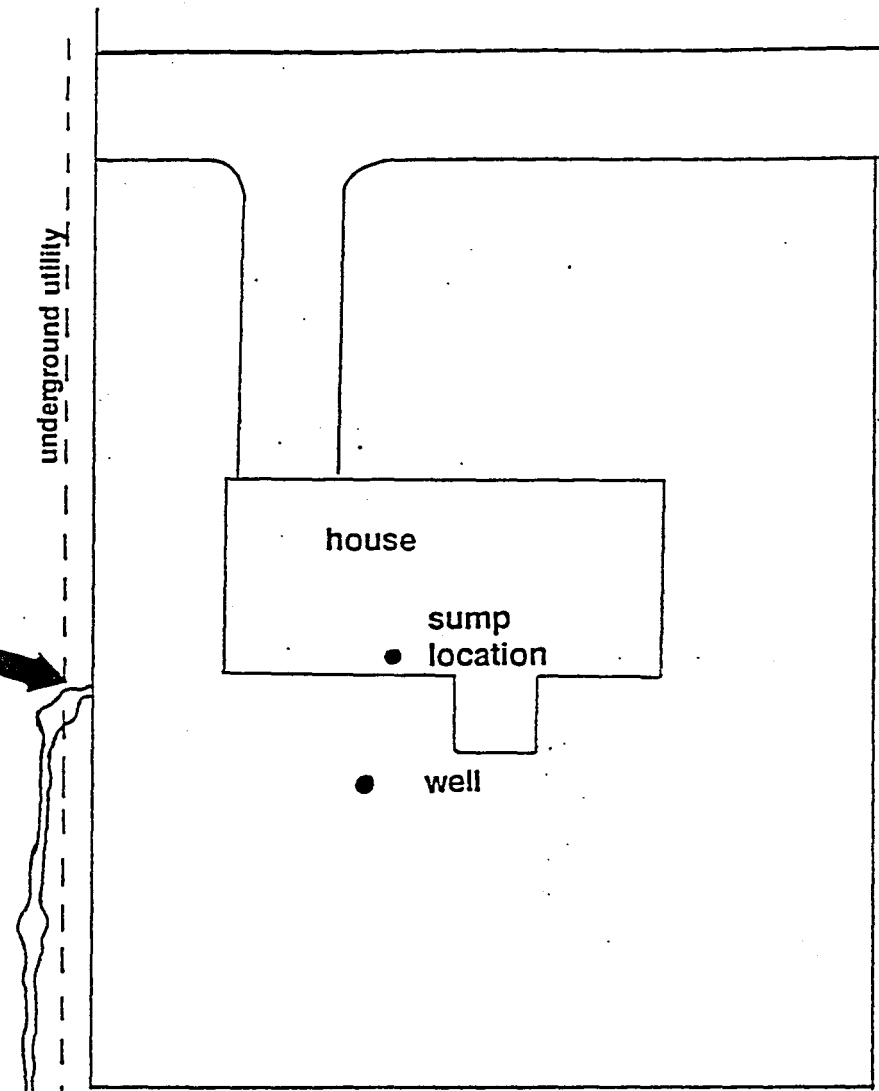
well



Not to Scale

RUST ENVIRONMENT & INFRASTRUCTURE

FIGURE 2
LOCATION OF FUEL OIL SPILL
Josephine Zyduck Property
Greenfield, Wisconsin



The only underground utilities in the vicinity of the property are for water, sanitary sewer, and gas; some of these utilities are located as shown in Figure 2. A well, which was at one time the source of potable water for the residence, remains in place on the property and west of the residence, but is reported to be used only for watering the lawn and garden at this time. Mrs. Zyduck reported that no sign of oil was observed in the well water at any time. No stressed vegetation was observed in the area on the western side of the property at the time of the initial survey, which would have been watered with well water. No sign of stressed vegetation was observed anywhere on the property in July 1993 nor were there any signs of leakage or spills of oil, including none which could have occurred while the basement oil tank was being filled.

Stressed vegetation was noted in the property to the north, as shown in Figure 2, currently part of the Greenfield Middle School grounds. It consisted of a strip, running west from the point of discharge of the sump pump line to a point about 200 feet further west, meandering along a line between 2 and 15 feet north of the property line. The strip ranges in width from less than 1-foot at the drain pipe to about 2-1/2 feet. The widest section, an area approximately 5 feet by 16 feet, was located immediately north and west of the point of discharge.

3.0 INVESTIGATION PROCEDURES

Sampling of the potentially contaminated soils was conducted on December 7, 1993. No snow had yet covered the ground, and the drainage path along which the contamination flowed was readily apparent on the property immediately north of the Zyduck residence. Stressed or dead vegetation (grass) was observed and assumed to indicate the areal extent of petroleum migration. Accordingly, samples were collected from the observed area of stressed or dead vegetation.

Soil samples were collected at four locations (SS01 through SS04) within the area of stressed vegetation. Soil sample locations are shown in Figure 3. Two samples were collected at consistent depth intervals at each sample location. At sample locations SS01 and SS02, samples were collected from the 6 and 18 inch depths. At SS03 and SS04, samples were collected from depths of 6 inches and 12 inches. At locations SS01 and SS02, samples from the 12 inch depth were used for head space monitoring for volatile organic compounds.

Soil samples were collected by using a pick axe to remove the top inch or two of frozen soil. Then a stainless steel hand auger was used to advance a boring to the above-mentioned sample depths. Soil samples were collected and placed into a glass jar. A clean pair of surgical gloves was put on before collecting each sample. Filled sample jars were labeled and kept in a cooler with ice until relinquishing to Precision Analytical Laboratory for analysis for Diesel Range Organics (DRO).

As noted, additional samples were collected in the same manner at selected depths for in-field headspace monitoring. These samples were warmed in the truck for several minutes before monitoring with an Hnu photoionization detector. No readings were detected on any of the samples. However, each sample had a distinct petroleum odor.

The pick axe and hand auger were decontaminated between sample locations by the following procedure: 1) wash with detergent and tap water, scrubbing with brushes as necessary, 2) rinse with deionized water, 3) rinse with isopropanol, and, 4) rinse twice with deionized water.

5.0 REMEDIAL ACTION PLAN

This remedial action plan presents three practicable remedial alternatives for consideration of mitigating the extent of fuel oil contamination of soil adjacent to the Zyduck property. The three options presented are reasonable alternatives selected for the nature and extent of the contaminants present, the location of contamination relative to human populations, and the probability of achieving success. The Wisconsin Department of Natural Resources (WDNR) requires remedial action at sites at which greater than 10 mg/kg of petroleum contamination is detected.

5.1 SCREENING OF REMEDIAL ALTERNATIVES

The following remedial alternatives were considered for implementation at this site:

1. Soil excavation, treatment, and disposal.
2. Passive bioremediation.
3. Enhanced, in-situ bioremediation.
4. Soil vapor extraction.
5. Land farming contaminated soil on-site.

Alternative No. 1 involves excavating the entirety of contaminated soil and removing for treatment at an off-site facility, and disposal at a WDNR regulated landfill. For the purpose of this site, the recommended treatment is enhanced bioventing involving placing contaminated soil in a large pile within which are perforated pipe for air injection and extraction. Air is drawn through the pile, enhancing microbial degradation of fuel contamination. This process would occur at a licensed Waste Management, Inc. facility. A second treatment alternative is low temperature thermal treatment. This process involves heating the contaminated soil to volatilize petroleum (and other organic) compounds from the soil.

Alternative No. 2, passive bioremediation, involves allowing natural processes of biological microorganisms inherent in the soil to degrade the hydrocarbon compounds. As noted in Section 4, this process has likely started at the site and diminished contaminant concentrations.

Alternative No. 3, enhanced in-situ bioremediation, involves adding supplemental nutrients and microbial colonies to the affected soils to hasten biodegradation of the petroleum compounds.

Alternative No. 4, soil vapor extraction, involves implanting perforated piping into the contaminated area and drawing out petroleum vapors, slowly diminishing contaminant concentrations.

Alternative No. 5, land farming, for the purpose of this site, is a modified remedy of an often used technology for petroleum contaminated soils. For this site, this technique involves rototilling or mixing the contaminated soils on a regular basis, exposing contaminated soil to open air and allowing volatile petroleum compounds to vaporize, and also enhancing microbial degradation by supplementing oxygen to the soil.

Evaluation of these alternatives allows the elimination of Alternative No. 4 as impracticable due to high costs, operations, and maintenance, and the limited size of the site. Alternative Nos. 2, 3, and 5 are similar in that each provided for on-site bioremediation of contamination. Alternative number 5, however, would require frequent operations and maintenance, and would increase safety hazards in this residential area.

For the purposes cited, alternatives 4 and 5 are eliminated from further consideration as remedial alternatives.

5.2 EVALUATION

This section provides additional evaluation of the three alternatives selected from the screening process.

Alternative Number 1: Excavation, Treatment, Disposal. This alternative would require excavation of contaminated soils with a backhoe, transport to a treatment facility, and ultimately disposal of the treated soils. Clean soil would be backfilled into the excavation. Treatment options include off-site land farming, low-temperature thermal desorption, incineration, or bioventing. As stated earlier, bioventing at a nearby disposal facility is the most cost-effective option.

Assuming a volume of contaminated soil with dimensions of 3 feet deep by 3 feet wide (average) by 180 feet long (rough estimates based on observed area and analytical results), approximately 60 yards of soil would require removal and treatment. Estimated costs (calculations in Appendix B) for this option are approximately \$9,400. Estimated time of on-site operation is 2 weeks. If low temperature thermal treatment is required, the estimated remediation cost is approximately \$10,600.

Alternative Number 2: Passive Bioremediation. The State of Wisconsin requires that passive bioremediation be considered as an option for site remediation of fuel contaminated soils. This option, in essence, maintains natural processes will allow for the eventual breakdown of petroleum hydrocarbons to simple carbon compounds, carbon dioxide, and water. There is little cost associated with this option. A site suitability evaluation will include a comparative enumeration assay of the microbial population and a nutrient assessment. This general assessment is required by the WDNR and would cost approximately \$500 including labor for sample collection and laboratory analysis. The WDNR will also require periodic testing of soils to check progress of the remediation process. Estimated time for remediation is 2 to 4 years. We estimate the progress check of remediation progress will cost approximately \$1,000 for each of 3 years. Total site remediation option for this strategy is estimated at \$4,500.

Alternative Number 3: Enhanced, In-Situ Bioremediation. This alternative will require the addition of nutrients (nitrogen, phosphorous, sulphur), oxygen, and, often, microbial cultures to expedite microbial destruction of the petroleum hydrocarbons. The process will require purchase of the microbial colonies and nutrients and will require periodic maintenance to replenish moisture, oxygen, and nutrients. Estimated cost for this is \$7,575. Time requirement is approximately 2 to 3 years.

The costs estimated for these remedial alternatives are based on best available data and may vary by up to 50 percent.

6.0 CONCLUSION AND RECOMMENDATION

A site investigation of soils contaminated by a home heating fuel spill at the residence of Ms. Josephine Zyduck was conducted on December 7, 1993. A total of eight soil samples were collected from four locations along a flow path in which the fuel migrated.

The results of the site investigation of the fuel oil spill reveal that soils below an area of dead grass to be contaminated with diesel range petroleum organic compounds. The magnitude of contaminant concentrations requires that remedial action be undertaken to remediate the soils.

Based on an evaluation of three remediation alternatives; soil excavation, treatment and disposal, passive biodegradation, and enhanced biodegradation, a recommendation for continued corrective action can be made for this site. Prudential Insurance Company will pursue Alternative No. 2, passive bioremediation as the preferred remedy for this site. This recommendation is based on the following:

- Evidence that natural degradation of the petroleum hydrocarbon compounds has begun and may be successful in this area, and
- Disruptive remediation of the area could expose residents to unnecessary contact with contaminated soil.

In addition, to the remediation of the contaminated soil, it is recommended that the sump drain from Ms. Zyduck's home be diverted to either the storm or sanitary sewer to prevent future contamination from her residence based on the results of the sump water sample collected on December 7, 1993. Contamination of soil below the residence is highly unlikely due to the sub-basement structure (gravel) and the removal of petroleum product with sub-grade water by the sump. It is likely little, if any, fuel product contaminated soil below the house.

APPENDIX A

LABORATORY REPORT OF ANALYTICAL RESULTS

PRECISION ANALYTICAL LABORATORY

Page 1
12/22/93

CLIENT: Rust Environmental

Test	Result	Limit	Units	Analyzed	Extracted	BY	Method
Sample ID: SS01-01			Lab ID: 9312095-01A	Collected: 12/07/93			
TPH Diesel	4900	1100	OC mg/kg	12/21/93	12/14/93	DLK	Mod API 8015
Dry Weight - Organic	77		%	12/07/93		MDA	
Sample ID: SS01-03			Lab ID: 9312095-02A	Collected: 12/07/93			
TPH Diesel	460	110	OC mg/kg	12/21/93	12/14/93	DLK	Mod API 8015
Dry Weight - Organic	78		%	12/07/93		MDA	
Sample ID: SS02-01			Lab ID: 9312095-03A	Collected: 12/07/93			
TPH Diesel	4600	1100	OC mg/kg	12/21/93	12/14/93	DLK	Mod API 8015
Dry Weight - Organic	78		%	12/07/93		MDA	
Sample ID: SS02-03			Lab ID: 9312095-04A	Collected: 12/07/93			
TPH Diesel	35	5.4	mg/kg	12/19/93	12/14/93	DLK	Mod API 8015
Dry Weight - Organic	77		%	12/07/93		MDA	
Sample ID: SS03-01			Lab ID: 9312095-05A	Collected: 12/07/93			
TPH Diesel	2400	500	OC mg/kg	12/21/93	12/14/93	DLK	Mod API 8015
Dry Weight - Organic	82		%	12/07/93		MDA	
Sample ID: SS03-02			Lab ID: 9312095-06A	Collected: 12/07/93			
TPH Diesel	1100	200	OC mg/kg	12/21/93	12/14/93	DLK	Mod API 8015
Dry Weight - Organic	81		%	12/07/93		MDA	
Sample ID: SS04-01			Lab ID: 9312095-07A	Collected: 12/07/93			
TPH Diesel	BQL	5.7	mg/kg	12/19/93	12/14/93	DLK	Mod API 8015
Dry Weight - Organic	72		%	12/07/93		MDA	
Sample ID: SS04-02			Lab ID: 9312095-08A	Collected: 12/07/93			
TPH Diesel	BQL	5.4	mg/kg	12/19/93	12/14/93	DLK	Mod API 8015

BQL - Below Quantification Limit NP - Not Present P - Present

PRECISION ANALYTICAL LABORATORY

Page 2
12/22/93

CLIENT: Rust Environmental

Test	Result	Limit	Units	Analyzed	Extracted	BY	Method
Dry Weight - Organic	77		%	12/07/93		MDA	
Sample ID: SL-01				Lab ID: 9312095-09A		Collected: 12/07/93	
TPH Diesel	16	0.69	mg/l	12/20/93	12/14/93	DLK	Mod API 8015

BQL - Below Quantification Limit NP - Not Present P - Present

PRECISION ANALYTICAL LABORATORY
205 WEST GALENA
MILWAUKEE, WI 53212
(414) 272-5222

Page 1
12/09/93

Sample Acknowledgement Report

ATTN: Ted Hartsig
CLIENT: Rust Environmental
4738 N. 40th Street
Sheboygan, WI 53081

WORK ID: Zyduck Site Assmt.

Date Received: 12/07/93

Anticipated Date of Completion: 12/22/93

PAL ORDER #:9312095

SAMPLE DESCRIPTION	LAB ID	COLLECTED	TEST ORDERED	METHOD
SS01-01	01A	12/07/93	TPH Diesel	Mod API 8015
	01A	12/07/93	Dry Weight - Organic	
SS01-03	02A	12/07/93	TPH Diesel	Mod API 8015
	02A	12/07/93	Dry Weight - Organic	
SS02-01	03A	12/07/93	TPH Diesel	Mod API 8015
	03A	12/07/93	Dry Weight - Organic	
SS02-03	04A	12/07/93	TPH Diesel	Mod API 8015
	04A	12/07/93	Dry Weight - Organic	
SS03-01	05A	12/07/93	TPH Diesel	Mod API 8015
	05A	12/07/93	Dry Weight - Organic	
SS03-02	06A	12/07/93	TPH Diesel	Mod API 8015
	06A	12/07/93	Dry Weight - Organic	
SS04-01	07A	12/07/93	TPH Diesel	Mod API 8015
	07A	12/07/93	Dry Weight - Organic	
SS04-02	08A	12/07/93	TPH Diesel	Mod API 8015
	08A	12/07/93	Dry Weight - Organic	
SL-01	09A	12/07/93	TPH Diesel	Mod API 8015

*The information provided on this form should be reviewed by the project manager.
If any discrepancies, errors, or omissions are found, please contact Beth Klein
at (414) 272-5222*

PRECISION ANALYTICAL LABORATORY
205 WEST GALENA
MILWAUKEE, WI 53212
(414) 272-5222

12/22/93
14:39

Analytical Report

Attn: Ted Hartsig
Client: Rust Environmental
4738 N. 40th Street
Sheboygan, WI 53081

WORK ID: Zyduck Site Assmt.

Date Received: 12/07/93

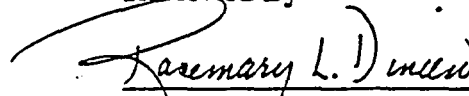
Date Reported: 12/22/93

PAL ORDER #: 9312095

SAMPLE DESCRIPTION	LAB ID	DATE COLLECTED
SS01-01	01A	12/07/93
SS01-03	02A	12/07/93
SS02-01	03A	12/07/93
SS02-03	04A	12/07/93
SS03-01	05A	12/07/93
SS03-02	06A	12/07/93
SS04-01	07A	12/07/93
SS04-02	08A	12/07/93
SL-01	09A	12/07/93

Laboratory ID Number (Wisconsin DNR): 241369260

Reviewed By



Rosemary L. Dineen

Laboratory Director

PRECISION ANALYTICAL LABORATORY
Report Comments

12/22/93

CLIENT: Rust Environmental

PAL Order #: 9312095

All analysis as per approved method found in one or more of
the following:
Standard Methods for Evaluation of Water and Wastewater,
17th Edition
Methods for Chemical Analysis for Water and Wastes, Revised
March 1983, EPA 600/4-79-020
Test Methods for Evaluating Solid Waste, Physical/Chemical
Methods, 3rd Edition 1986 EPA SW846

Analysis performed or certified by Precision Analytical Laboratory

The organic data is reported out on a dry-weight basis.

OC Elevated detection limit due to sample concentration.

APPENDIX B

REMEDIAL ALTERNATIVES COST ESTIMATE

**REMEDIAL ALTERNATIVES COST ESTIMATE
CALCULATIONS**

Zyduck Property
Greenfield, Wisconsin

ALTERNATIVE 1: SOIL EXCAVATION, TREATMENT, DISPOSAL

Engineering Services	Excavation Design/oversight	\$3,425
Excavation	60 yards @ \$26/yard (hauling included)	\$1,560
Analytical Testing	3 DRO Analyses @ \$125/each	\$475
Treatment and Disposal	60 yards @ \$20/yard (bioventing)	\$1,200
	60 yards @ \$40/yard (low temperature thermal treatment)	\$2,400
Backfill	60 yards @ \$16/yard	\$960
Sod Cover	60 square yards @ \$8.00/yard	\$480
Site Closure Report		<u>\$1,300</u>
TOTAL ESTIMATED COST (Alternative No. 1)		\$9,400-\$10,600

Assumptions:

1. Excavation is (on average) a strip 3 feet wide by 3 feet deep and 180 feet long.
2. Contaminated soil can be accepted and treated by a local landfill (Metro Disposal Facility, Milwaukee County, Wisconsin).
3. Soil hauling can be completed in trucks capable of carrying 12 c.y. per load.

ALTERNATIVE NO. 2: PASSIVE BIOREMEDIATION

• Site Characterization for Biological Suitability	\$500
• Site Sampling and Analyses (DRO) as an Annual Progress Evaluation - 4 years	\$3,000
• Submission for Site Closure	<u>\$1,000</u>
TOTAL ESTIMATED COST (Alternative No. 2)	\$4,500

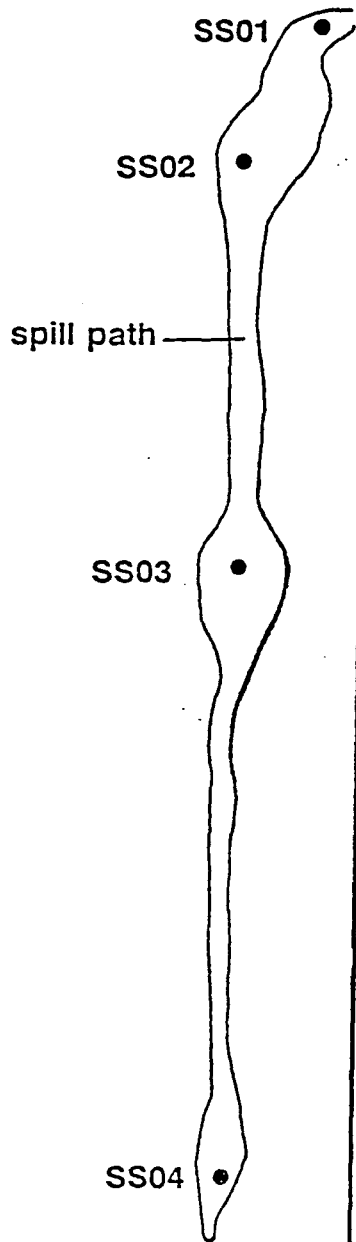
ALTERNATIVE NO. 3: ENHANCED, IN-SITU BIOREMEDIATION

• Engineering Design (including soil evaluation for supporting microbial populations)	\$2,300
• Bioremediation Implementation (including site preparation, nutrient addition, and additional colonies, if necessary)	\$1,500
• Periodic Site Maintenance and Annual DRO Sampling to Check Remediation Progress (3 years, two times per year for maintenance, one set of 3 samples per year)	\$2,675
• Remediation Report for Site Closure	<u>\$1,100</u>
TOTAL ESTIMATED COST (Alternative No. 3)	\$7,575

Assumptions:

1. Site is suitable for bioremediation.
2. Three years is sufficient for bioremediation to reduce DRO levels to WDNR approved levels.

Greenfield Middle School Grounds



Zyduck Property



Not to Scale

4.0 DATA EVALUATION

Analytical results of the samples collected at the site on December 7, 1993, reveal that petroleum contamination is present in the area assumed to be affected by the fuel oil release north of the Zyduck property. Diesel range organic contamination was detected in concentrations ranging between 35 to 4,900 mg/kg up to 77 feet west of the sump outlet from the Zyduck property (Figure 4). Analytical results are shown in Table 1, and the laboratory report is provided in Appendix A.

The highest levels of DRO are at sampling location SS01, near the sump outfall. The DRO concentration is 4,900 mg/kg near the surface (0-6 inches) and diminishes to 460 mg/kg at 18 inches in depth. At location SS02, 4,600 mg/kg of DRO was detected, again near the surface, but the concentration diminishes to 35 mg/kg at 18 inches of depth. At sample location SS03, a location where possible ponding occurred, the surface concentration was 2,400 mg/kg, and 1,100 mg/kg with depth to 12 inches. At the sampling location farthest from the sump, SS04, located approximately 119 feet west of the sump outfall, no DRO was detected.

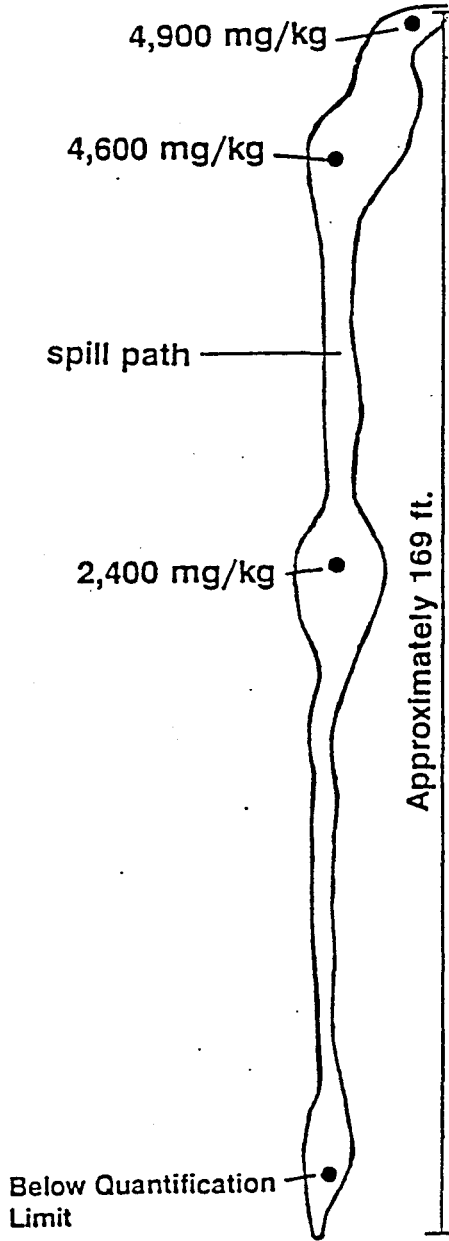
These results indicate that as of December 1993, high levels of DRO contamination remained in a narrow strip of soil extending west from the sump outfall from Mrs. Zyduck's home. The extent of petroleum contamination likely extends to approximately 100 feet west of the sump outfall. The depth of apparent contamination exceeds 18 inches.

During sampling of the soils, it was noted that the soil is silty clay, dark brown to black in color indicating a relatively high level of organic matter in the top 12 to 18 inches. The soil, as would be expected in winter, was very wet and near or at saturation below 12 inches deep. It is likely that further migration of fuel oil contaminants will be very limited, and that the organic complex of the soil will attenuate residual fuel oil in the soil. It is probable that degradation has begun with the contaminants as we have seen the veritable non-detection of DRO at sample location SS04, an area that was near the far extent of fuel migration (across the ground surface) and was initially of sufficient concentration to kill the grass.

In addition to the sampling of soils north of the Zyduck property, a water sample from the sump located in Mrs. Zyduck's basement detected 16 mg/l of DRO, indicating small amounts of fuel oil remain in the subbasement area of her home.

The possibility of groundwater contamination was not investigated at this site based on the estimated limited quantity of the release and lack of potential exposure pathways from groundwater.

Greenfield Middle School Grounds



ZYDUCK PROPERTY



Not to Scale

Additional DRO Concentrations

Location	Depth	Concentration
SS01	18 in	460 mg/kg
SS02	18 in	35 mg/kg
SS03	12 in	1100 mg/kg
SS04	12 in	below quantification limit

TABLE 1

DRO ANALYTICAL RESULTS
ZYDUCK PROPERTY
GREENFIELD, WISCONSIN

Sample Location	Depth (inches)	Analytical Result (mg/kg)
SS01	0-6	4900
SS01	12-18	460
SS02	0-6	4600
SS02	12-18	35
SS03	0-6	2400
SS03	6-12	1100
SS04	0-6	BQL
SS04	6-12	BQL

BQL = Below Quantification Limit

UID Number: FID Number: 241722800 PMN Number:

County: Milwaukee
Site Name: Zyduck Residence
Address: 4905 S. 34th St
Greenfield 53221

Initial Contact Date: 3/28/94
Date RPLetter Sent: 5/2/94
Date Closure Approved: / /

Municipality:
Legal Descript.: 1/4 1/4 sec. T N R (E/W)
Lat.: Long.:

Person/Firm Reporting:
Phone Number: ()

Table with 5 columns: Priority Screening, Scoring Criteria, Funding Source, Effective Date, LUST Trust Eligible. Includes sub-tables for each column with options 1-4.

Case Status

Table with 3 columns: Case Status (F, E, R, L), Start Date, End Date.

Responsible Party
Contact Person: Josephine Zyduck
Company Name:
Address:
Phone Number:
CC's:

Impacts
Enter "P" for potential and "K" for known
(1) Fire/Explosion Threat
(2) Contaminated Private Well(s) # of Wells
(3) Contaminated Public Well
[X] (4) Groundwater Contamination possible 120 in sump 16 mg/DEO
[X] (5) Soil Contamination
(6) Other:
(7) Surface Water Impacts
(9) Floating Product

Consultant
Contact Name: Ted Hartwig
Company Name: RUST Environment Inc.
Address: 4738 N. 40th
Sheyagan 53083
Telephone: (414) 458-8711

Table with 3 columns: Substances, # Tank(s), Size. Includes handwritten entries for Fuel Oil (300 gal).

In basement
Tank in basement
Replaced valve going into house

HIGH FACTORS: (DEFINITION: Any case which presents an actual threat to human health, or has a high potential of causing a threat to human health and property; and/or any case which has caused or has a high potential of causing substantial impacts to the soil, waters and air of the State of Wisconsin).

EMERGENCY FACTORS:

- Contaminated private or public well >NR 140 enf. std.
- Explosive or toxic vapors in structures
- Threat of fire

HIGH FACTORS:

- Floating product (including sheen)
- GW contamination (>140 enf. std.)
- Impacted surface water - - wetland, trout stream, etc. impacted
- Saturated soil contamination posing a risk to groundwater

MEDIUM FACTORS: (DEFINITION: Any case which does not appear to be an immediate threat to human health or vital natural resources but which shows levels of contamination that may cause substantial environmental impacts if left unaddressed.)

- Moderate soil contamination with potential for impacting groundwater.
- Impacted surface water - - no critical habitat threats.
- Groundwater contamination >NR 140 PAL.

LOW FACTORS: (DEFINITION: Any case where contamination has been documented, but which presents limited potential for immediate threat to human health and vital natural resources.)

- Soil contamination which appears to have a limited potential for impacting groundwater.
- Initial Remedial action has substantially reduced environmental threat.

UNKNOWN FACTORS: (DEFINITION: Any case where some indication of contamination is present, but due to incomplete or inaccurate information the level of threat to human health or the environment can not be assessed at this time.)

- Inadequate information to assign a high, medium, or low ranking.

NUMERICAL LUST SCORING WORKSHEET

1. **GROUNDWATER & SOILS:**

POINTS:

- 20 Municipal well impacted
- 18 >6 private wells impacted
- 16 4 - 6 private wells impacted
- 14 2 - 3 private wells impacted
- 12 1 private well impacted

Points:

- 10 Major soil and/or gw >ES within 1200' of a public well
- 8 Major soil and/or gw >ES within 1200' of one or more private wells
- 6 Groundwater contamination >ES
- 4 Groundwater contamination <ES
- 2 Soil contamination

For purposes of this scoring, private well includes any non-municipal water supply system (e.g. non-community and other than municipal).

2. **EXPLOSIVE OR TOXIC VAPORS:**

POINTS: CONFIRMED

- 20
- 16
- 12

POTENTIAL

- 10
- 8
- 6

- Explosive levels in a residence or building
- Explosive levels in a sewer or other confined space
- Toxic levels in a residence or building

NOTE: Explosive levels determined to be >20% LEL as per an explosivity meter, toxicity levels are based on OSHA permissible exposure limits (PEL's)

3. **SURFACE WATER IMPACTS:**

POINTS: CONFIRMED

- 14
- 10
- 6

POTENTIAL

- 7
- 5
- 3

- Visible sheen or product on sensitive surface water environment (e.g. wetland, trout stream)
- Visible sheen or product on non-sensitive surface water area.
- Exceedance of NR 102, 103 or 104 surface water quality standards.

Request assistance from District Water Resources staff in evaluating surface water impacts.

4. **HYDROGEOLOGIC SETTING:**

Points:

- 12 Permeable stratigraphy (gravel, sand, fractured bedrock or utilities capable of intercepting and directing flow) and groundwater within 25 feet of the ground surface.
- 10 Permeable stratigraphy and groundwater greater than 25 feet below ground surface.
- 8 Moderately permeable stratigraphy (silty sands, silty gravel, clayey sands) and groundwater within 25 feet of ground surface.
- 6 Moderately permeable stratigraphy and groundwater greater than 25 feet below ground surface.
- 4 Low permeability stratigraphy (silt, clayey silt, sand clays) and groundwater within 25 feet of ground surface.
- 2 Low permeability stratigraphy and groundwater greater than 25 feet below ground surface.

5. **TYPE OF PRODUCT:**

POINTS: FREE PRODUCT

- 12
- 10
- 6

DISSOLVED PRODUCT

- 8
- 6
- 2

- Gasoline, mixture of gasoline and other products, other light petroleum products.
- Diesel, fuel oil.
- Bunker oil, other heavy oils or crude fractions.

CASE STATUS SUMMARY

UID: _____

SITE NAME: _____

- | | | | | |
|----------------------------|----------------------------|----------------------------|-----------------------------|-------------------------------|
| 03 = NTC of Non Compliance | 21 = Contest Case Hearing | 34 = Tnk Cls/SA Rpt Appv'd | 40 = RA Work Plan Appv'd | 46 = Form 4 Denied |
| 04 = Enf. Conference | 23 = Referral to DOJ | 35 = SI Work Plan Recv'd | 41 = RA Report Recv'd | 47 = PECFA Reimbursment |
| 14 = Notice of Violation | 30 = Notice to Proceed | 36 = SI Work Plan Appv'd | 42 = RA Report Appv'd | 48 = Free Product Recovery |
| 18 = Admin. Order Issued | 31 = Tnk Cls/SA Work Plan | 37 = SI Report Recv'd | 43 = Qrtly/Mthly Status Rpt | 49 = Alternate Water Supplied |
| 19 = Admin. Order Modified | 32 = Tnk Cls/SA WP Appv'd | 38 = SI Report Appv'd | 44 = Form 4 Received | |
| 20 = Admin. Order Canceled | 33 = Tnk Cls/SA Rpt Recv'd | 39 = RA Work Plan Recv'd | 45 = Form 4 Approved | |
-
- | | | | | |
|------------|------------|------------|------------|------------|
| 60 = _____ | 68 = _____ | 76 = _____ | 84 = _____ | 92 = _____ |
| 61 = _____ | 69 = _____ | 77 = _____ | 85 = _____ | 93 = _____ |
| 62 = _____ | 70 = _____ | 78 = _____ | 86 = _____ | 94 = _____ |
| 63 = _____ | 71 = _____ | 79 = _____ | 87 = _____ | 95 = _____ |
| 64 = _____ | 72 = _____ | 80 = _____ | 88 = _____ | 96 = _____ |
| 65 = _____ | 73 = _____ | 81 = _____ | 89 = _____ | 97 = _____ |
| 66 = _____ | 74 = _____ | 82 = _____ | 90 = _____ | 98 = _____ |
| 67 = _____ | 75 = _____ | 83 = _____ | 91 = _____ | 99 = _____ |

CASE STATUS UPDATES:

Action Code	Date Received/Sent	Compliance Due Date	Compliance Achieved	Date Entered In Tracking
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____
_____	____/____/____ (R/S)	____/____/____	____/____/____	____/____/____

REMARKS:

preliminary assessment & collected
soil samples (Did SI)

Tank in ladies basement

feed line leaked into basement

semp fed fuel oil into field into a field