



**DAHL & ASSOCIATES, INC.**  
Environmental Consultants, Contractors & Engineers

4390 McMENEMY ROAD  
SAINT PAUL, MINNESOTA 55127

**PHASE II  
ENVIRONMENTAL PROPERTY  
EVALUATION**

University of Minnesota  
2510 5th Street and 25th Avenue Southeast  
Minneapolis, Minnesota  
Report ID: VEMN3236-001  
February 2, 1993

Copies submitted to: Mr. Gordon Girtz, University of Minnesota  
Mr. Bruce Backus, University of Minnesota  
Mr. Dan Hannan, Minnesota Pollution Control Agency  
Ms. Karen Nordby, Minneapolis Pollution Control Division

UMR-1656

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## 1.0 INTRODUCTION

### 1.1 Purpose

Dahl & Associates, Inc. (DAHL) was retained in August of 1992, by Mr. Gordon Girtz and Mr. Bruce Backus of the Environmental Health and Safety Department of the University of Minnesota, to perform a limited Phase II Environmental Property Evaluation of a parcel of vacant property located at 2510 5th Street and 25th Avenue Southeast, Minneapolis, Minnesota (refer to Figure's 1 and 2).

DAHL proposed a limited Phase II Environmental Property Evaluation consisting of advancing two test borings in locations that were acceptable to the client, and converting the test borings to monitoring wells for the purpose of obtaining soil and ground-water samples. Due to the intended use of the property as an integrated waste management facility as well as past uses of the property and surrounding area, the soil and water samples were analyzed for the presence of an extensive list of selected contaminants (refer to Tables 3 and 6).

### 1.2 Limitations

This report was prepared for the exclusive use of the University of Minnesota, Department of Environmental Safety and Health. Phase II work has been performed in accordance with generally accepted environmental evaluation practices. Other services on this project have been conducted in a manner consistent with standards of care practiced by members of this profession in this area, under similar time and budget restraints. No other warranty, expressed or implied, is made.

Test borings were advanced on-site, and soil and ground-water samples were collected and analyzed for selected contaminants. As with any subsurface investigation, only a fraction of the entire soil profile was sampled. General assumptions of subsurface conditions may be made only as interpreted from information obtained at each point drilled.

## 2.0 BACKGROUND

The property consists of a 1.6 acre parcel of land located in an industrial area northeast of the University of Minnesota. The property is located in the NW 1/4 of the SW 1/4 of the NE 1/4 of the NW 1/4 of Section 30 in Township 29 North, Range 23 West, Latitude 44°58'33" North, and Longitude 93°13'13" West (refer to Figure 1).

The site was not developed at the time of this assessment. The property consisted of a former rail yard area.

### 3.0 SUBSURFACE INVESTIGATION

#### 3.1 Test Borings

On November 4, 1992, DAHL advanced two soil test borings at the site. Test boring TB-1 was advanced approximately 133 feet northwest of 25th Avenue Southeast, and 143 feet northeast of the Transitway. Test boring TB-2 was advanced approximately 497 feet from 25th Avenue Southeast, and 85 feet from the Transitway. Locations of the test borings are indicated on the Test Boring/Monitoring Well Location Map (refer to Figure 3), and the test borings results are summarized in Table 1. Soils were sampled semi-continuously (every four feet out of five feet drilled) during the advancement of the augers and were classified by a geologist. The method of test drilling and soil sampling is described in Appendix B. Lithographic units encountered during soil boring advancement are included in the soil boring logs (refer to Appendix C).

#### 3.2 Geology

Soils beneath the site typically consist of one foot of gravel fill material, overlying a fine to medium sand to a depth of 12 feet, and coarse sand and fine gravel to a depth of approximately 20 feet. Traces of clay were encountered from a depth of 20 to 22.5 feet below grade (refer to Appendix C for soil boring logs). Water was encountered at a depth of 17 feet.

#### 3.3 Soil Analyses

Soil samples were field screened with an OVA Flame-Ionization Detection (FID) meter for the presence of petroleum hydrocarbons, following the Minnesota Pollution Control Agency's Jar Headspace Analytical Screening Procedure, document dated May, 1992. FID field results are indicated on the drill logs. No petroleum hydrocarbons were field detected in any of the samples collected from either boring. Soil head space analyses conducted at room temperature, indicated low readings of petroleum hydrocarbons in parts-per-million (ppm) from soil samples collected from both soil test borings (refer to Table 2). The Minnesota Pollution Control Agency (MPCA), and the Minneapolis Pollution Control Division were contacted on November 16, 1992, concerning the findings. State law requires notification of contamination (refer to Appendix E, MPCA Guidance Document 1, dated May, 1992). It is stated in this document that there is no minimum quantity for reporting spills in Minnesota.

Soil samples were collected from a depth of 7 to 9 feet, and at the soil-water interface at seventeen feet, and submitted to an analytical laboratory for analyses. Samples were analyzed for the presence of volatile organic compounds (VOCs), diesel range

organics (DRO), eight RCRA metals, poly-chlorinated biphenyls (PCBs), organochlorine pesticides, organophosphorus pesticides, base neutral acids (BNAs), acid herbicides, total Kjeldahl nitrogen, and nitrate as nitrogen. Contamination was detected in samples analyzed from each test boring. Laboratory results identified the following contaminants found in the soil samples collected from TB-1: acetone (0.016 ppm), methyl ethyl ketone (0.008 ppm), barium (13 ppm), chromium (4.5 ppm), DRO (15 ppm), and nitrate (3.0 ppm). Laboratory results identified the following contaminants found in the soil samples collected from TB-2: acetone (0.014 ppm), methyl ethyl ketone (0.010 ppm), 1,1,2-trichloroethane (0.002 ppm), barium (13 ppm), chromium (4.6 ppm), DRO (35 ppm), and nitrate (3.6 ppm). Refer to Table 3 for soil sampling results, and Appendix C for the laboratory analysis.

### 3.4 Monitoring Wells

The two test borings were converted into monitoring wells MW-1 and MW-2 (refer to Table 4 for monitoring well construction summaries, and to Appendix D for the Minneapolis Pollution Control Division monitoring well permit, as-builts, Minnesota Department of Health (MDH) well records, stabilization tests, survey, and laboratory results). MW-1 was screened from 10.5 to 20.5 feet below grade. MW-2 was screened from 12 to 22 feet below grade, and the static water level was observed in both wells at 18.5 feet below grade (refer to Table 5). Both of the monitoring wells are locked, and are surrounded by three protective posts per MDH monitoring well codes.

### 3.5 Ground-Water Analyses

Ground-water samples were collected from the monitoring wells, and submitted for laboratory analyses for the presence of VOCs, DRO, eight RCRA metals, PCBs, organochlorine pesticides, organophosphorus pesticides, BNAs, acid herbicides, total Kjeldahl nitrogen, and nitrate as nitrogen. In both wells, the ground-water laboratory results indicated that certain metals were found with levels of contamination higher than the MDH's Recommended Allowable Limits (RALs) for drinking water. Arsenic (650 ppb), barium (2,300 ppb), cadmium (29 ppb), and lead (230 ppb) levels in the ground-water samples collected from MW-1 were at levels above their respective RALs. In ground-water samples collected from MW-2, the arsenic (120 ppb) level was found to be above its respective RAL. In MW-1, the nitrate level was 12,000 ppb, exceeding its RAL by 2,000 ppb (refer to Table 6, and Appendix D for the laboratory analyses).

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

A Phase II Environmental Property Evaluation was conducted at the vacant property

located at 2510 5th Street and 25th Avenue Southeast, Minneapolis, Minnesota, in order to document what levels of contamination, if any, are currently present at the site. Two soil test borings were advanced on the property to evaluate the subsurface soils. The test borings were converted into monitoring wells in order to evaluate the ground water at the site. Soil and ground-water samples were submitted for laboratory analyses in order to determine the presence, if any, of VOCs, DRO, eight RCRA metals, PCBs, organochlorine pesticides, organophosphorus pesticides, BNAs, acid herbicides, total Kjeldahl nitrogen, and nitrate as nitrogen.

The MPCA Guidance Documents do not indicate the soil action levels for all of the contaminants found in the soil samples collected at the site, therefore a determination of the degree of soil contamination at the site could not be made. As stated previously in this report, with any subsurface investigation, only a fraction of the entire soil profile is sampled. General assumptions of subsurface conditions may be made only as interpreted from information obtained at each point drilled.

In ground-water samples collected from the monitoring wells at the site, arsenic, barium, cadmium, lead, and nitrate were found to be present in the ground water at levels above their respective RALs, according to the laboratory analyses.

The MPCA, and the Minneapolis Pollution Control Division were contacted on November 16, 1992, concerning the findings of the Phase II Property Evaluation. It is also recommended that the Department of Agriculture be notified of the findings due to the level of nitrate found in the ground water samples collected at the site.

Without further investigation, it is not known whether there are potential sources of heavy metals or nitrates at the site. It is also not known which direction the ground-water is flowing, due to the presence of only two wells at the site. With the permission of the well owner located northwest of the site, it may be possible to infer ground-water gradient at the site. The wells located on the adjacent property would have to be surveyed and tied in to a common benchmark with the wells located at the site.

A Phase I Environmental Property Assessment may be useful in determining the past history and uses of the site and surrounding areas.

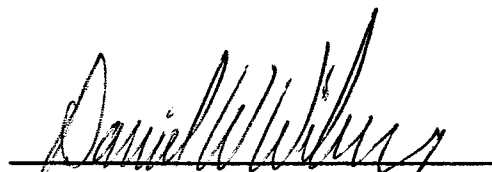
If, at any time, soils on the site are disturbed for development or other purposes, DAHL recommends that an environmental consultant be on site to collect soil samples as necessary for metal, nitrate, and DRO analyses, and/or other parameters as required. Soils found to be contaminated should be managed according to MPCA approved methods and guidelines.

The recommendations and methodologies contained in this report represent DAHL's professional opinions and are based on accepted analytical practices and documented industry standards. Services performed on this project have been conducted in a manner consistent with standards of care practiced by members of this profession in this area, under similar time and budget restraints. Beyond this, no warranty is expressed or implied.

This report is submitted by:  
DAHL and ASSOCIATES, INC.

  
Patrice Jensen  
Assistant Project Manager

7-19-93  
Date

  
Daniel Wiberg  
Director of Environmental Operations

7/19/93  
Date

**TABLES**

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**TABLE 1**  
**TEST BORING SUMMARY**  
*University of Minnesota - 5th Street*  
(VEMN-3236)

---

Test Boring	Date Completed	Water Table	End of Boring (Ft.)
TB-1	11/2/92	17-19'	22.5
TB-2	11/2/92	17-19'	20.5

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*Explanation: Depths are expressed in feet below grade.*

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**TABLE 2**  
**FID HEADSPACE ANALYSIS SUMMARY**  
*University of Minnesota - 5th Street*  
*(VEMN-3236)*

Sample Interval (ft.)	TB-1	Sample Interval (ft.)	TB-2
2 to 4	ND	2 to 4	ND
4 to 6	1	4 to 6	ND
7 to 9	2	7 to 9	ND
9 to 11	ND	9 to 11	1
12 to 14	ND	12 to 14	ND
14 to 16	2	14 to 16	ND
17 to 19	1	17 to 19	1
19 to 21	3	19 to 21	1
22 to 24	2		

*Explanation:* FID - Flame-ionization detection meter  
*Depths are expressed in feet below grade.*  
 TB - Test boring  
 ND - non-detect

**TABLE 3**  
**SOIL SAMPLE LABORATORY RESULTS**  
 University of Minnesota - 5th Street  
 (VEMN-3236)

Test Boring	Date Collected	Sample Depth	VOCs	DRO	8 RCRA Metals	EPA 8080	EPA 8141	EPA 8270	EPA 8150	Kjeldahl Nitrogen	Nitrate Nitrogen
TB-1	11/2/92	7-9' 17-19'	NA 0.024	NA 15.0	NA 17.5	ND NA	ND NA	ND NA	ND NA	ND NA	3.0 NA
TB-2	11/2/92	7-9' 17-19'	NA 0.026	NA 35.0	NA 17.6	ND NA	ND NA	ND NA	ND NA	ND NA	3.6 NA

**Explanation:**

All values are expressed in parts-per-million (ppm).

Values are totals per testing method.

Depths of sample collection are expressed in feet below grade.

VOCs - Volatile Organic Compounds

EPA 8080 - Organochlorine Pesticides/PCBs

EPA 8270 - Base neutral acids (BNAs)

ND - parameter not detected

Samples were analyzed by Twin City Test Laboratories, Inc. (#1023).

DRO - Diesel Range Organics

EPA 8141 - Organophosphorus Pesticides (MNDOA List 1)

EPA 8150 - Acid Herbicides

NA - parameter not analyzed at sample depth

**TABLE 4**  
**MONITORING WELL CONSTRUCTION SUMMARY**  
*University of Minnesota - 5th Street*  
*(VEMN-3236)*

Well Design Summary	MW-1	MW-2
Unique Well Number	517606	517607
Screen Diameter (inches)	2	2
Boring Diameter (inches)	4.25	4.25
Screen Length (feet)	10	10
Top of Casing Elevation	99.34	96.95
Surface Elevation	97.34	94.95
Top of Bentonite Seal Elevation	87.84	87.45
Top of Screen Pack Elevation	75.34	82.45
Top of Screen Elevation	85.34	84.45
Bottom of Screen Elevation	75.34	74.45

*Explanation: Data collected by Dahl & Associates, Inc.*  
*All elevations are expressed in feet, surveyed to the nearest 0.01 foot from*  
*a defined benchmark, given a defined elevation of 100.00 feet.*

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**TABLE 5**  
**GROUND-WATER ELEVATION DATA**  
*University of Minnesota - 5th Street*  
*(VEMN-3236)*

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MW Number	MW Elevation	Top of Screen	Bottom of Screen	Date Collected	Water Table Elevation	Ft. Above Screen
MW-1	99.34	87.34	77.34	11/6/92	77.89	0
MW-2	96.95	86.45	76.45	11/6/92	76.67	0

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*Explanation: Data collected by Dahl & Associates, Inc.*  
*All elevations are expressed in feet, surveyed to the nearest 0.01 foot from a defined benchmark, given a defined elevation of 100.00 foot.*

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**TABLE 6**  
**GROUND-WATER LABORATORY RESULTS**  
*University of Minnesota - 5th Street*  
*(VEMN-3236)*

MW#	Date Collected	Sample Depth	VOCs	DRO	8 RCRA Metals	EPA 8080	EPA 8141	EPA 8270	EPA 8150	Kjeldahl Nitrogen	Nitrate Nitrogen
MW-1	11/6/92	76.70	ND	ND	3649	ND	ND	ND	ND	5,100	12,000
MW-2	11/6/92	74.76	ND	ND	1147	ND	0.62	ND	ND	3,500	3,700

**Explanation:**

*All values are expressed in parts-per-billion (ppb).*

*Values are totals per testing method.*

*Sample Depth - expressed in elevation in feet, surveyed to the nearest 0.01 foot from a defined benchmark, given an arbitrary elevation of 100.00 feet.*

*MW-1 Elevation: 99.34*

*MW-2 Elevation: 96.95*

*VOCs - Volatile Organic Compounds*

*DRO - Diesel Range Organics*

*EPA 8080 - Organochlorine Pesticides/PCBs*

*EPA 8141 - Organophosphorus Pesticides (MNDOA List 1)*

*EPA 8270 - Base neutral acids (BNAs)*

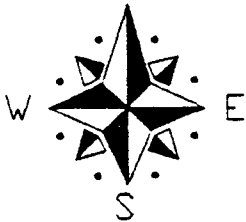
*EPA 8150 - Acid Herbicides*

*ND - parameter not detected*

*Samples were analyzed by Twin City Test Laboratories, Inc. (#1023).*

**FIGURES**

NORTH



# PROJECT SITE LOCATION

LAT. N.	44° 58' 33"	T. 29 N
LONG. W.	93° 13' 13"	R. 23 W
		SEC. 30

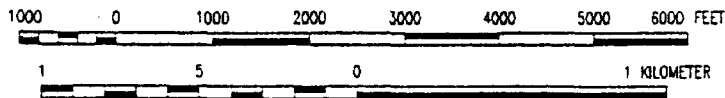
U.S.G.S. STANDARD NAME  
ST. PAUL WEST, MINN.



QUADRANGLE LOCATION



SCALE 1:24000



CONTOUR INTERVAL 10 FEET

Heavy duty Light duty

Medium duty Unimproved dirt

Interstate Route U.S. Route State Route

BASED ON U.S.G.S. 7.5 MINUTE SERIES (TOPOGRAPHIC) MAP

4390 McMenemy Road  
Saint Paul, MN. 55127  
Phone (612)490-2905  
FAX (612)490-3777

# DAHL

& ASSOCIATES, INC.  
Environmental Consultants, Contractors & Engineers

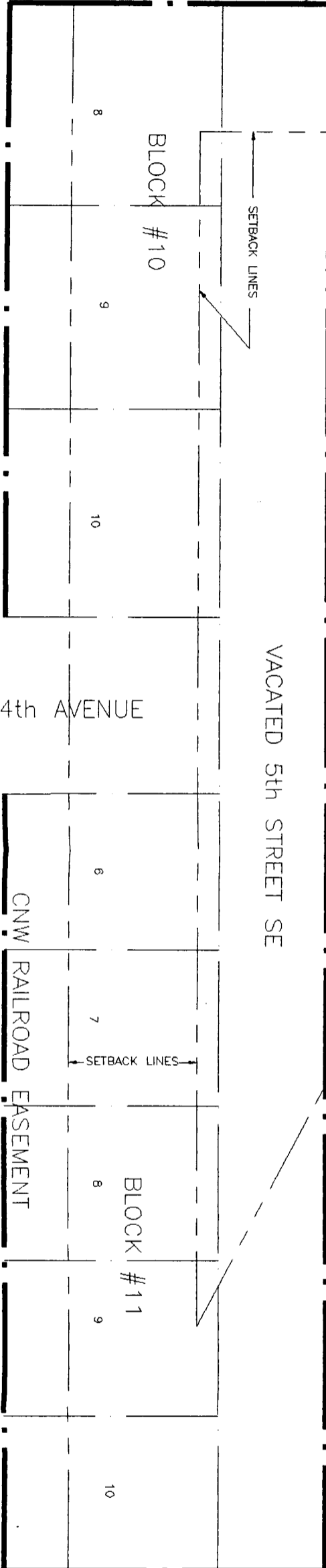
## LOCATION MAP

UNIVERSITY of MINNESOTA 5th ST.  
2510 5th ST. & 25 AVE. SE  
MINNEAPOLIS, MINNESOTA

PLOT DATE	09/18/92	AUTOCAD FILE NAME	3236-01A	PLOT SCALE	1" = 2000'
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DATE DRAWN	09/18/92	DRAWN BY	Jim N.	APPR BY	
PROJECT NUMBER	MEMN3236	DRAWING NUMBER	A-01	FIGURE NUMBER	1

FUTURE STREET EXTENSION



TRANSITWAY

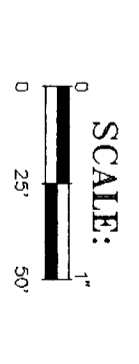
24th AVENUE

VACATED 5th STREET SE

CNW RAILROAD EASEMENT

BLOCK #10

BLOCK #11



**EXPLANATION**

**NOTE :**  
This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

**SITE MAP**

UNIVERSITY of MINNESOTA  
2510 5th Street & 25th Avenue SE.  
MINNEAPOLIS, MINNESOTA

**DAHL**  
& ASSOCIATES, INC.  
Environmental Consultants, Contractors & Engineers

4390 McMenemy Road  
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DATE DRAWN	09/18/92
DRAWN BY	Jim R.
APPROVED BY	
DRAWING NUMBER	B-03-A
PROJECT NUMBER	VEMN3236
FIGURE NUMBER	

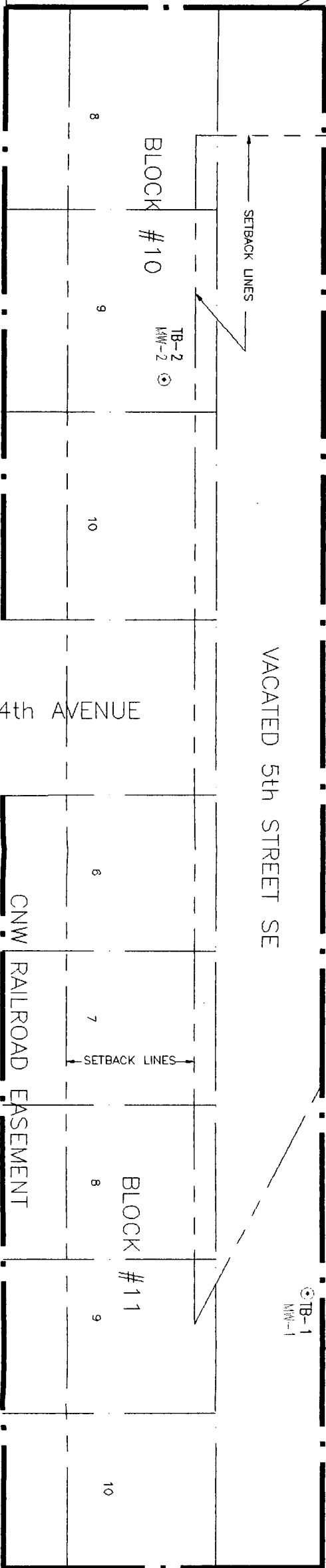
PLOT DATE 10/16/92

AutoCAD FILE NAME 0896-03A

PLOT SCALE 1" = 50'

DAHL STD NO: VEMN3236-B-00-A

FUTURE STREET EXTENSION



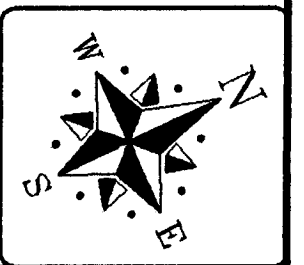
TRANSITWAY

24th AVENUE

VACATED 5th STREET SE

CNW RAILROAD EASEMENT

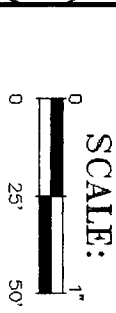
25th AVE



EXPLANATION

NOTE:  
 This drawing (including property lines, structures, and locations of buried utilities) is not exact. For precise locations, consult a registered land surveyor and appropriate utility company.

● TB - TEST BORING  
 ○ MW - MONITORING WELL



TEST BORING &  
 MONITORING WELL LOCATIONS

UNIVERSITY of MINNESOTA  
 2510 5th Street & 25th Avenue SE.  
 MINNEAPOLIS, MINNESOTA

**DAHL**  
 & ASSOCIATES, INC.  
 Environmental Consultants, Contractors & Engineers

4390 McMenemy Road  
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 FAX (612)490-3777

DAHL STD NO: VEMN3236-B-00-A

PLOT DATE 11/06/92

AutoCAD FILE NAME 0896-07A

PLOT SCALE 1" = 50'

DATE DRAWN 09/18/92

DRAWN BY Jim R.

APPROVED BY

DRAWING NUMBER B-07-A

PROJECT NUMBER VEMN3236

FIGURE NUMBER

# APPENDIX A

Additional Site Maps

25 ACRE ACQUISITION FOR  
FUTURE UNIVERSITY DEVELOPMENT

IWMF SITE

UNIVERSITY  
PARKING LOT

TRANSITWAY

CHURCH STREET

3RD AVENUE

UNIVERSITY AVENUE

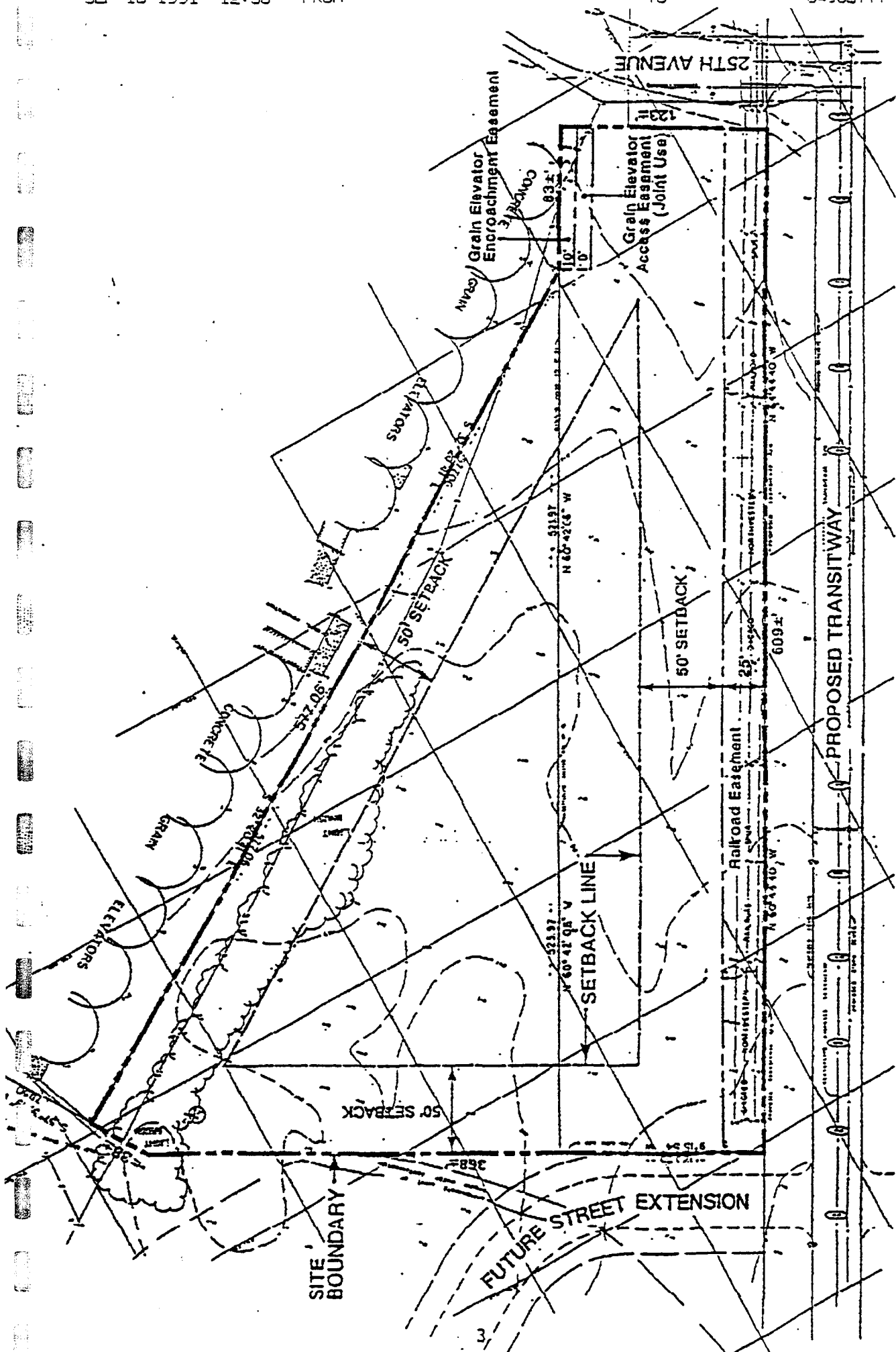
WILLIAMS ARENA

EDINA PARK

UNIVERSITY OF MINNESOTA  
1500 AVENUE

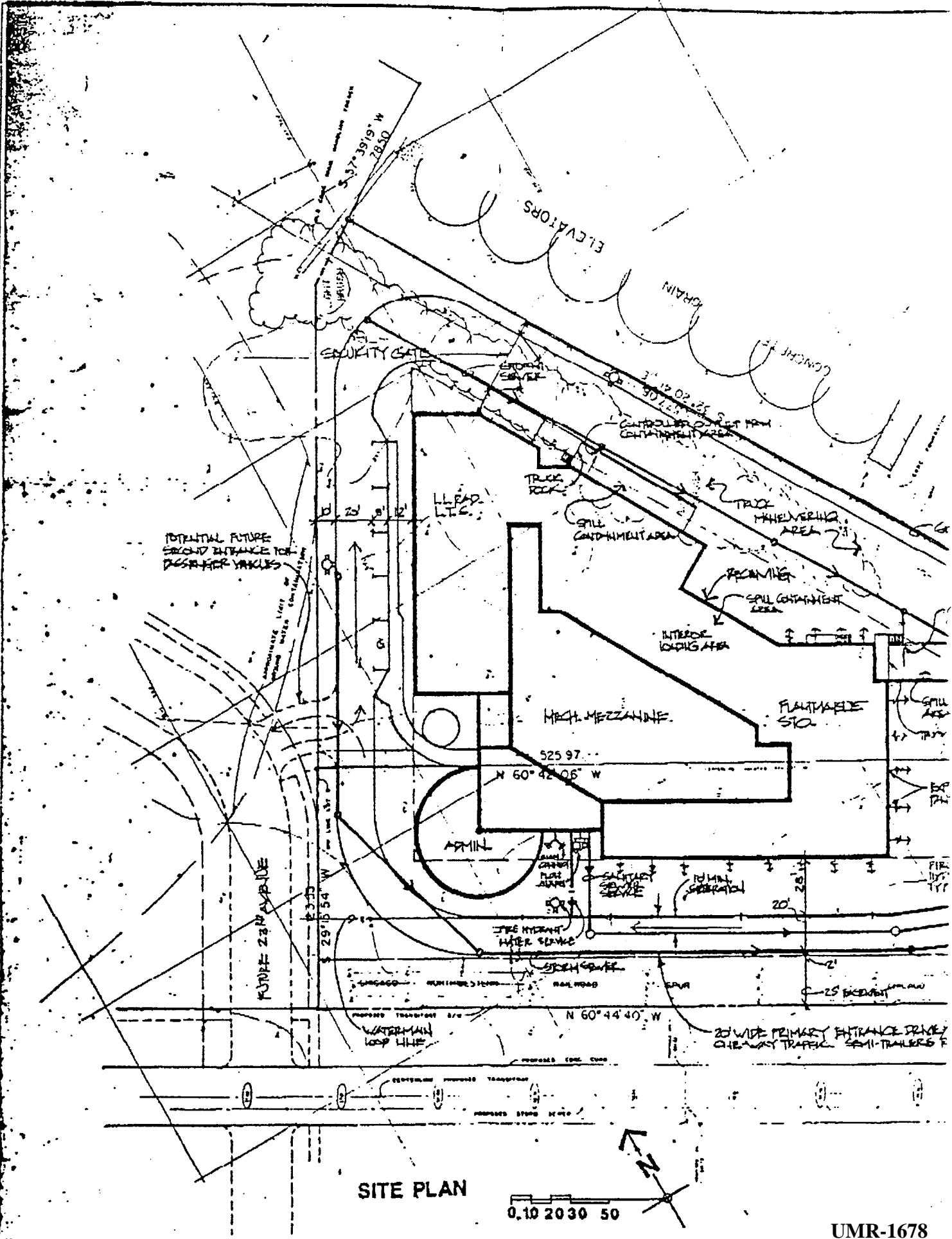


**SITE LOCATION**  
**INTEGRATED WASTE MANAGEMENT FACILITY**  
University of Minnesota



**SITE BOUNDARY AND BUILDING SETBACKS**  
**INTEGRATED WASTE MANAGEMENT FACILITY**  
 University of Minnesota





SITE PLAN

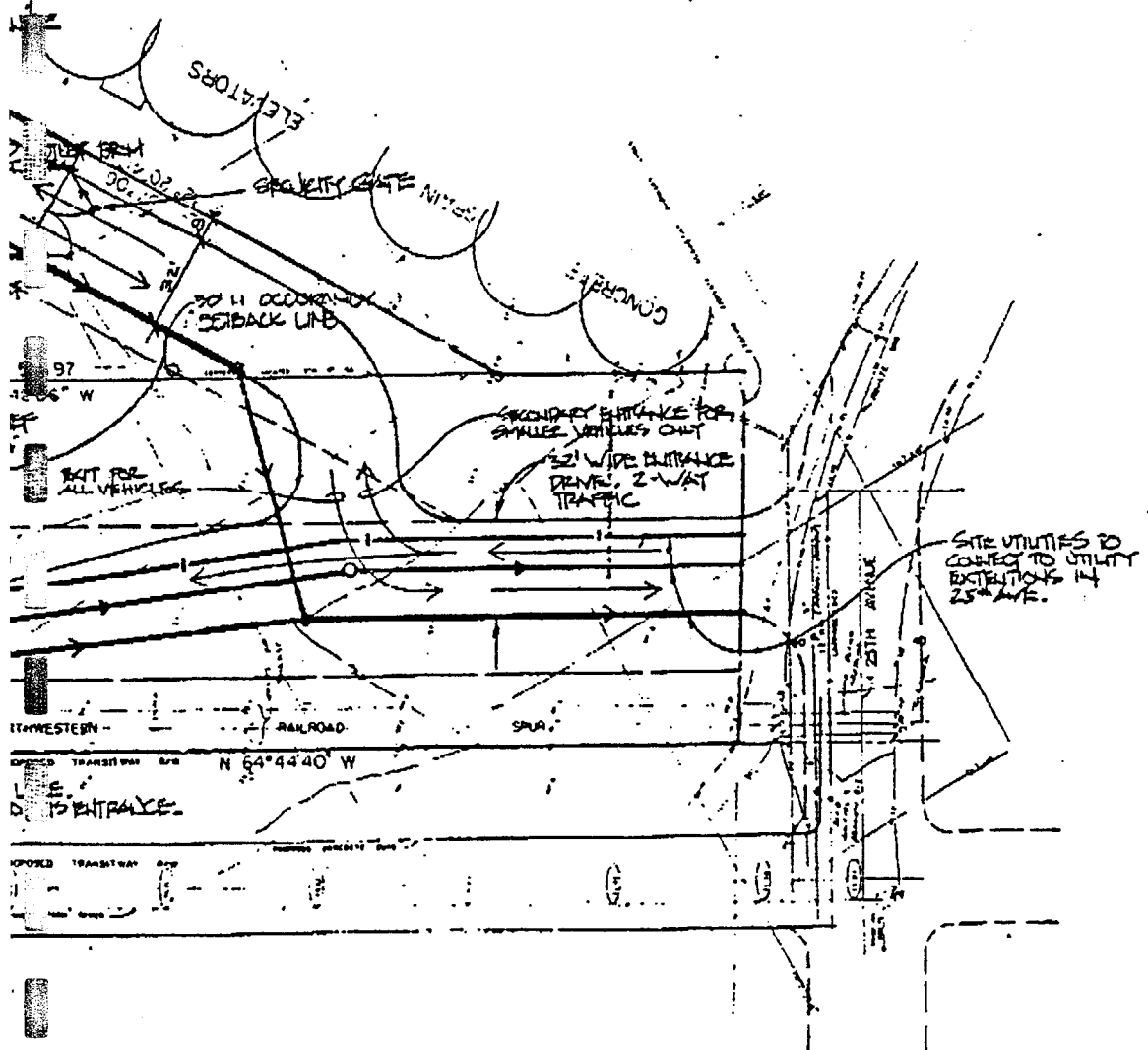
0.10 2030 50

UMR-1678

DESIGNED BY: [ ]  
 DRAWN BY: KAE  
 CHECKED BY: [ ]  
 DATE: [ ]

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF ILLINOIS.

TKDA



SCALE: 1/32" = 1'-0"

UMR-1679

3/19/91

COMMISSION NO.

9690



**Integrated Waste  
Management Facility**

**MPCA SUBMITTAL  
SCHEMATIC DESIGN PHASE**

**SHEET NO. 1 OF 4 SHEETS**

ING DUVALL ANDERSON  
CONSULTANTS INCORPORATED  
SOUTH PAUL, MINNESOTA

## APPENDIX B

METHODOLOGIES  
of  
Test Drilling & Soil Sampling  
Soil Sample Analyses  
Soil Classification System  
Monitoring Well Installation  
Ground-Water Sampling

## **Method of test drilling & soil sampling:**

### **Soil Borings**

Soil borings were advanced and cased using a truck mounted, model B-57, Mobile Drill equipped with 4.25 inch I.D., hollow stem, continuous flight augers. All drill tools were decontaminated prior to the assessment using high pressure hot water.

Standard penetration soil sampling was conducted in accordance with methods of ASTM designation D-1586, using two inch O.D. by 24 inch split barrel soil samplers. Soil sampling intervals were directed by the project geologist, and project leader. Soil borings were advanced to minimum depth of the water table of the uppermost unconfined aquifer. Soil samplers were decontaminated in a tri-sodium phosphate bath prior to each use. In the field, soil samples were cataloged on the drill logs by the team geologist using color and texture as soil classification criteria. Soil samples were later classified in accordance with standards of ASTM designation D-2487 (Unified Soil Classification System). Soil samples were retained in clean, air tight, glass jars.

### **Method of soil sample analyses:**

For detection of petroleum hydrocarbons, observations were initially made of the soil samples appearance. Observations were recorded on the drill logs. Soil samples were then tested for petroleum hydrocarbon content using an OVA Flame-ionization detection (FID) meter. Gas vapors from the headspace of soil samples were drawn through the analyzer. The analyzer display registers a reading proportional to the concentration of the trace gas present. FID readings were recorded on the drill logs.

The MPCA recommends the use of FID techniques in the field. However, it should be noted that the FID is used only as a qualitative instrument to give relative indications of hydrocarbon contamination and does not quantify hydrocarbon levels in the soils.

Soil samples were returned to the office of DAHL. At room temperature, the head space of each soil sample was tested for petroleum hydrocarbon content using a FID in accordance with the Minnesota Pollution Control Agency's protocol for "Jar Headspace Analytical Screening Procedures", dated May, 1992.

Methodologies of laboratory analyses of soil samples are included in the laboratory reports.

### **Method of monitoring well installation:**

Groundwater monitoring wells were installed by DAHL, in accordance with Minnesota Department of Health Registration #M0095.

Prior to drilling, all drill tools were decontaminated in a high pressure hot water bath. The wells were advanced to depths of at least six feet below the water table of the uppermost unconfined aquifer, using a B-57 Mobile drill, with rotary top drive

power auger, utilizing 8 5/8 inch O.D. by 4 1/4 inch I.D. hollow stem continuous flight augers. No drilling fluids were used. No water or fluids were introduced to the formation.

Soils encountered during bore hole advancement were classified by the geologist and logged in accordance with ASTM Designation D-2487. Soil samples were retrieved as auger samples of cuttings and through standard penetration soil tests conducted at specified intervals using a split barrel sampler.

Monitoring wells were designed by soil grain size distribution analysis. The monitoring wells were constructed to specifications outlined in the Minnesota Department of Health Water Well Construction Code. Well placement was surveyed to the nearest 0.5 foot from site features. The top of each well casing was surveyed to the nearest 0.01 foot from an arbitrary benchmark elevation assumed to be 100.00 feet.

The wells were developed by over pumping and dry surging. All wells were registered with the Minnesota Department of Health.

#### **Method of ground-water sampling:**

Groundwater samples were retrieved by DAHL, in accordance with the Minnesota Pollution Control Agency's Groundwater Sample Collection Protocol. Groundwater samples were retrieved using dedicated well bailers provide by the testing laboratory. Water samples were retained in prescribed containers provided by the testing laboratory. Samples were kept refrigerated until being submitted for analysis. Chain of custody records are provided with all laboratory reports.

# Unified Soil Classification

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
<b>COARSE GRAINED SOILS</b>        <b>MORE THAN 50% OF MATERIAL IS LARGER THAN No. 200 SIEVE</b>	<b>GRAVEL AND GRAVELLY SOILS</b>   <b>MORE THAN 50% OF COARSE FRACTION RETAINED ON No. 4 SIEVE MESH</b>	<b>CLEAN GRAVEL LITTLE OR NO FINES</b>	<b>GW</b>	<b>WELL GRADED GRAVEL GRAVEL-SAND MIXTURES, LITTLE OR NO FINES</b>
		<b>CLEAN GRAVEL LITTLE OR NO FINES</b>	<b>GP</b>	<b>POORLY GRADED GRAVEL GRAVEL-SAND MIXTURES, LITTLE OR NO FINES</b>
		<b>GRAVEL WITH FINES. APPRECIABLE AMOUNT OF FINES</b>	<b>GM</b>	<b>SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES</b>
		<b>GRAVEL WITH FINES. APPRECIABLE AMOUNT OF FINES</b>	<b>GC</b>	<b>CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURES</b>
	<b>SAND AND SANDY SOILS</b>   <b>MORE THAN 50% OF COARSE FRACTION PASSING No. 4 SIEVE MESH</b>	<b>CLEAN SANDS. LITTLE OR NO FINES</b>	<b>SW</b>	<b>WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES</b>
		<b>CLEAN SANDS. LITTLE OR NO FINES</b>	<b>SP</b>	<b>POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES</b>
		<b>SANDS WITH FINES. APPRECIABLE AMOUNTS OF FINES</b>	<b>SM</b>	<b>SILTY SANDS, SAND-SILT MIXTURES</b>
		<b>SANDS WITH FINES. APPRECIABLE AMOUNTS OF FINES</b>	<b>SC</b>	<b>CLAYEY SANDS, SAND-CLAY MIXTURES</b>
<b>FINE GRAINED SOILS</b>      <b>MORE THAN 50% OF MATERIAL IS SMALLER THAN No. 200 SIEVE</b>	<b>SILTS AND CLAYS</b>   <b>LIQUID LIMIT LESS THAN 50</b>	<b>ML</b>	<b>INORGANIC SILTS AND SANDY SILTS OF SLIGHT PLASTICITY</b>	
		<b>ML</b>	<b>INORGANIC SILTS, CLAYEY SILTS, SANDY CLAYS OR SILTY CLAYS OF LOW TO MEDIUM PLASTICITY</b>	
		<b>OL</b>	<b>ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY</b>	
	<b>SILTS AND CLAYS</b>   <b>LIQUID LIMIT GREATER THAN 50</b>	<b>MH</b>	<b>INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS</b>	
		<b>CH</b>	<b>INORGANIC SILTY CLAYS AND AND CLAYS OF HIGH PLASTICITY</b>	
		<b>OH</b>	<b>ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS</b>	
<b>HIGHLY ORGANIC SOILS</b>			<b>PT</b>	<b>PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS</b>
<b>FILL</b>			<b>FILL</b>	<b>DESCRIPTION OF MATERIAL MADE FROM VISUAL INSPECTION</b>
<b>DUAL SYMBOLS RE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS</b>			<b>SW-SP</b>	<b>TYPICAL SPLIT CLASSIFICATION</b>

## DRILL LOG AND SAMPLING SYMBOLS

TB - TEST BORING OD - OUTSIDE CASING DIAMETER AS - AUGER SAMPLE AD - AFTER DRILLING CS - CONTINUOUS SAMPLER EOB - END OF BORING HSA - HOLLOW STEM AUGER ▽ - WATER LEVEL	ID - INSIDE CASING DIAMETER SP - SOIL PROBE WD - WHILE DRILLING ST - SHELBY TUBE SAMPLE BCR - BEFORE CASING REMOVED SGP - SOIL GAS PROBE PPB - PARTS PER BILLION	TP - TEST PIT WS - WHILE SAMPLING SS - SPLIT SPOON SAMPLE ACR - AFTER CASING REMOVED W - WASH SAMPLE PPM - PARTS PER MILLION SA - SOLID STEM AUGER
--	--	--

# APPENDIX C

Soil Assessment Documentation

# Soil Boring Log



Page : 1 of 1

Date: 11/2/92

Project: U of M 5th Street

Boring Number: TB-1/MW-1

Job Number: VEMN3236

Surface Elevation:

PID  FID

Depth (ft.)	Sample No.	Sample Type	DESCRIPTION/COLOR OF MATERIAL	WL	USCS	Blow Counts	(ppm)
1	-	-	Gravel, top soil	-	-	-	-
	1	SS	Blk.silt, sand, trc. clay,organic, poss.contamination,moist	-	SM	12	ND
	2	SS	Same soil, moist	-	SM	17	ND
5	-	-		-	-	-	-
	3	SS	Tan, med. grained sand, moist	-	SW	21	ND
	4	SS	Tan, as above	-	SW	22	ND
10	-	-		-	-	-	-
	5	SS	Tan, as above but coarse sand	-	SW	19	ND
	6	SS	No recovery	-	NA	39	ND
15	-	-		-	-	-	-
	7	SS	Tan gravel w/sand, wet, med. to coarse, oxidized	-	GP	13	ND
	8	SS	Same as above	-	GP	17	ND
20	-	-		-	-	-	-
	9	SS	2" as above, remainder is med. gray clay w/sand & gravel med. plasticity, moist	-	GCML	15	ND
			EOB 22.5', Completed as MW-1	-	-	-	-
25	-	-		-	-	-	-

Driller: GL	Time Complete: 1:40 pm	Boring Depth (")X Boring Dia.(")
Geologist: TW	Water During 17-19'	UST Reg. No.:
Drill/Casing: B-57	Water After: 17-19'	
Time Start: 10:50 am	Cave Depth: NA	

UMR-1685

# Soil Boring Log



Page : 1 of 1

Date: 11/3/92

Project: U of M 5th Street

Boring Number: TB-2/MW-2

Job Number: VEMN3236

Surface Elevation:

PID  RD

Depth (ft.)	Sample No.	Sample Type	DESCRIPTION/COLOR OF MATERIAL	WL	USCS	Blow Counts	(ppm)
1	-		Gravel, fill	-			
	1	SS	Fill w/sand, black, very moist	-	FILL	12	ND
	2	SS	Blk-brn.med.sand, silt, low plasticity due to hydrocarbons rather than clay - possibly	-	SWSM	7	ND
5							
	3	SS	Greenish gray fine to med. sand, moist	-	SW	32	ND
	4	SS	Same soil but brownish, some oxidation	-	SW	60	ND
10							
	5	SS	Greenish tan, coarse sand, moist	-	SW	25	ND
	6	SS	Same as above w/gravel	-	SW	29	ND
15							
	7	SS	Same as above	-	SW	35	ND
	8	SS	Brown coarse sand w/gravel in upper 1', v.wet, lower 1' is sand/silt w/clay, moist	-	SWSM	23	ND
20							
			EOB 20.5', Completed as MW-2				
25							

Driller: GL	Time Complete: 11:35 am	Boring Depth (")X Boring Dia.(")
Geologist: TW	Water During 17-19'	UST Reg. No.:
Drill/Casing: B-57	Water After: 17-19'	UMR-1686
Time Start: 9:40 am	Cave Depth:	

## SOIL HEAD SPACE ANALYSIS

PROJECT #: UEMN 3236

Page: 1 of 1

Site Location: ( ) of M 5th Street

Technician: TIM WAWRZYNIEC

DATE: 11-16-92

Test Boring No.	Sample No.	Sample Location (Depth), feet	HNU/FID Reading, ppm
TB-2               V	1	2-4'	ND
	2	4'-6'	ND
	3	7-9'	ND
	4	9-11'	1
	5	12-14'	ND
	6	14-16'	ND
	7	17-19'	1
	8	19-21'	1
TB-1                 V	1	2-4'	ND
	2	4'-6'	1
	3	7-9'	2
	4	9'-11'	ND
	5	11'-12' 12'-14'	ND
	6	14'-16'	2
	7	17-19'	1
	8	19-21'	3
	9	22'-24'	2

**FULL SIEVE ANALYSIS FORM**

Project Name: UofM Project Code #: 3236  
 Conducted By: Tim Date: 11/16/92

Boring: TB-2 Depth: 7-11  
 Sample: \_\_\_\_\_

Tare #1 & Sample Wt. 592.6 Tare#1 Wt. 236.6 Dry Wt.[a] 356.0  
 > 200 pan/wash+Tare #1 \_\_\_\_\_ > 200 pan/wash[b] \_\_\_\_\_  
 < 200 pan/wash & Tare #2 \_\_\_\_\_ Tare #2 Wt. \_\_\_\_\_ < 200 pan/wash[c] \_\_\_\_\_  
 TOTAL(wash){b+c} \_\_\_\_\_

MESH No.	OPENING (mm)	SAMPLE + TARE (g)	TARE (g)	SAMPLE (g)	PERCENT RETAINED	CUMUL. WEIGHT	CUMUL. PERCENT
6	3.350	<u>694.9</u>	<u>693.9</u>	<u>1.0</u>	<u>0.28</u>	<u>1.0</u>	<u>0.28</u>
8	2.360	<u>669.5</u>	<u>669.1</u>	<u>0.4</u>	<u>0.11</u>	<u>1.4</u>	<u>0.39</u>
10	2.000	<u>675.9</u>	<u>675.9</u>	<u>0.0</u>	<u>0.0</u>	<u>1.4</u>	<u>0.39</u>
16	1.180	<u>582.4</u>	<u>581.0</u>	<u>1.4</u>	<u>0.39</u>	<u>2.8</u>	<u>0.78</u>
20	0.850	<u>600.5</u>	<u>589.5</u>	<u>11.0</u>	<u>3.09</u>	<u>13.8</u>	<u>3.87</u>
30	0.600	<u>602.1</u>	<u>571.0</u>	<u>31.1</u>	<u>8.74</u>	<u>44.9</u>	<u>12.61</u>
40	0.425	<u>641.0</u>	<u>553.6</u>	<u>87.4</u>	<u>24.5</u>	<u>132.3</u>	<u>37.1</u>
50	0.300	<u>610.9</u>	<u>519.9</u>	<u>91.0</u>	<u>25.6</u>	<u>223.3</u>	<u>62.7</u>
70	0.212	<u>549.3</u>	<u>505.3</u>	<u>44.0</u>	<u>12.4</u>	<u>267.3</u>	<u>75.1</u>
100	0.150	<u>531.5</u>	<u>497.4</u>	<u>34.1</u>	<u>9.58</u>	<u>301.4</u>	<u>84.7</u>
200	0.740	<u>337.4</u>	<u>317.5</u>	<u>22.9</u>	<u>6.43</u>	<u>324.3</u>	<u>91.09</u>
pan	<0.740	<u>457.7</u>	<u>453.1</u>	<u>4.6</u>	<u>1.29</u>	<u>[d]328.9</u>	<u>92.39</u>
<200 wash				<u>[c]</u>		<u>[e]</u>	

pan + wash \_\_\_\_\_

Dry Weight Before Wash [a] 356.0 Dry Weight After Wash [b+c] \_\_\_\_\_  
 Dry Weight Before Sieve [b+c] \_\_\_\_\_ Dry Weight After Sieve [c+d] \_\_\_\_\_  
 PERCENT LOSS  $\{[a-(b+c)]/a\}$  \_\_\_\_\_ PERCENT LOSS  $\{[(b+c)-(c+d)]/b+c\}$  \_\_\_\_\_  
 Total Percent Loss  $\{[a-e]/a\}$  \_\_\_\_\_



**twin city testing**  
corporation

**REPORT OF: CHEMICAL ANALYSES**

662 CROMWELL AVENUE  
ST. PAUL, MN 55114  
PHONE 612/645-3601

**PROJECT:** VEMN 3236, SOIL DATA

**DATE:** November 20, 1992

**REPORTED TO:** Dahl & Associates  
Attn: Dan Wiberg  
4390 McMenemy Drive  
St. Paul, MN 55127

**LABORATORY NO:** 4410 93-0209

**INTRODUCTION**

This report presents the results of the analyses of four samples received on November 5, 1992, from a representative of Dahl & Associates. The scope of our services was limited to the parameters listed in the attached tables.

**METHODOLOGY**

Analyses are performed according to Twin City Testing Standard Operating Procedures. The procedures are based on the references stated in the analytical results tables.

**DISCUSSION**

The surrogate amount added to the samples prior to extraction for organophosphorus pesticides analysis was below the concentration range of the calibration standards. The surrogate values are estimated, resulting in recovery values outside of the recommended quality control limits. The target analyte data is unaffected by the high surrogate recovery values.

All surrogate recoveries for the determination of acid pesticides are outside of the recommended quality control limits. However, they are characteristic of the laboratory results for the analysis. The surrogate recoveries and analytical data are listed in the attached table.


**RESULTS**

The results are listed in the attached tables.

**REMARKS**

The samples were collected on November 2, 1992. If samples are not consumed in the analysis, they are held for three months from the date of sample receipt and then disposed, unless written instructions to the contrary are received.

**TWIN CITY TESTING CORPORATION**

  
Nancy J. Whaley  
Project Manager

  
Susan D. Max  
Director, Environmental Chemistry

NJW\SDM\ct

**UMR-1689**

# CHLORINATED PESTICIDE/PCB RESULTS EPA METHOD 8080

(All values are in  $\mu\text{g}/\text{Kg}$  which is equal to parts-per-billion)

<b>Client ID:</b>	<b>Method Blank</b>	<b>TB-1, S-3, 7-9</b>	<b>TB-2, S-3, 7-9</b>
<b>TCT ID:</b>		301131	301133

<u>Compounds:</u>				<u>PQL</u>
Aldrin	ND	ND	ND	2.0
A-BHC	ND	ND	ND	2.0
B-BHC	ND	ND	ND	2.0
D-BHC	ND	ND	ND	2.0
A-Chlordane	ND	ND	ND	2.0
G-Chlordane	ND	ND	ND	2.0
4,4-DDD	ND	ND	ND	2.0
4,4-DDE	ND	ND	ND	2.0
4,4-DDT	ND	ND	ND	2.0
Dieldrin	ND	ND	ND	2.0
Endosulfan I	ND	ND	ND	2.0
Endosulfan II	ND	ND	ND	2.0
Endosulfan Sulfate	ND	ND	ND	2.0
Endrin	ND	ND	ND	2.0
Endrin Aldehyde	ND	ND	ND	2.0
Endrin Ketone	ND	ND	ND	2.0
Heptachlor	ND	ND	ND	2.0
Heptachlor Epoxide	ND	ND	ND	2.0
Lindane (G-BHC)	ND	ND	ND	2.0
Methoxychlor	ND	ND	ND	4.0
Toxaphene	ND	ND	ND	20
PCB 1016	ND	ND	ND	20
PCB 1221	ND	ND	ND	20
PCB 1232	ND	ND	ND	20
PCB 1242	ND	ND	ND	20
PCB 1248	ND	ND	ND	20
PCB 1254	ND	ND	ND	20
PCB 1260	ND	ND	ND	20
TCMX (% Recovery)	62%	77%	73%	

<b>Date Extracted:</b>	11-10-92	11-10-92	11-10-92
<b>Date Analyzed:</b>	11-18-92	11-18-92	11-18-92

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit  
ND = Not Detected

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

**VOLATILE ORGANIC COMPOUNDS  
MNDH METHOD 465D**

(All values are in  $\mu\text{g}/\text{Kg}$  which is equal to parts-per-billion)

<b>Client ID:</b>	TB-1	TB-2
	S-7	S-7
	17-19'	17-19'
<b>TCT ID:</b>	301130	301132

<u>Compound:</u>			<u>PQL</u>
Acetone	16	14	10
Allyl Chloride	ND	ND	10
Benzene	ND	ND	1
Bromobenzene	ND	ND	1
Bromochloromethane	ND	ND	1
Bromodichloromethane	ND	ND	1
Bromoform	ND	ND	5
Bromomethane	ND	ND	2
n-Butylbenzene	ND	ND	1
sec-Butylbenzene	ND	ND	1
tert-Butylbenzene	ND	ND	1
Carbon tetrachloride	ND	ND	1
Chlorobenzene	ND	ND	1
Chloroethane	ND	ND	2
Chloroform	ND	ND	1
Chloromethane	ND	ND	5
2-Chlorotoluene	ND	ND	1
4-Chlorotoluene	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	5
Dibromochloromethane	ND	ND	1
1,2-Dibromoethane	ND	ND	2
Dibromomethane	ND	ND	1
1,2-Dichlorobenzene	ND	ND	1
1,3-Dichlorobenzene	ND	ND	1
1,4-Dichlorobenzene	ND	ND	1
Dichlorodifluoromethane	ND	ND	5
1,1-Dichloroethane	ND	ND	1
1,2-Dichloroethane	ND	ND	1
1,1-Dichloroethene	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	1
Dichlorofluoromethane	ND	ND	2
1,2-Dichloropropane	ND	ND	1
1,3-Dichloropropane	ND	ND	1
2,2-Dichloropropane	ND	ND	1

(continued)

PQL = Practical Quantitation Limit  
ND = Not Detected

LABORATORY NO: 4410 93-0209  
UMR-1691

## VOLATILE ORGANIC COMPOUNDS (continued)

### MNDH METHOD 465D

(All values are in  $\mu\text{g}/\text{Kg}$  which is equal to parts-per-billion)

<b>Client ID:</b>	<b>TB-1</b>	<b>TB-2</b>
	S-7	S-7
	17-19'	17-19'
<b>TCT ID:</b>	301130	301132

<u>Compound:</u>			<u>PQL</u>
1,1-Dichloropropene	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	1
Ethyl Ether	ND	ND	5
Ethylbenzene	ND	ND	1
Hexachlorobutadiene	ND	ND	1
Isopropylbenzene	ND	ND	1
p-Isopropyltoluene	ND	ND	1
Methyl Ethyl Ketone	8	10	5
Methyl Isobutyl Ketone	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	1
Methylene chloride	ND	ND	1
Naphthalene	ND	ND	1
n-Propylbenzene	ND	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	1
Tetrachloroethene	ND	ND	1
Tetrahydrofuran	ND	ND	10
Toluene	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	1
1,1,1-Trichloroethane	ND	ND	2
1,1,2-Trichloroethane	ND	2	1
Trichloroethene	ND	ND	1
Trichlorofluoromethane	ND	ND	2
1,2,3-Trichloropropane	ND	ND	1
Trichlorotrifluoroethane	ND	ND	1
1,2,4-Trimethylbenzene	ND	ND	1
1,3,5-Trimethylbenzene	ND	ND	1
Vinyl chloride	ND	ND	2
o-Xylene, Styrene <sup>1</sup>	ND	ND	1
m-p-Xylenes <sup>1</sup>	ND	ND	1

<b>Date Analyzed:</b>	11/12/92	11/12/92
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<sup>1</sup>Compounds not separated by this method.  
 All results are reported on a dry weight basis.  
 PQL = Practical Quantitation Limit  
 ND = Not Detected

**Reference:** Minnesota Department of Health, Method 465D.

LABORATORY NO: 4410 93-0209

UMR-1692

**VOLATILE ORGANIC COMPOUNDS  
MNDH METHOD 465D**

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

**Client ID:** **Method Blank**  
**TCT ID:**

---

<u>Compound:</u>		<u>PQL</u>
Acetone	ND	10
Allyl Chloride	ND	10
Benzene	ND	1
Bromobenzene	ND	1
Bromochloromethane	ND	1
Bromodichloromethane	ND	1
Bromoform	ND	5
Bromomethane	ND	2
n-Butylbenzene	ND	1
sec-Butylbenzene	ND	1
tert-Butylbenzene	ND	1
Carbon tetrachloride	ND	1
Chlorobenzene	ND	1
Chloroethane	ND	2
Chloroform	ND	1
Chloromethane	ND	5
2-Chlorotoluene	ND	1
4-Chlorotoluene	ND	1
1,2-Dibromo-3-chloropropane	ND	5
Dibromochloromethane	ND	1
1,2-Dibromoethane	ND	2
Dibromomethane	ND	1
1,2-Dichlorobenzene	ND	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
Dichlorodifluoromethane	ND	5
1,1-Dichloroethane	ND	1
1,2-Dichloroethane	ND	1
1,1-Dichloroethene	ND	1
cis-1,2-Dichloroethene	ND	1
trans-1,2-Dichloroethene	ND	1
Dichlorofluoromethane	ND	2
1,2-Dichloropropane	ND	1
1,3-Dichloropropane	ND	1
2,2-Dichloropropane	ND	1

(continued)

PQL = Practical Quantitation Limit  
ND = Not Detected

LABORATORY NO: 4410 93-0209  
UMR-1693

# VOLATILE ORGANIC COMPOUNDS (continued)

## MNDH METHOD 465D

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

**Client ID:** **Method Blank**

**TCT ID:**

<u>Compound:</u>		<u>PQL</u>
1,1-Dichloropropene	ND	1
cis-1,3-Dichloropropene	ND	1
trans-1,3-Dichloropropene	ND	1
Ethyl Ether	ND	5
Ethylbenzene	ND	1
Hexachlorobutadiene	ND	1
Isopropylbenzene	ND	1
p-Isopropyltoluene	ND	1
Methyl Ethyl Ketone	ND	5
Methyl Isobutyl Ketone	ND	5
Methyl-tert-Butyl Ether	ND	1
Methylene chloride	ND	1
Naphthalene	ND	1
n-Propylbenzene	ND	1
1,1,1,2-Tetrachloroethane	ND	1
1,1,2,2-Tetrachloroethane	ND	1
Tetrachloroethene	ND	1
Tetrahydrofuran	ND	10
Toluene	ND	1
1,2,3-Trichlorobenzene	ND	1
1,2,4-Trichlorobenzene	ND	1
1,1,1-Trichloroethane	ND	2
1,1,2-Trichloroethane	ND	1
Trichloroethene	ND	1
Trichlorofluoromethane	ND	2
1,2,3-Trichloropropane	ND	1
Trichlorotrifluoroethane	ND	1
1,2,4-Trimethylbenzene	ND	1
1,3,5-Trimethylbenzene	ND	1
Vinyl chloride	ND	2
o-Xylene, Styrene <sup>1</sup>	ND	1
m-p-Xylenes <sup>1</sup>	ND	1

**Date Analyzed:** 11/12-13/92

<sup>1</sup>Compounds not separated by this method.

PQL = Practical Quantitation Limit

ND = Not Detected

**Reference:** Minnesota Department of Health, Method 465D.

LABORATORY NO: 4410 93-0209

UMR-1694

## METAL RESULTS

(All values are in mg/Kg which is equal to parts-per-million)

<b>Client ID:</b>	<b>TB-1</b>	<b>TB-2</b>
	<b>S-3</b>	<b>S-3</b>
	<b>7-9'</b>	<b>7-9'</b>
<b>TCT ID:</b>	<b>301131</b>	<b>301133</b>

---

<u>Parameter</u>			<u>PQL</u>	<u>Test Date</u>	<u>Test Method</u>
Arsenic	ND	ND	5.0	11-13-92	6010
Barium	13	13	0.50	11-13-92	6010
Cadmium	ND	ND	0.50	11-13-92	6010
Chromium	4.5	4.6	0.50	11-13-92	6010
Lead	ND	ND	2.5	11-13-92	6010
Mercury	ND	ND	0.10	11-11-92	7471
Selenium	ND	ND	5.0	11-13-92	6010
Silver	ND	ND	0.50	11-13-92	6010

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All results are reported on a dry weight basis.

ND = Not Detected

PQL = Practical Quantitation Limit

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

LABORATORY NO: 4410 93-0209

UMR-1695

**DIESEL RANGE ORGANIC RESULTS  
MODIFIED DRO METHOD**

(All values are in mg/Kg which is equal to parts-per-million)

<u>Sample Identification</u>	<u>TCT ID</u>	<u>Diesel Range Organics</u>	<u>Triacontane Recovery (%)</u>	<u>Practical Quantitation Limit</u>
TB-1 S-7 17-19'	301130	15	125	10
TB-2 S-7 17-19'	301132	35	124	10
Blank		ND	113	10
Method Spike		71% Recovery	112	--
Method Spike Duplicate		70% Recovery	111	--
<b>Date Sampled:</b>		11-02-92		
<b>Date Extracted:</b>		11-10-92		
<b>Date Analyzed:</b>		11-12-92		

All results are reported on a dry weight basis.

ND = Not Detected

**Reference:** Wisconsin Department of Natural Resources, PUBL-SW-141, April 1992.

LABORATORY NO: 4410 93-0209  
UMR-1696

**ORGANOPHOSPHORUS PESTICIDE RESULTS  
EPA METHOD 8141B**

(All values are in  $\mu\text{g/g}$  which is equal to parts-per-million)

<b>Client ID:</b>	<b>TB-1, S-3, 7-9</b>	<b>TB-2, S-3, 7-9</b>	<b>Method Blank</b>
<b>TCT ID:</b>	301131	301133	

<u>Pesticide:</u>				<u>PQL</u>
Alachlor	ND	ND	ND	0.309
Atrazine	ND	ND	ND	0.163
Butylate	ND	ND	ND	0.036
Chlorpyrifos	ND	ND	ND	0.016
Cyanazine	ND	ND	ND	0.031
EPTC	ND	ND	ND	0.227
Ethalfuralin	ND	ND	ND	0.208
Fonofos	ND	ND	ND	0.020
Linuron	ND	ND	ND	0.172
Metolachlor	ND	ND	ND	0.295
Metribuzin	ND	ND	ND	0.080
Pendimethalin	ND	ND	ND	0.090
Phorate	ND	ND	ND	0.020
Propachlor	ND	ND	ND	0.398
Prometon	ND	ND	ND	0.194
Propazine	ND	ND	ND	0.085
Simazine	ND	ND	ND	0.092
Terbufos	ND	ND	ND	0.019
Triallate	ND	ND	ND	0.360
Trifluralin	ND	ND	ND	0.243

**Surrogate Recovery:**

4-Chloro-3-Nitro- benzotrifluoride:	154%	190%	173%
<b>Date Extracted:</b>	11/10/92	11/10/92	11/10/92
<b>Date Analyzed:</b>	11/12/92	11/12/92	11/12/92

PQL = Practical Quantitation Limit

ND = Not Detected

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

LABORATORY NO: 4410 93-0209

UMR-1697

# ACID HERBICIDES RESULTS

## EPA METHOD 8150

(All values are in  $\mu\text{g}/\text{kg}$  which is equal to parts-per-billion)

Client ID:	TB-1, S-3, 7-9	TB-2, S-3, 7-9	Method Blank	
TCT ID:	301131	301133		
<b>Compound:</b>				<b>PQL</b>
Dicamba	ND	ND	ND	30
2,4-DB	ND	ND	ND	30
Dalapon	ND	ND	ND	30
MCPP	ND	ND	ND	750
MCPA	ND	ND	ND	750
Dichloroprop	ND	ND	ND	30
Dinoseb	ND	ND	ND	30
Silvex	ND	ND	ND	30
2,4-D	ND	ND	ND	30
2,4,5-T	ND	ND	ND	30
DCAA (% Recovery)	39%*	35%*	39%*	
Date Extracted:	11-12-92	11-12-92	11-12-92	
Date Analyzed:	11-20-92	11-20-92	11-20-92	

\* Surrogate recovery is outside the recommended quality control limits. See discussion section.

All results are reported on a dry weight basis.

PQL = Practical Quantitation Limit

ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

LABORATORY NO: 4410 93-0209

UMR-1698

# ANALYTICAL RESULTS

(All values are in mg/Kg which is equal to parts-per-million)

Client ID:           TB-1, S-3,                   TB-2, S-3,  
                          7-9                                   7-9

TCT ID:               301131                   301133

---

<u>Parameter</u>			<u>PQL</u>	<u>Test Date</u>	<u>Test Method</u>
Nitrate as N	3.0	3.6	0.25	11-06-92	300.0
Total Kjeldahl Nitrogen	ND	ND	4.6	11-16-92	351.2

---

All results are reported on a dry weight basis.

ND = Not Detected

PQL = Practical Quantitation Limit

Reference: Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March, 1983.

LABORATORY NO: 4410 93-0209

## EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS

Project: DAHL-V3236.1	Date Extracted: 11/10/92
Client ID:	Matrix: Soil
Date Received:	Sample Size: 30.1 grams
TCT ID: Lab. Method Blank	Extract Vol.: 500 uL
Filename: 2321P07	Dil. Factor: 1
Analysis Date: 11/16/92	% Moisture: 0.0 %

COMPOUND	ug/Kg (PPB)	PQL
Phenol	ND	330
bis(2-Chloroethyl) ether	ND	330
2-Chlorophenol	ND	330
1,3-Dichlorobenzene	ND	330
1,4-Dichlorobenzene	ND	330
1,2-Dichlorobenzene	ND	330
2-Methylphenol	ND	330
2,2'-oxybis(1-Chloropropane)	ND	330
4-Methylphenol	ND	330
N-Nitroso-di-n-propylamine	ND	330
Hexachloroethane	ND	330
Nitrobenzene	ND	330
Isophorone	ND	330
2-Nitrophenol	ND	330
2,4-Dimethylphenol	ND	330
bis(2-Chloroethoxy)methane	ND	330
2,4-Dichlorophenol	ND	330
1,2,4-Trichlorobenzene	ND	330
Naphthalene	ND	330
4-Chloroaniline	ND	330
Hexachlorobutadiene	ND	330
4-Chloro-3-methylphenol	ND	330
2-Methylnaphthalene	ND	330
Hexachlorocyclopentadiene	ND	330
2,4,6-Trichlorophenol	ND	330
2,4,5-Trichlorophenol	ND	830
2-Chloronaphthalene	ND	330
2-Nitroaniline	ND	830
Dimethylphthalate	ND	330
Acenaphthylene	ND	330
2,6-Dinitrotoluene	ND	330
3-Nitroaniline	ND	830
Acenaphthene	ND	330
2,4-Dinitrophenol	ND	830
4-Nitrophenol	ND	830
Dibenzofuran	ND	330
2,4-Dinitrotoluene	ND	330
Diethylphthalate	ND	330
4-Chlorophenyl-phenylether	ND	330
Fluorene	ND	330
4-Nitroaniline	ND	830
4,6-Dinitro-2-methylphenol	ND	830
N-Nitrosodiphenylamine	ND	330
4-Bromophenyl-phenylether	ND	330
Hexachlorobenzene	ND	330
Pentachlorophenol	ND	830
Phenanthrene	ND	330

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS (Cont.)

Project: DAHL-V3236.1 Date Extracted: 11/10/92  
 Client ID: Matrix: Soil  
 Date Received: Sample Size: 30.1 grams  
 TCT ID: Lab. Method Blank Extract Vol.: 500 uL  
 Filename: 2321P07 Dil. Factor: 1  
 Analysis Date: 11/16/92 % Moisture: 0.0 %

COMPOUND	ug/Kg (PPB)	PQL
Anthracene	ND	330
Carbazole	ND	330
Di-n-butylphthalate	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Butylbenzylphthalate	ND	330
3,3'-Dichlorobenzidine	ND	330
Benz(a)anthracene	ND	330
Chrysene	ND	330
bis(2-Ethylhexyl)phthalate	1000	330
Di-n-octylphthalate	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenz(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

SURROGATE RECOVERY:

QC LIMITS

2-Fluorophenol	68%	(25-121)
Phenol-d5	69%	(24-113)
2-Chlorophenol-d4	70%	(20-130)
1,2-Dichlorobenzene-d4	72%	(20-130)
Nitrobenzene-d5	68%	(23-120)
2-Fluorobiphenyl	69%	(30-115)
2,4,6-Tribromophenol	65%	(19-122)
Terphenyl-d14	82%	(18-137)

TCL = Target Compound List from USEPA CLP SOW, 3/90 (OLM01.7)  
 PQL = Practical Quantitation Limit  
 ND = Not Detected  
 BQL = Below Quantitation Limit (estimated value)  
 ALR = Above Linear Range (estimated value)

Note: All results are reported on a dry weight basis.

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846, November 1986, 3rd Edition.

Analyst: *H. Maisel* 11/17/92 Analyst: GNM  
 Technical Review: *D. Zimm* 11/18/92 Invoice No.: 4410\_93-0209

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS

Project: DAHL-V3236.1	Date Extracted: 11/10/92
Client ID: TB-1 S-3 7-9'	Matrix: Soil
Date Received: 11/05/92	Sample Size: 30.2 grams
TCT ID: 301131	Extract Vol.: 500 uL
Filename: 2321P09	Dil. Factor: 1
Analysis Date: 11/16/92	% Moisture: 9.3 %

COMPOUND	ug/Kg (PPB)	PQL
Phenol	ND	370
bis(2-Chloroethyl) ether	ND	370
2-Chlorophenol	ND	370
1,3-Dichlorobenzene	ND	370
1,4-Dichlorobenzene	ND	370
1,2-Dichlorobenzene	ND	370
2-Methylphenol	ND	370
2,2'-oxybis(1-Chloropropane)	ND	370
4-Methylphenol	ND	370
N-Nitroso-di-n-propylamine	ND	370
Hexachloroethane	ND	370
Nitrobenzene	ND	370
Isophorone	ND	370
2-Nitrophenol	ND	370
2,4-Dimethylphenol	ND	370
bis(2-Chloroethoxy)methane	ND	370
2,4-Dichlorophenol	ND	370
1,2,4-Trichlorobenzene	ND	370
Naphthalene	ND	370
4-Chloroaniline	ND	370
Hexachlorobutadiene	ND	370
4-Chloro-3-methylphenol	ND	370
2-Methylnaphthalene	ND	370
Hexachlorocyclopentadiene	ND	370
2,4,6-Trichlorophenol	ND	370
2,4,5-Trichlorophenol	ND	910
2-Chloronaphthalene	ND	370
2-Nitroaniline	ND	910
Dimethylphthalate	ND	370
Acenaphthylene	ND	370
2,6-Dinitrotoluene	ND	370
3-Nitroaniline	ND	910
Acenaphthene	ND	370
2,4-Dinitrophenol	ND	910
4-Nitrophenol	ND	910
Dibenzofuran	ND	370
2,4-Dinitrotoluene	ND	370
Diethylphthalate	ND	370
4-Chlorophenyl-phenylether	ND	370
Fluorene	ND	370
4-Nitroaniline	ND	910
4,6-Dinitro-2-methylphenol	ND	910
N-Nitrosodiphenylamine	ND	370
4-Bromophenyl-phenylether	ND	370
Hexachlorobenzene	ND	370
Pentachlorophenol	ND	910
Phenanthrene	ND	370

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS (Cont.)

Project: DAHL-V3236.1	Date Extracted: 11/10/92
Client ID: TB-1 S-3 7-9'	Matrix: Soil
Date Received: 11/05/92	Sample Size: 30.2 grams
TCT ID: 301131	Extract Vol.: 500 uL
Filename: 2321P09	Dil. Factor: 1
Analysis Date: 11/16/92	% Moisture: 9.3 %

COMPOUND	ug/Kg (PPB)	PQL
Anthracene	ND	370
Carbazole	ND	370
Di-n-butylphthalate	ND	370
Fluoranthene	66 BQL	370
Pyrene	66 BQL	370
Butylbenzylphthalate	ND	370
3,3'-Dichlorobenzidine	ND	370
Benz(a)anthracene	58 BQL	370
Chrysene	78 BQL	370
bis(2-Ethylhexyl)phthalate	88 BQL	370
Di-n-octylphthalate	ND	370
Benzo(b)fluoranthene	130 BQL	370
Benzo(k)fluoranthene	46 BQL	370
Benzo(a)pyrene	58 BQL	370
Indeno(1,2,3-cd)pyrene	ND	370
Dibenz(a,h)anthracene	ND	370
Benzo(g,h,i)perylene	38 BQL	370

SURROGATE RECOVERY:

QC LIMITS

2-Fluorophenol	65%	(25-121)
Phenol-d5	66%	(24-113)
2-Chlorophenol-d4	69%	(20-130)
1,2-Dichlorobenzene-d4	72%	(20-130)
Nitrobenzene-d5	68%	(23-120)
2-Fluorobiphenyl	68%	(30-115)
2,4,6-Tribromophenol	80%	(19-122)
Terphenyl-d14	84%	(18-137)

TCL = Target Compound List from USEPA CLP SOW, 3/90 (OLM01.7)  
 PQL = Practical Quantitation Limit  
 ND = Not Detected  
 BQL = Below Quantitation Limit (estimated value)  
 ALR = Above Linear Range (estimated value)

Note: All results are reported on a dry weight basis.

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846, November 1986, 3rd Edition.

Analyst: A. Maisel 11/17/92 Analyst: GNM  
 Technical Review: D. Quinn 11/18/92 Invoice No.: 4410\_93-0209

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS

Project: DAHL-V3236.1	Date Extracted: 11/10/92
Client ID: TB-2 S-3 7-9'	Matrix: Soil
Date Received: 11/05/92	Sample Size: 30.9 grams
TCT ID: 301133	Extract Vol.: 500 uL
Filename: 2321P08	Dil. Factor: 1
Analysis Date: 11/16/92	% Moisture: 8.7 %

COMPOUND	ug/Kg (PPB)	PQL
Phenol	ND	350
bis(2-Chloroethyl) ether	ND	350
2-Chlorophenol	ND	350
1,3-Dichlorobenzene	ND	350
1,4-Dichlorobenzene	ND	350
1,2-Dichlorobenzene	ND	350
2-Methylphenol	ND	350
2,2'-oxybis(1-Chloropropane)	ND	350
4-Methylphenol	ND	350
N-Nitroso-di-n-propylamine	ND	350
Hexachloroethane	ND	350
Nitrobenzene	ND	350
Isophorone	ND	350
2-Nitrophenol	ND	350
2,4-Dimethylphenol	ND	350
bis(2-Chloroethoxy) methane	ND	350
2,4-Dichlorophenol	ND	350
1,2,4-Trichlorobenzene	ND	350
Naphthalene	ND	350
4-Chloroaniline	ND	350
Hexachlorobutadiene	ND	350
4-Chloro-3-methylphenol	ND	350
2-Methylnaphthalene	ND	350
Hexachlorocyclopentadiene	ND	350
2,4,6-Trichlorophenol	ND	350
2,4,5-Trichlorophenol	ND	890
2-Chloronaphthalene	ND	350
2-Nitroaniline	ND	890
Dimethylphthalate	ND	350
Acenaphthylene	ND	350
2,6-Dinitrotoluene	ND	350
3-Nitroaniline	ND	890
Acenaphthene	ND	350
2,4-Dinitrophenol	ND	890
4-Nitrophenol	ND	890
Dibenzofuran	ND	350
2,4-Dinitrotoluene	ND	350
Diethylphthalate	ND	350
4-Chlorophenyl-phenylether	ND	350
Fluorene	ND	350
4-Nitroaniline	ND	890
4,6-Dinitro-2-methylphenol	ND	890
N-Nitrosodiphenylamine	ND	350
4-Bromophenyl-phenylether	ND	350
Hexachlorobenzene	ND	350
Pentachlorophenol	ND	890
Phenanthrene	ND	350

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS (Cont.)

Project: DAHL-V3236.1	Date Extracted: 11/10/92
Client ID: TB-2 S-3 7-9'	Matrix: Soil
Date Received: 11/05/92	Sample Size: 30.9 grams
TCT ID: 301133	Extract Vol.: 500 uL
Filename: 2321P08	Dil. Factor: 1
Analysis Date: 11/16/92	% Moisture: 8.7 %

COMPOUND	ug/Kg (PPB)	PQL
Anthracene	ND	350
Carbazole	ND	350
Di-n-butylphthalate	ND	350
Fluoranthene	ND	350
Pyrene	ND	350
Butylbenzylphthalate	ND	350
3,3'-Dichlorobenzidine	ND	350
Benz(a)anthracene	ND	350
Chrysene	ND	350
bis(2-Ethylhexyl)phthalate	ND	350
Di-n-octylphthalate	ND	350
Benzo(b)fluoranthene	ND	350
Benzo(k)fluoranthene	ND	350
Benzo(a)pyrene	ND	350
Indeno(1,2,3-cd)pyrene	ND	350
Dibenz(a,h)anthracene	ND	350
Benzo(g,h,i)perylene	ND	350

SURROGATE RECOVERY:

QC LIMITS

2-Fluorophenol	73%	(25-121)
Phenol-d5	75%	(24-113)
2-Chlorophenol-d4	77%	(20-130)
1,2-Dichlorobenzene-d4	79%	(20-130)
Nitrobenzene-d5	72%	(23-120)
2-Fluorobiphenyl	74%	(30-115)
2,4,6-Tribromophenol	88%	(19-122)
Terphenyl-d14	87%	(18-137)

TCL = Target Compound List from USEPA CLP SOW, 3/90 (OLM01.7)  
 PQL = Practical Quantitation Limit  
 ND = Not Detected  
 BQL = Below Quantitation Limit (estimated value)  
 ALR = Above Linear Range (estimated value)

Note: All results are reported on a dry weight basis.

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846, November 1986, 3rd Edition.

Analyst: G. Maisel 11/17/92 Analyst: GNM  
 Technical Review: D. Yumina 11/18/92 Invoice No.: 4410\_93-0209

TCT USE ONLY  
 PROJ. MGR. Nancy  
 PRIORITY Holding Time  
 INVOICE # 410 93-0209  
 JOB NAME Dahl-V3236.1  
 CUSTODY SEAL INTACT/NUMBER N/A  
 TEMPERATURE OF CONTAINER 7c  
 SAMPLE CONDITION OK

CLIENT NAME DAHLE & Assoc, INC.  
 CLIENT ADDRESS (STREET NUMBER, SUITE, ETC.) 4390 McMenemy Rd  
 CLIENT ADDRESS (CITY, STATE, ZIP) St. Paul, MN 55127  
 CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE PATRICK JENSEN 490-2905  
 SAMPLED BY PRINT NAME/SIGNATURE Tim Wawrzyniec

ANALYSES REQUEST	FILTERED (YES/NO)										PRESERVED (CODE)	REFRIGERATED (Y/N)	CODE A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCl F -
	N	N	N	N	N	N	N	N	N	N			
VOC	A	A	A	A	A	A	A	A	A	A			
NITRATE AS Nitrogen	A	A	A	A	A	A	A	A	A	A			
ACID METALS	A	A	A	A	A	A	A	A	A	A			
ACID PESTICIDES (EPA 8270)	A	A	A	A	A	A	A	A	A	A			
CRUEN PESTICIDES	A	A	A	A	A	A	A	A	A	A			
PCBs, PCBs & Chlormins	A	A	A	A	A	A	A	A	A	A			
pesticides (EPA 8270)	A	A	A	A	A	A	A	A	A	A			

POSSIBLE HAZARD: YES  UNKNOWN  (COMMENT BELOW)  
 SAMPLE DISPOSAL: RETURN TO CLIENT  DISPOSAL BY LAB (ADDITIONAL CHARGES MAY BE ASSESSED)

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	DATE SAMPLED	TIME SAMPLED	NO. OF CONTAINERS	CONTAINER TYPE	TCT NO.
1	VEMN3236 TB-1 S-7 17'-19'	SOIL	11-2-92	115P	2	2oz. Glass	301130
2	VEMN3236 TB-1 S-7 17'-19'	SOIL	11-2-92	115P	2	4oz. Glass	
3	VEMN3236 TB-1 S-3 7'-9'	SOIL	11-2-92	1130A	1	4oz. Glass	301130
4	VEMN3236 TB-1 S-3 7'-9'	SOIL	11-2-92	1130A	1	4oz. Glass	301130
5	VEMN3236 TB-1 S-3 7'-9'	SOIL	11-2-92	1130A	1	4oz. Glass	301130
6	VEMN3236 TB-2 S-7 17'-19'	SOIL	11-3-92	1115A	2	2oz. Glass	301130
7	VEMN3236 TB-2 S-7 17'-19'	SOIL	11-3-92	1115A	2	4oz. Glass	301130
8	VEMN3236 TB-2 S-3 7'-9'	SOIL	11-3-92	1115A	1	4oz. Glass	
9	VEMN3236 TB-2 S-3 7'-9'	SOIL	11-3-92	1115A	1	4oz. Glass	301130
10	VEMN3236 TB-2 S-3 7'-9'	SOIL	11-3-92	1115A	1	4oz. Glass	

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
<u>John W. Jensen / DAHL</u>	11-2-92	550P	<u>Paul J. Jensen</u>	11/5/92	10:11A
<u>John W. Jensen / DAHL</u>	11-3-92	730P			

## APPENDIX D

### Ground-Water Assessment Documentation

DEPARTMENT OF REGULATORY SERVICES - INSPECTIONS DIVISION  
 POLLUTION CONTROL SECTION  
 300 Public Health Center - 250 South 4th Street  
 Minneapolis, Minnesota 55415  
 (612) 673-5897

**ENVIRONMENTAL REVIEW PERMIT**

AMOUNT: \$ NO CHARGE	EMPLOYEE NUMBER: 2408	DATE: 10-26-92	PERMIT NUMBER: ER225
-------------------------	--------------------------	-------------------	-------------------------

JOB ADDRESS				
PROPERTY OWNER: UNIVERSITY OF MINNESOTA	ADDRESS: 2510 5th Street SE	ZIP CODE:	STATE:	PHONE NUMBER: ( )
OCCUPANT: 5th Street SE between 25th AV. SE and 23 AV. SE				

APPROVALS	
<input type="checkbox"/> Fire Department	<input type="checkbox"/> Heating Department
<input type="checkbox"/> Licensing	<input checked="" type="checkbox"/> Pollution Control
<input type="checkbox"/> Other:	

ENVIRONMENTAL REVIEW			
<input type="checkbox"/> Tank Removal	<input type="checkbox"/> Recovery Well	<input type="checkbox"/> On Site Treatment	<input type="checkbox"/> Special Permit
<input type="checkbox"/> Tank Abandonment	<input type="checkbox"/> Well Abandonment	<input type="checkbox"/> Amplified Music Permit	<input type="checkbox"/> Work Permit
<input type="checkbox"/> Tank Installation	<input checked="" type="checkbox"/> Monitoring Well	<input type="checkbox"/> Burning Permit	<input type="checkbox"/> Cost Recovery
<input type="checkbox"/> Other: _____			

COMPANY ADDRESS			
COMPANY NAME: DAHL & ASSOCIATES, INC.	ADDRESS: 4390 McMenemy Road	ZIP CODE: 55127	STATE:
CONTACT'S NAME: Mark Johnson		PHONE NUMBER: St. Paul ( )	

DESCRIPTION
This permit, when stamped paid, allows the above named company to install two (2) monitoring wells
(UWN 517606, 517607) at the above mentioned property. MW #1 is proposed to be installed
in Lot 10 of block 11 of the Regents Addition. MW #2 is proposed to be installed on
Lot 9 of Block 10 of the Regents Addition.
The wells are to be installed above grade as part of a Phase II investigation of this site.

BILLING: NO BILLING
MASTER: FILE

UMR-1708

WELL LOCATION  
County Name  
**Hennepin**

MINNESOTA DEPARTMENT OF HEALTH  
**WELL RECORD**  
Minnesota Statutes Chapter 1031

MINNESOTA UNIQUE WELL NO.  
**517606**

Township Name  
**29**

Township No. **23**

Range No. **30**

Section No. **SW NE NW**

Fraction

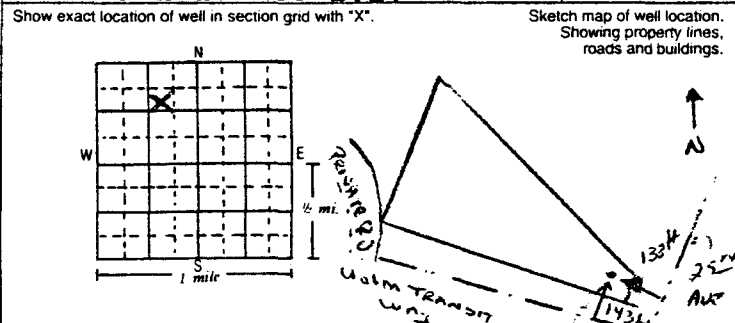
WELL DEPTH (completed) **22.5** ft.

Date Work Completed **11-2-92**

Numerical Street Address and City of Well Location  
**near 2510 South 5th Street and 25th Avenue N.E.**

or Fire Number

DRILLING METHOD  
 Cable Tool  
 Auger  
 Driven  
 Rotary  
 Dug  
 Jetted



DRILLING FLUID  
---

USE  
 Domestic  
 Irrigation  
 Test Well  
 Monitoring  
 Public  
 Dewatering  
 Heating/Cooking  
 Industry/Commercial  
 Remedial

CASING Drive Shoe?  Yes  No  
 Steel  Plastic  
 Threaded  Welded

HOLE DIAM.  
8.58 22.5

CASING DIAMETER WEIGHT  
**2** in. to **13' 4"** ft. **.75** lbs./ft. **8.58 22.5**

in. to \_\_\_\_\_ ft. \_\_\_\_\_ lbs./ft. \_\_\_\_\_ in. to \_\_\_\_\_ ft.

in. to \_\_\_\_\_ ft. \_\_\_\_\_ lbs./ft. \_\_\_\_\_ in. to \_\_\_\_\_ ft.

PROPERTY OWNER'S NAME  
**University of Minnesota**

SCREEN Yes OPEN HOLE from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
Make Johnson  
Type SS Cont Wire Wrap diam. 2"  
Slot/Gauze #10 Length 10'  
Set between 22 ft. and 12 ft. FITTINGS: Threaded

Mailing address if different than property address indicated above.  
**2510 South 5th Street  
Minneapolis, MN 55455**

STATIC WATER LEVEL  
18.5 ft.  below  above land surface Date measured 11-2-92

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Gravel, top soil			0	2'
Silt, sand	Blk		2'	7'
Graveled sand	Tan		7'	12'
Coarse sand	Tan		12'	17'
Gravel w/sand	Tan		17'	22.5'
EOB @ 22.5'				

PUMPING LEVEL (below land surface)  
\_\_\_\_\_ ft. after NA hrs. pumping \_\_\_\_\_ g.p.m.

WELL HEAD COMPLETION  
 Pitless adapter manufacturer \_\_\_\_\_ Model \_\_\_\_\_  
 Casing Protection Protective posts and Casing 12 in. above grade

GROUTING INFORMATION  
Well grouted?  Yes  No  
Grout Material  Neat cement  Bentonite  
1 from 0 to 9.5 ft. \_\_\_\_\_ yds. \_\_\_\_\_ bags  
from 9.5 to 10 ft. \_\_\_\_\_ yds. \_\_\_\_\_ bags  
from \_\_\_\_\_ to \_\_\_\_\_ ft. \_\_\_\_\_ yds. \_\_\_\_\_ bags

NEAREST KNOWN SOURCE OF CONTAMINATION  
\_\_\_\_\_ feet \_\_\_\_\_ direction \_\_\_\_\_ type  
Well disinfected upon completion?  Yes  No

PUMP  
 Not installed Date installed \_\_\_\_\_  
Manufacturer's name \_\_\_\_\_  
Model number \_\_\_\_\_ HP \_\_\_\_\_ Volts \_\_\_\_\_  
Length of drop pipe \_\_\_\_\_ ft. Capacity \_\_\_\_\_ g.p.m.  
Pressure Tank Capacity \_\_\_\_\_  
Type:  Submersible  L.S. Turbine  Reciprocating  Jet  \_\_\_\_\_

ABANDONED WELLS  
Does property have any not in use and not sealed well(s)?  Yes  No

WELL CONTRACTOR CERTIFICATION  
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.  
**Dahl & Associates, Inc.**

**Dahl & Associates, Inc.** M0095  
Licensee Business Name Lic. or Reg. No.  
*[Signature]* P.E. 11-4-92  
Authorized Representative Signature Date  
**Dahl & Associates, Inc.** 11-4-92  
Name of Driller Date

Use a second sheet, if needed

**VEMN-3236** **MW-1**

IMPORTANT - FILE WITH PROPERTY PAPERS - WELL OWNER COPY

**517606**

**UMR-1709**  
HE-01205-04 (Rev. 5/92)

WELL LOCATION  
County Name  
**Hennepin**

MINNESOTA DEPARTMENT OF HEALTH  
**WELL RECORD**  
Minnesota Statutes Chapter 1031

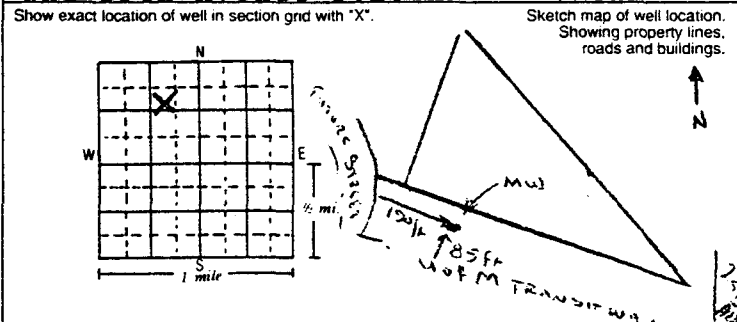
MINNESOTA UNIQUE WELL NO.  
**517607**

Township Name Township No. Range No. Section No. Fraction  
**29 23 30 SW NE NW**

WELL DEPTH (completed) ft. Date Work Completed  
**20.5 11-3-92**

Numerical Street Address and City of Well Location  
**near 2510 South 5th Street and 25th Avenue S.E.**

DRILLING METHOD  
 Cable Tool  Driven  Dug  
 Auger  Rotary  Jetted



DRILLING FLUID  
---

PROPERTY OWNER'S NAME  
**University of Minnesota**

USE  
 Domestic  Monitoring  Heating/Cooling  
 Irrigation  Public  Industry/Commercial  
 Test Well  Dewatering  Remedial

Mailing address if different than property address indicated above.  
**2510 South 5th Street  
Minneapolis, MN 55455**

CASING Drive Shoe?  Yes  No  
 Steel  Threaded  Welded  
 Plastic

CASING DIAMETER WEIGHT  
**2 in. to 12.5 ft. .75 lbs./ft. 8.5 in. to 20.5 ft.**

GEOLOGICAL MATERIALS	COLOR	HARDNESS OF MATERIAL	FROM	TO
Gravel, fill			0	2'
Fill w/sand			2'	4'
Grained sand, silt Brn/Blk			4'	7'
Sand	Greenish/grey		7'	12'
Coarse sand	Greenish/Tan		12'	19'
Coarse sand w/gravel	Brown		19'	20.5'
EOB @ 20.5				

SCREEN **Yes** OPEN HOLE  
Make **Johnson** from \_\_\_\_\_ ft. to \_\_\_\_\_ ft.  
Type **SS Cont. Wire Wrap** Diam. **2"**  
Slot/Gauze **#10** Length **10'**  
Set between **20.5** ft. and **10.5** ft. FITTINGS: **Threaded**

STATIC WATER LEVEL  
**18.5'** ft.  below  above land surface Date measured **11-3-92**

PUMPING LEVEL (below land surface)  
\_\_\_\_\_ ft. after **NA** hrs. pumping \_\_\_\_\_ g.p.m.

WELL HEAD COMPLETION  
 Pitless adapter manufacturer \_\_\_\_\_ Model \_\_\_\_\_  
 Casing Protection **Protective post and Casing** 12 in. above grade

GROUTING INFORMATION  
Well grouted?  Yes  No  
Grout Material  Neat cement  Bentonite  
**1** from **0** to **7.5** ft. \_\_\_\_\_ yds. \_\_\_\_\_ bags  
**2** from **7.5** to **8** ft. \_\_\_\_\_ yds. \_\_\_\_\_ bags

NEAREST KNOWN SOURCE OF CONTAMINATION  
\_\_\_\_\_ feet \_\_\_\_\_ direction \_\_\_\_\_ type  
Well disinfected upon completion?  Yes  No

PUMP  
 Not installed Date installed \_\_\_\_\_  
Manufacturer's name \_\_\_\_\_  
Model number \_\_\_\_\_ HP \_\_\_\_\_ Volts \_\_\_\_\_  
Length of drop pipe \_\_\_\_\_ ft. Capacity \_\_\_\_\_ g.p.m.  
Pressure Tank Capacity \_\_\_\_\_  
Type:  Submersible  L.S. Turbine  Reciprocating  Jet  \_\_\_\_\_

ABANDONED WELLS  
Does property have any not in use and not sealed well(s)?  Yes  No

WELL CONTRACTOR CERTIFICATION  
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.  
**Dahl & Associates, Inc.**  
**VEMN-3236 MW-2**

**Dahl & Associates, Inc. M0095**  
Licensee Business Name Lic. or Reg. No.  
**11-4-92**  
Authorized Representative Signature Date  
**Dahl & Associates, Inc. 11-4-92**  
Name of Driller Date

IMPORTANT - FILE WITH PROPERTY PAPERS - WELL OWNER COPY  
**517607**

**UMR-1710**  
HE-01205-04 (Rev. 5/92)

**Reference Information:**

DAHL Well Number MW-1  
 Unique Well Number 517606  
 Date Installed 11/2/92  
 Driller/Co. GI/Dahl  
 Rig B-57  
 Method 4 1/2" I.D. HSA  
 Ground Surface Elev. \_\_\_\_\_

**Summary of Construction:**

Joint Locations (below grade)  
1 @ top of screen

**Casing:**

Length 13'4"  
 Diameter 2 inches  
 Joints NPT  
 Type Steel

**Screen:**

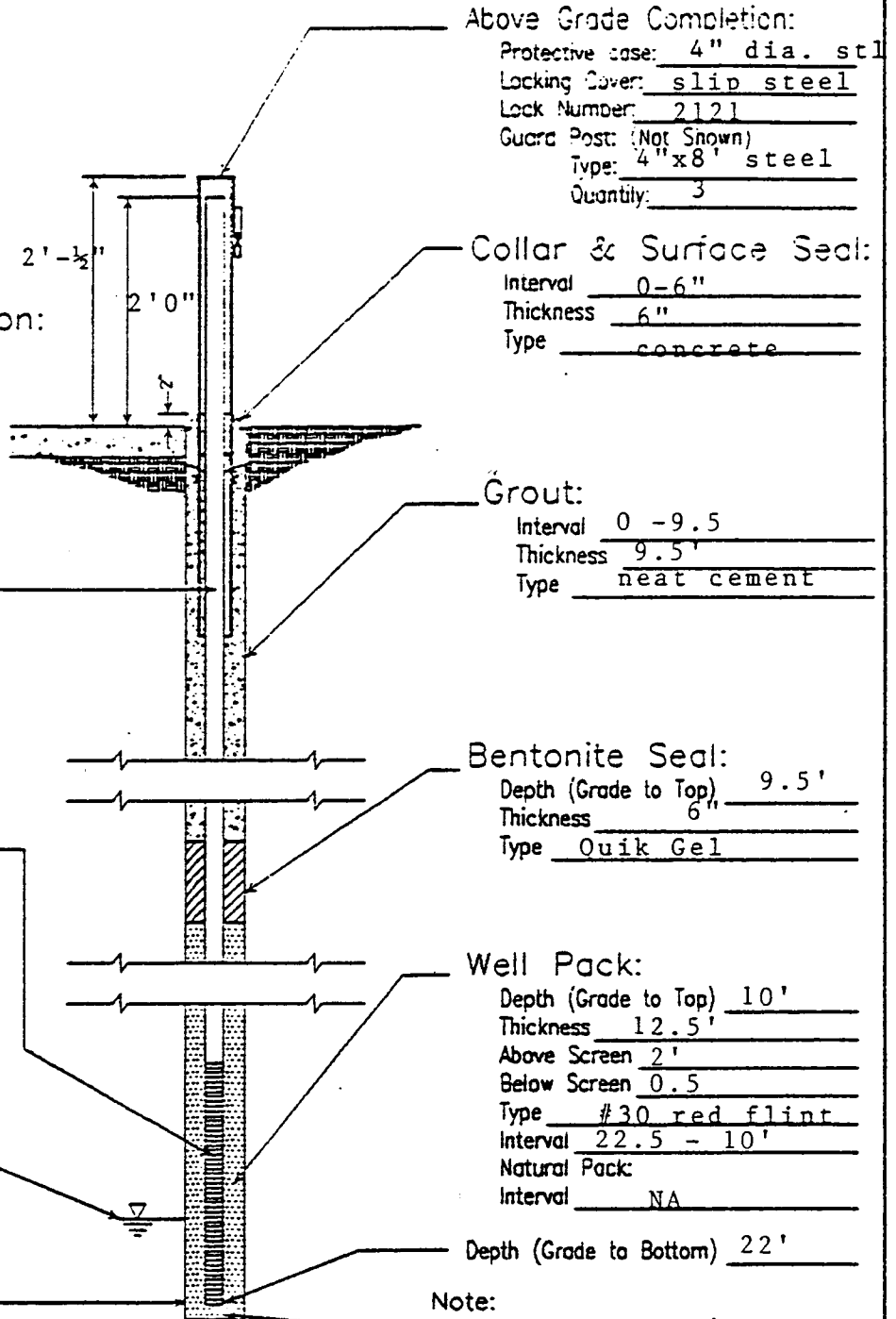
Length 10 feet  
 Screen Interval 22 - 12'  
 Diameter 2 inches  
 Slot Size #10  
 Joints NPT  
 Type Stainless steel  
 Make \_\_\_\_\_

**Water Table:**

Depth From Grade 18.5  
 (While Drilling)

**Boring:**

Depth (Grade to Bottom) 22.5  
 Diameter of Hole 8.5"



**Above Grade Completion:**

Protective case: 4" dia. stl  
 Locking Cover: slip steel  
 Lock Number: 2121  
 Guard Post: (Not Shown)  
 Type: 4"x8" steel  
 Quantity: 3

**Collar & Surface Seal:**

Interval 0-6"  
 Thickness 6"  
 Type concrete

**Grout:**

Interval 0 - 9.5  
 Thickness 9.5"  
 Type neat cement

**Bentonite Seal:**

Depth (Grade to Top) 9.5'  
 Thickness 6"  
 Type Quik Gel

**Well Pack:**

Depth (Grade to Top) 10'  
 Thickness 12.5"  
 Above Screen 2'  
 Below Screen 0.5  
 Type #30 red flint  
 Interval 22.5 - 10'  
 Natural Pack:  
 Interval NA

Depth (Grade to Bottom) 22'

**Note:**

Overall Length of  
 Screen & Casing 23'5"

Note:  
 All Depths & Heights Measured From Grade.

4390 McMenemy Road  
 Saint Paul, MN. 55127  
 Phone (612)490-2905  
 FAX (612)490-3777

**DAHL**

& ASSOCIATES, INC.  
 Environmental Consultants, Contractors & Engineers

**MONITORING WELL  
 AS BUILT**

DAHL STD NO: MWELL-MW-ASB

DATE DRAWN	03/16/92	DRAWN BY	Jim N.	APPR. BY	
PROJECT NUMBER	VFMN3236	DRAWING NUMBER	A-		-A

PLOT DATE	04/14/92	AUTOCAD FILE NAME	A- -A	PLOT SCALE	1' = 2'
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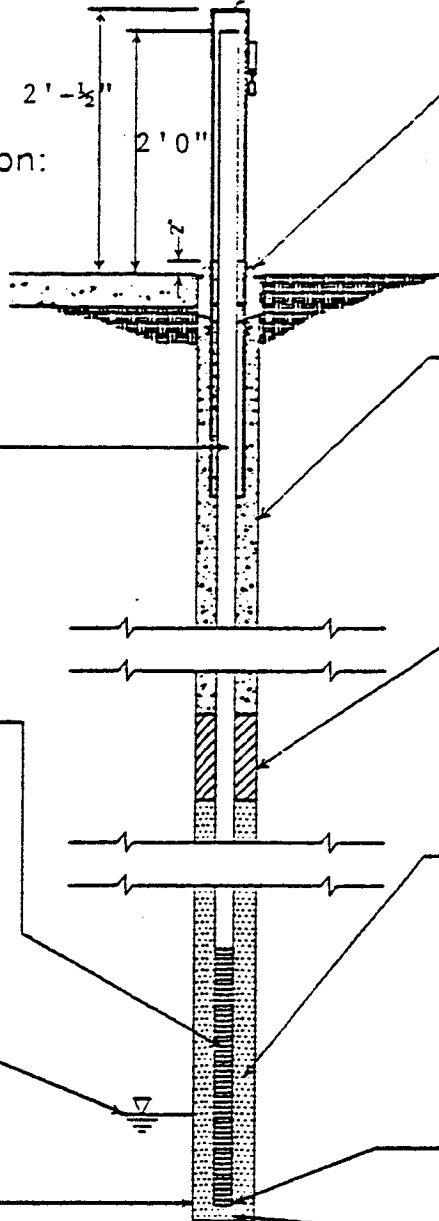
Reference Information:

DAHL Well Number MW-2  
 Unique Well Number 517607  
 Date Installed 11/3/92  
 Driller/Co. GL/Dahl  
 Rig B-57  
 Method 4 1/2" I.D. HSA  
 Ground Surface Elev. \_\_\_\_\_

Above Grade Completion:  
 Protective case: 4" dia. stl  
 Locking Cover: slip steel  
 Lock Number: 2121  
 Guard Post: (Not Shown)  
 Type: 4"x8" steel  
 Quantity: 3

Summary of Construction:

Joint Locations (below grade)  
1 @ top of screen



Collar & Surface Seal:  
 Interval 0-6"  
 Thickness 6"  
 Type concrete

Grout:  
 Interval 0 - 7.5'  
 Thickness 7.5"  
 Type neat cement

Casing:  
 Length 12.5  
 Diameter 2 inches  
 Joints NPT  
 Type Steel

Bentonite Seal:  
 Depth (Grade to Top) 7.5'  
 Thickness 6"  
 Type Quik Gel

Screen:  
 Length 10 feet  
 Screen Interval 20.5 - 10.5  
 Diameter 2 inches  
 Slot Size #10  
 Joints NPT  
 Type Stainless steel  
 Make \_\_\_\_\_

Well Pack:  
 Depth (Grade to Top) 8'  
 Thickness 12.5  
 Above Screen 2.5'  
 Below Screen 0  
 Type #30 red flint  
 Interval 8 - 20.5'  
 Natural Pack:  
 Interval NA

Water Table:  
 Depth From Grade 18.5'  
 (While Drilling)

Depth (Grade to Bottom) 20.5

Boring:  
 Depth (Grade to Bottom) 20.5  
 Diameter of Hole 8.5"

Note:  
 Overall Length of  
 Screen & Casing 22.5'

Note:  
 All Depths & Heights Measured From Grade.

4390 McMenemy Road  
 Saint Paul, MN. 55127  
 Phone (612)490-2905  
 FAX (612)490-3777

**MONITORING WELL  
 AS BUILT**

**DAHL**

& ASSOCIATES, INC.  
 Environmental Consultants, Contractors & Engineers

DAHL STD NO: MWELL-MW-ASB

DATE DRAWN	<u>03/16/92</u>	DRAWN BY	<u>Jim N.</u>	APPR. BY	
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PLOT DATE	<u>04/14/92</u>	AUTOCAD FILE NAME	<u>A- -A</u>	PLOT SCALE	<u>1" = 2'</u>
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PROJECT NUMBER	<u>VEMN3236</u>	DRAWING NUMBER	<u>A- -A</u>
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**twin city testing**  
corporation

**REPORT OF: CHEMICAL ANALYSES**

662 CROMWELL AVENUE  
ST. PAUL, MN 55114  
PHONE 612/645-3601

**PROJECT: VEMN 3236, WATER DATA**

**DATE: November 20, 1992**

**REPORTED TO:** Dahl & Associates  
Attn: Dan Wiberg  
4390 McMenemy Drive  
St. Paul, MN 55127

**LABORATORY NO: 4410 93-0209**

**INTRODUCTION**

This report presents the results of the analyses of two samples received on November 6, 1992, from a representative of Dahl & Associates. The scope of our services was limited to the parameters listed in the attached tables.

**METHODOLOGY**

Analyses are performed according to Twin City Testing Standard Operating Procedures. The procedures are based on the references stated in the analytical results tables.

**DISCUSSION**

Surrogate recoveries were outside of the recommended quality control limits for several of the organic analyses. During preparation of the water samples for instrumental analyses, severe emulsions were documented. Additionally, the samples were muddy in appearance. However, the associated method blanks for both semi-volatile and chlorinated pesticides/PCBs were within the suggested limits. This suggests that the low surrogate recoveries and corresponding extraction efficiencies may be matrix related.

During preparation of the samples for organophosphorus pesticides analysis, surrogate standard was inadvertently omitted. No surrogate data is available for these analyses.

**RESULTS**

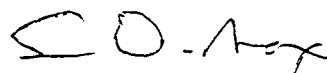
The results are listed in the attached tables.

**REMARKS**

The samples were collected on November 6, 1992. If samples are not consumed in the analysis, they are held for three months from the date of sample receipt and then disposed, unless written instructions to the contrary are received.

**TWIN CITY TESTING CORPORATION**

  
Nancy J. Whaley  
Project Manager

  
Susan D. Max  
Director, Environmental Chemistry

NJWSDMct

**UMR-1716**

**VOLATILE ORGANIC COMPOUNDS  
MNDH METHOD 465D**

(All values are in µg/L which is equivalent to parts-per-billion)

<b>Client ID:</b>	<b>Method</b>	<b>Method</b>	<b>MW-1</b>	<b>MW-2</b>
	<b>Blank</b>	<b>Blank</b>		
<b>TCT ID:</b>			301269	301270

<u>Compound:</u>					<u>PQL</u>
Acetone	ND	ND	ND	ND	10
Allyl Chloride	ND	ND	ND	ND	10
Benzene	ND	ND	ND	ND	1
Bromobenzene	ND	ND	ND	ND	1
Bromochloromethane	ND	ND	ND	ND	1
Bromodichloromethane	ND	ND	ND	ND	1
Bromoform	ND	ND	ND	ND	5
Bromomethane	ND	ND	ND	ND	2
n-Butylbenzene	ND	ND	ND	ND	1
sec-Butylbenzene	ND	ND	ND	ND	1
tert-Butylbenzene	ND	ND	ND	ND	1
Carbon tetrachloride	ND	ND	ND	ND	1
Chlorobenzene	ND	ND	ND	ND	1
Chloroethane	ND	ND	ND	ND	2
Chloroform	ND	ND	ND	ND	1
Chloromethane	ND	ND	ND	ND	5
2-Chlorotoluene	ND	ND	ND	ND	1
4-Chlorotoluene	ND	ND	ND	ND	1
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	ND	1
1,2-Dibromoethane	ND	ND	ND	ND	2
Dibromomethane	ND	ND	ND	ND	1
1,2-Dichlorobenzene	ND	ND	ND	ND	1
1,3-Dichlorobenzene	ND	ND	ND	ND	1
1,4-Dichlorobenzene	ND	ND	ND	ND	1
Dichlorodifluoromethane	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	1
1,2-Dichloroethane	ND	ND	ND	ND	1
1,1-Dichloroethene	ND	ND	ND	ND	1
cis-1,2-Dichloroethene	ND	ND	ND	ND	1
trans-1,2-Dichloroethene	ND	ND	ND	ND	1
Dichlorofluoromethane	ND	ND	ND	ND	2
1,2-Dichloropropane	ND	ND	ND	ND	1
1,3-Dichloropropane	ND	ND	ND	ND	1
2,2-Dichloropropane	ND	ND	ND	ND	1

(continued)

PQL = Practical Quantitation Limit  
ND = Not Detected

LABORATORY NO: 4410 93-0209  
UMR-1717

**VOLATILE ORGANIC COMPOUNDS (continued)**  
**MNDH METHOD 465D**

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

<b>Client ID:</b>	<b>Method</b>	<b>Method</b>	<b>MW-1</b>	<b>MW-2</b>
	<b>Blank</b>	<b>Blank</b>		
<b>TCT ID:</b>			301269	301270

<u>Compound:</u>					<u>PQL</u>
1,1-Dichloropropene	ND	ND	ND	ND	1
cis-1,3-Dichloropropene	ND	ND	ND	ND	1
trans-1,3-Dichloropropene	ND	ND	ND	ND	1
Ethyl Ether	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	1
Hexachlorobutadiene	ND	ND	ND	ND	1
Isopropylbenzene	ND	ND	ND	ND	1
p-Isopropyltoluene	ND	ND	ND	ND	1
Methyl Ethyl Ketone	ND	ND	ND	ND	5
Methyl Isobutyl Ketone	ND	ND	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	ND	ND	1
Methylene chloride	ND	ND	ND	ND	1
Naphthalene	ND	ND	ND	ND	1
n-Propylbenzene	ND	ND	ND	ND	1
1,1,1,2-Tetrachloroethane	ND	ND	ND	ND	1
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	1
Tetrachloroethene	ND	ND	ND	ND	1
Tetrahydrofuran	ND	ND	ND	ND	10
Toluene	ND	ND	ND	ND	1
1,2,3-Trichlorobenzene	ND	ND	ND	ND	1
1,2,4-Trichlorobenzene	ND	ND	ND	ND	1
1,1,1-Trichloroethane	ND	ND	ND	ND	2
1,1,2-Trichloroethane	ND	ND	ND	ND	1
Trichloroethene	ND	ND	ND	ND	1
Trichlorofluoromethane	ND	ND	ND	ND	2
1,2,3-Trichloropropane	ND	ND	ND	ND	1
Trichlorotrifluoroethane	ND	ND	ND	ND	1
1,2,4-Trimethylbenzene	ND	ND	ND	ND	1
1,3,5-Trimethylbenzene	ND	ND	ND	ND	1
Vinyl chloride	ND	ND	ND	ND	2
o-Xylene, Styrene <sup>1</sup>	ND	ND	ND	ND	1
m-p-Xylenes <sup>1</sup>	ND	ND	ND	ND	1

<b>Date Analyzed:</b>	11/12-13/92	11/13-14/92	11/12/92	11/13/92
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<sup>1</sup>Compounds not separated by this method.

PQL = Practical Quantitation Limit  
 ND = Not Detected

**Reference:** Minnesota Department of Health, Method 465D.

LABORATORY NO: 4410 93-0209

UMR-1718

## CHLORINATED PESTICIDES/PCB RESULTS EPA METHOD 8080

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

<b>Client ID:</b>	<b>Blank</b>	<b>MW-1</b>	<b>MW-2</b>
<b>TCT ID:</b>		301269	301270

<u>Compounds:</u>				<u>PQL</u>
Aldrin	ND	ND	ND	0.3
A-BHC	ND	ND	ND	3.0
B-BHC	ND	ND	ND	0.4
D-BHC	ND	ND	ND	4.0
A-Chlordane	ND	ND	ND	1.0
G-Chlordane	ND	ND	ND	1.0
4,4-DDD	ND	ND	ND	0.3
4,4-DDE	ND	ND	ND	0.3
4,4-DDT	ND	ND	ND	0.3
Dieldrin	ND	ND	ND	0.3
Endosulfan I	ND	ND	ND	1.0
Endosulfan II	ND	ND	ND	1.0
Endosulfan Sulfate	ND	ND	ND	1.0
Endrin	ND	ND	ND	1.0
Endrin Aldehyde	ND	ND	ND	0.2
Endrin Ketone	ND	ND	ND	1.0
Heptachlor	ND	ND	ND	0.05
Heptachlor Epoxide	ND	ND	ND	0.3
Lindane (G-BHC)	ND	ND	ND	0.1
Methoxychlor	ND	ND	ND	1.0
Toxaphene	ND	ND	ND	2.0
PCB 1016	ND	ND	ND	1.0
PCB 1221	ND	ND	ND	1.0
PCB 1232	ND	ND	ND	1.0
PCB 1242	ND	ND	ND	1.0
PCB 1248	ND	ND	ND	1.0
PCB 1254	ND	ND	ND	1.0
PCB 1260	ND	ND	ND	1.0
TCMX (% Recovery)	65%	30%*	45%*	
<b>Date Extracted:</b>	11-11-92	11-11-92	11-11-92	
<b>Date Analyzed:</b>	11-17-92	11-17-92	11-17-92	

\* Surrogate recovery is outside the recommended quality control limits. See discussion section.

PQL = Practical Quantitation Limit

ND = Not Detected

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

LABORATORY NO: 4410 93-0209

**DIESEL RANGE ORGANIC RESULTS  
MODIFIED DRO METHOD**

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

<u>Sample Identification</u>	<u>TCT ID</u>	<u>Diesel Range Organics</u>	<u>Triacontane Recovery (%)</u>	<u>Practical Quantitation Limit</u>
MW-1	301269	ND	77	210
MW-2	301270	ND	74	210
Blank		ND	85	200
Method Spike		66% Recovery	84	--
Method Spike Duplicate		70% Recovery	87	--
<b>Date Sampled:</b>		11-06-92		
<b>Date Extracted:</b>		11-08-92		
<b>Date Analyzed:</b>		11-14-92		

---

ND = Not Detected

**Reference:** Wisconsin Department of Natural Resources, PUBL-SW-141, April 1992.

LABORATORY NO: 4410 93-0209  
UMR-1720

# ORGANOPHOSPHORUS PESTICIDE RESULTS

## EPA METHOD 8141B

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID:	MW-1	MW-2	Method Blank	
TCT ID:	301269	301270		
<u>Pesticide:</u>				<u>PQL</u>
Alachlor	ND	ND	ND	2.9
Atrazine	ND	ND	ND	1.1
Butylate	ND	ND	ND	0.25
Chlorpyrifos	ND	ND	ND	0.24
Cyanazine	ND	ND	ND	0.18
EPTC	ND	ND	ND	4.8
Ethalfuralin	ND	ND	ND	1.2
Fonofos	ND	ND	ND	0.033
Linuron	ND	ND	ND	0.43
Metolachlor	ND	ND	ND	3.0
Metribuzin	ND	ND	ND	1.6
Pendimethalin	ND	ND	ND	0.82
Phorate	ND	ND	ND	0.73
Propachlor	ND	ND	ND	7.6
Prometon	ND	0.62	ND	0.39
Propazine	ND	ND	ND	1.2
Simazine	ND	ND	ND	1.5
Terbufos	ND	ND	ND	0.066
Triallate	ND	ND	ND	3.7
Trifluralin	ND	ND	ND	1.0
Date Extracted:	11/11/92	11/11/92	11/11/92	
Date Analyzed:	11/18/92	11/18/92	11/18/92	

PQL = Practical Quantitation Limit

ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

LABORATORY NO: 4410 93-0209

UMR-1721

## METAL RESULTS

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID:                    MW-1                    MW-2

TCT ID:                    301269                    301270

---

<u>Parameter</u>			<u>PQL</u>	<u>Test Date</u>	<u>Test Method</u>
Arsenic	650	120	100	11-16-92	200.7
Barium	2,300	830	10	11-16-92	200.7
Cadmium	29	ND	10	11-16-92	200.7
Chromium	440	130	10	11-16-92	200.7
Lead	230	67	50	11-16-92	200.7
Mercury	ND	ND	0.20	11-18-92	245.1
Selenium	ND	ND	100	11-16-92	200.7
Silver	ND	ND	10	11-16-92	200.7

---

ND = Not Detected

PQL = Practical Quantitation Limit

Reference:                    Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March 1983.

LABORATORY NO: 4410 93-0209  
UMR-1722

# ANALYTICAL RESULTS

(All values are in mg/L which is equivalent to parts-per-million)

Client ID:            MW-1                            MW-2

TCT ID:              301269                            301270

---

<u>Parameter</u>			<u>PQL</u>	<u>Test Date</u>	<u>Test Method</u>
Nitrate as N	12	3.7	0.025	11-07-92	300.0
Total Kjeldahl Nitrogen	5.1	3.5	0.20	11-16-92	351.2

---

PQL = Practical Quantitation Limit

Reference: Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March, 1983.

LABORATORY NO: 4410 93-0209

UMR-1723

# ACID HERBICIDES RESULTS

## EPA METHOD 8150

(All values are in  $\mu\text{g/L}$  which is equivalent to parts-per-billion)

Client ID:	MW-1	MW-2	Method Blank	
TCT ID:	301269	301270		
<u>Compound:</u>				<u>PQL</u>
Dicamba	ND	ND	ND	1.0
2,4-DB	ND	ND	ND	1.0
Dalapon	ND	ND	ND	1.0
MCPP	ND	ND	ND	25
MCPA	ND	ND	ND	25
Dichloroprop	ND	ND	ND	1.0
Dinoseb	ND	ND	ND	1.0
Silvex	ND	ND	ND	1.0
2,4-D	ND	ND	ND	1.0
2,4,5-T	ND	ND	ND	1.0
DCAA (% Recovery)	101%	136%	90%	
Date Extracted:	11-13-92	11-13-92	11-13-92	
Date Analyzed:	11-20-92	11-20-92	11-20-92	

PQL = Practical Quantitation Limit

ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

LABORATORY NO: 4410 93-0209  
UMR-1724

## EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS

Project: DAHL-V3236.2	Date Extracted: 11/11/92
Client ID:	Matrix: Water
Date Received:	Sample Size: 1000 mL
TCT ID: Lab. Method Blank	Extract Vol.: 1000 uL
Filename: 2320P05	Dil. Factor: 1
Analysis Date: 11/15/92	

COMPOUND	ug/L (PPB)	PQL
Phenol	ND	10
bis(2-Chloroethyl) ether	ND	10
2-Chlorophenol	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10
2-Methylphenol	ND	10
2,2'-oxybis(1-Chloropropane)	ND	10
4-Methylphenol	ND	10
N-Nitroso-di-n-propylamine	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Isophorone	ND	10
2-Nitrophenol	ND	10
2,4-Dimethylphenol	ND	10
bis(2-Chloroethoxy) methane	ND	10
2,4-Dichlorophenol	ND	10
1,2,4-Trichlorobenzene	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	10
4-Chloro-3-methylphenol	ND	10
2-Methylnaphthalene	ND	10
Hexachlorocyclopentadiene	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	25
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	25
Dimethylphthalate	ND	10
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	10
3-Nitroaniline	ND	25
Acenaphthene	ND	10
2,4-Dinitrophenol	ND	25
4-Nitrophenol	ND	25
Dibenzofuran	ND	10
2,4-Dinitrotoluene	ND	10
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	ND	10
4-Nitroaniline	ND	25
4,6-Dinitro-2-methylphenol	ND	25
N-Nitrosodiphenylamine	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	10
Pentachlorophenol	ND	25
Phenanthrene	ND	10

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS (Cont.)

Project: DAHL-V3236.2      Date Extracted: 11/11/92  
 Client ID:      Matrix: Water  
 Date Received:      Sample Size: 1000 mL  
 TCT ID: Lab. Method Blank      Extract Vol.: 1000 uL  
 Filename: 2320P05      Dil. Factor: 1  
 Analysis Date: 11/15/92

COMPOUND	ug/L (PPB)	PQL
Anthracene	ND	10
Carbazole	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	10
Benz(a)anthracene	ND	10
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	ND	10
Di-n-octylphthalate	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenz(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

SURROGATE RECOVERY:

QC LIMITS

2-Fluorophenol	46%	(21-110)
Phenol-d5	30%	(10-110)
2-Chlorophenol-d4	74%	(33-110)
1,2-Dichlorobenzene-d4	72%	(16-110)
Nitrobenzene-d5	73%	(35-114)
2-Fluorobiphenyl	66%	(43-116)
2,4,6-Tribromophenol	80%	(10-123)
Terphenyl-d14	74%	(33-141)

TCL = Target Compound List from USEPA CLP SOW, 3/90 (OLM01.7)  
 PQL = Practical Quantitation Limit  
 ND = Not Detected  
 BQL = Below Quantitation Limit (estimated value)  
 ALR = Above Linear Range (estimated value)

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846, November 1986, 3rd Edition.

Analyst: *G. Mairal* 11/17/92      Analyst: GNM  
 Technical Review: *D. Zimmerman* 11/18/92      Invoice No.: 4410\_93-0209

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS

Project: DAHL-V3236.2	Date Extracted: 11/11/92
Client ID: MW-1	Matrix: Water
Date Received: 11/06/92	Sample Size: 1000 mL
TCT ID: 301269	Extract Vol.: 1000 uL
Filename: 2320P06	Dil. Factor: 1
Analysis Date: 11/15/92	

COMPOUND	ug/L (PPB)	PQL
Phenol	ND	10
bis(2-Chloroethyl) ether	ND	10
2-Chlorophenol	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10
2-Methylphenol	ND	10
2,2'-oxybis(1-Chloropropane)	ND	10
4-Methylphenol	ND	10
N-Nitroso-di-n-propylamine	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Isophorone	ND	10
2-Nitrophenol	ND	10
2,4-Dimethylphenol	ND	10
bis(2-Chloroethoxy) methane	ND	10
2,4-Dichlorophenol	ND	10
1,2,4-Trichlorobenzene	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	10
4-Chloro-3-methylphenol	ND	10
2-Methylnaphthalene	ND	10
Hexachlorocyclopentadiene	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	25
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	25
Dimethylphthalate	ND	10
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	10
3-Nitroaniline	ND	25
Acenaphthene	ND	10
2,4-Dinitrophenol	ND	25
4-Nitrophenol	ND	25
Dibenzofuran	ND	10
2,4-Dinitrotoluene	ND	10
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	ND	10
4-Nitroaniline	ND	25
4,6-Dinitro-2-methylphenol	ND	25
N-Nitrosodiphenylamine	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	10
Pentachlorophenol	ND	25
Phenanthrene	ND	10

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS (Cont.)

Project: DAHL-V3236.2                      Date Extracted: 11/11/92  
 Client ID: MW-1                              Matrix: Water  
 Date Received: 11/06/92                      Sample Size: 1000 mL  
 TCT ID: 301269                              Extract Vol.: 1000 uL  
 Filename: 2320P06                              Dil. Factor: 1  
 Analysis Date: 11/15/92

COMPOUND	ug/L (PPB)	PQL
Anthracene	ND	10
Carbazole	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	10
Benz(a)anthracene	ND	10
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	5.2 BQL	10
Di-n-octylphthalate	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenz(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

SURROGATE RECOVERY:		QC LIMITS
2-Fluorophenol	13%	(21-110)
Phenol-d5	10%	(10-110)
2-Chlorophenol-d4	18%	(33-110)
1,2-Dichlorobenzene-d4	17%	(16-110)
Nitrobenzene-d5	17%	(35-114)
2-Fluorobiphenyl	16%	(43-116)
2,4,6-Tribromophenol	14%	(10-123)
Terphenyl-d14	12%	(33-141)

TCL = Target Compound List from USEPA CLP SOW, 3/90 (OLM01.7)  
 PQL = Practical Quantitation Limit  
 ND = Not Detected  
 BQL = Below Quantitation Limit (estimated value)  
 ALR = Above Linear Range (estimated value)

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846, November 1986, 3rd Edition.

Analyst: G. Maisel 11/17/92                      Analyst: GNM  
 Technical Review: D. Zimura 11/18/92                      Invoice No.: 4410\_93-0209

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS

Project: DAHL-V3236.2	Date Extracted: 11/11/92
Client ID: MW-2	Matrix: Water
Date Received: 11/06/92	Sample Size: 1000 mL
TCT ID: 301270	Extract Vol.: 1000 uL
Filename: 2320P07	Dil. Factor: 1
Analysis Date: 11/15/92	

COMPOUND	ug/L (PPB)	PQL
Phenol	ND	10
bis(2-Chloroethyl) ether	ND	10
2-Chlorophenol	ND	10
1,3-Dichlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10
2-Methylphenol	ND	10
2,2'-oxybis(1-Chloropropane)	ND	10
4-Methylphenol	ND	10
N-Nitroso-di-n-propylamine	ND	10
Hexachloroethane	ND	10
Nitrobenzene	ND	10
Isophorone	ND	10
2-Nitrophenol	ND	10
2,4-Dimethylphenol	ND	10
bis(2-Chloroethoxy) methane	ND	10
2,4-Dichlorophenol	ND	10
1,2,4-Trichlorobenzene	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	10
4-Chloro-3-methylphenol	ND	10
2-Methylnaphthalene	ND	10
Hexachlorocyclopentadiene	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	25
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	25
Dimethylphthalate	ND	10
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	10
3-Nitroaniline	ND	25
Acenaphthene	ND	10
2,4-Dinitrophenol	ND	25
4-Nitrophenol	ND	25
Dibenzofuran	ND	10
2,4-Dinitrotoluene	ND	10
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	ND	10
4-Nitroaniline	ND	25
4,6-Dinitro-2-methylphenol	ND	25
N-Nitrosodiphenylamine	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	10
Pentachlorophenol	ND	25
Phenanthrene	ND	10

EPA METHOD 8270/TCL SEMIVOLATILE ANALYTICAL RESULTS (Cont.)

Project: DAHL-V3236.2 Date Extracted: 11/11/92  
 Client ID: MW-2 Matrix: Water  
 Date Received: 11/06/92 Sample Size: 1000 mL  
 TCT ID: 301270 Extract Vol.: 1000 uL  
 Filename: 2320P07 Dil. Factor: 1  
 Analysis Date: 11/15/92

COMPOUND	ug/L (PPB)	PQL
Anthracene	ND	10
Carbazole	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	10
Benz(a)anthracene	ND	10
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	2.9 BQL	10
Di-n-octylphthalate	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenz(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

SURROGATE RECOVERY:

QC LIMITS

2-Fluorophenol	20%	(21-110)
Phenol-d5	15%	(10-110)
2-Chlorophenol-d4	21%	(33-110)
1,2-Dichlorobenzene-d4	12%	(16-110)
Nitrobenzene-d5	12%	(35-114)
2-Fluorobiphenyl	12%	(43-116)
2,4,6-Tribromophenol	16%	(10-123)
Terphenyl-d14	17%	(33-141)

TCL = Target Compound List from USEPA CLP SOW, 3/90 (OLM01.7)  
 PQL = Practical Quantitation Limit  
 ND = Not Detected  
 BQL = Below Quantitation Limit (estimated value)  
 ALR = Above Linear Range (estimated value)

Reference: "EPA Test Methods for Evaluating Solid Waste", SW-846, November 1986, 3rd Edition.

Analyst: *G. Maisel* 11/17/92 Analyst: GNM  
 Technical Review: *D. Zimm* 11/18/92 Invoice No.: 4410\_93-0209



737 PELHAM AVENUE  
DOCK 4  
ST. PAUL, MN 55114  
PHONE 612/659-7355

1-156

DAHL & ASSOCIATES  
CLIENT NAME  
4390 McMenamy Rd  
CLIENT ADDRESS (STREET NUMBER, SUITE, ETC.)  
ST. PAUL, MN 55127  
CLIENT ADDRESS (CITY, STATE, ZIP)

490-2905  
CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE PHONE

J. HOWARD / 9777 Howard  
SAMPLED BY PRINT NAME/SIGNATURE

POSSIBLE HAZARD: YES  UNKNOWN  (COMMENT BELOW)

SAMPLE DISPOSAL: RETURN TO CLIENT  DISPOSAL BY LAB   
(ADDITIONAL CHARGES MAY BE ASSESSED)

CHAIN-OF-CUSTODY RECORD

TCT CONTACT Nancy Whaley

PROJECT NAME VEMM-3236  
CLIENT P.O. # / PROJECT NO.

BILL TO (CO. NAME, ADDRESS) Dahl

REPORT TO Patricia Jensen

ANALYSES REQUEST	FILTERED (YES/NO)	PRESERVED (CODE)	REFRIGERATED (Y/N)	CODE A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCl F -
VOC H6SD				
BRCRB Metals				
Acids: EPA				
Non-Acids: EPA				
Lebanates EPA				
acid pesticides				
EPA 8150				
Kydaish N. trypans				
N. trypans				

PREPAY Y/N  
CHECK NO.  
CHECK AMOUNT

TCT NO. 39885

TCT USE ONLY  
PROJ. MGR. Nancy  
PRIORITY  
INVOICE # 440 93-0209  
JOB NAME DUN - V3236.02  
CUSTODY SEAL INTACT/NUMBER  
TEMPERATURE OF CONTAINER dropped off - 11c  
SAMPLING CONDITION OK

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	DATE SAMPLED	TIME SAMPLED	NO. OF CONTAINERS	CONTAINER TYPE	TCT NO.
111	mw-1	H <sub>2</sub> O	11-6-92	1:30 PM	11	pat. 4 L.L.Y	301269
112	mw-2	H <sub>2</sub> O	11-6-92	1:45 PM	11	2 1/2 L. pl.	301270
3							
4							
5							
6							
7							
8							
9							
10							

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
9777 Howard	11/6		J. Dahl	11/6	16:00:20

\* Also test for Organophosphorus Pesticides  
EPA 8141 (MNDCA List 1) & BNA's  
EPA 8270-6 health

UMR-1731

**APPENDIX E**

MPCA Guidance Document 1, Dated May, 1992

GUIDANCE FOR  
REPORTING SPILLS AND LEAKS TO THE  
MINNESOTA POLLUTION CONTROL AGENCY  
24-HOUR TELEPHONE 612/296-8100  
MAY 1992

Minn. Stat. § 115.061, which has been in effect since 1969, describes the duty of people to notify the Minnesota Pollution Control Agency (MPCA) of spills and leaks.

"115.061 DUTY TO NOTIFY AND AVOID WATER POLLUTION. It is the duty of every person to notify the agency immediately of the discharge, accidental or otherwise, of any substance or material under its control which, if not recovered, may cause pollution of waters of the state, and the responsible person shall recover as rapidly and thoroughly as possible such substance or material and take immediately such other action as may be reasonably possible to minimize or abate pollution of waters of the state caused thereby."

The law provides penalties of up to \$10,000 per day for violations. However, MPCA staff's primary interest is preventing pollution. The following is general guidance on reporting spills and leaks. Be aware that there may be other reporting requirements imposed by state or federal law, local ordinances, or permits. Understanding all reporting requirements is the responsibility of those people who handle substances which can pollute.

WHAT SPILLS OR LEAKS NEED TO BE REPORTED?

Minn. Stat. § 115.061 requires reporting of spills or leaks of any substances which may cause pollution of waters of the state.

1. Spills of toxic, flammable, corrosive, and otherwise dangerous industrial chemicals must be reported. Other substances not ordinarily thought to be damaging may cause pollution if spilled in the wrong place and not recovered. Examples from our spill log include tanker loads of milk, coal, animal parts, batteries, etc.
2. Waters of the state include surface and ground water. Spills on pavement may pollute by runoff to ditches, sewers, or to the ground.
3. There is no minimum quantity for reporting spills in Minnesota. Report all spills to the MPCA.

WHEN DOES A SPILL OR LEAK NEED TO BE REPORTED AND RECOVERED?

Minn. Stat. § 115.061 requires IMMEDIATE notification of the MPCA and IMMEDIATE implementation of steps to recover substances which may pollute waters of the state. There are, of course, logical emergency responses that should be taken before notification. For example, cutting off the source, containment of the spill, evacuation of a building, and calling the fire department would normally

take place before calling MPCA. If for some reason you are not aware of a spill, you must report it upon discovery. You must report a confirmed tank leak and you must also report when you suspect a leak from a tank because of the discovery of soil contamination, vapors, water in a tank, or failed tank tests.

HOW DOES A PERSON REPORT A SPILL OR LEAK?

The MPCA has a 24 hour, seven days a week telephone number 612/296-8100 with staff on call to receive reports.

WHO MUST REPORT A SPILL OR LEAK?

Minn. Stat. § 115.061 requires EVERY PERSON to notify the MPCA of spills or leaks of "any substance or material under its control."

1. The term person includes individuals, partnerships, companies, corporations, and governmental subdivisions, including officers of these entities.
2. At a minimum, the person in possession of a substance at the time of a spill or leak must report the spill or leak to the MPCA.
3. Owners of a substance being stored or transported by another company may often be construed as being "in control" of that substance, and therefore are required to also report spills or leaks. Other statutes (Superfund and the hazardous waste statutes, for example) clearly link ownership of spilled or disposed material to responsibility for cleanup.
4. MPCA staff believes that persons who own property where substances have been spilled, leaked, or disposed in the past are obligated by Minn. Stat. § 115.061 to report to the MPCA upon discovery of contamination on their property.
5. A contractor who comes into physical control of discharged substances has a duty to notify the MPCA. For example, a contractor who digs up contaminated soil has control of that substance and must report.
6. Sometimes a fire department, police agency, or other state or local agency responds to spills or leaks in their public safety capacity, or encounters evidence of a release during their regular duties. Often they choose to report spills to the MPCA. In some circumstances, such a report by them might be required. However, in no case does a report from someone else stand in lieu of your responsibility to report to the MPCA if a substance in your control spills or leaks.