

# DAHL

& ASSOCIATES, INC.

Environmental Compliance Management Systems

March 7, 1994

Mr. Dave Scheer  
Minnesota Pollution Control Agency  
520 Lafayette Road  
St. Paul, MN 55155

RECEIVED  
MAR 09 1994  
MPCA, HAZARDOUS  
WASTE DIVISION

Dear Mr Scheer:

**RE: CAD Insallation Notification Worksheet (Fact Sheet #10), Conoco Store #23034, 1126 South Robert, West St. Paul, Minnesota LEAK#00000858**

Enclosed is Fact Sheet #10, *CAD Installation Notification Worksheet*, for the above referenced site.

System installation began and was completed October of 1992. The ground-water system was started on January 28, 1994, and the soil ventilation system was started on February 3, 1994. Significant Emission Rates (SER's) were not exceeded for either system during the start-up period. Upon review of the final laboratory analysis, both systems are currently operating.

Please review the enclosed worksheet, MPCA Forms 1 and 2, Air Stripper Screening Evaluation and Off-Gas Screening Evaluation, respectively, and the remediation system layout and ground-water area of influence maps.

Upon review of this information, if I can provide you with any additional information, please feel free to contact me at our office.

Sincerely,



Mike Watson  
Project Manager

MPW/rl

enclosure

cc: Ms. Cindy Mueller, Conoco Inc.

CAD INSTALLATION NOTIFICATION WORKSHEET

Fact Sheet #10

Minnesota Pollution Control Agency

LUST Cleanup Program

April 1993

RECEIVED

MAR 09 1994

MPCA, HAZARDOUS  
WASTE DIVISION

This worksheet serves three purposes: 1) notify the MPCA of system startup; as required by U.S. Environmental Protection Agency requirements; 2) verify system construction, and 3) document initial system emissions and operating parameters. This worksheet must be submitted within thirty (30) days of system startup.

All common remedial technologies are listed on this worksheet. Please complete only those portions that apply to your site. If you are using a remedial technology that is not included on this worksheet, discuss reporting requirements with the Minnesota Pollution Control Agency (MPCA) staff assigned to your project. If an item is not applicable to your site, fill in the line with N/A. Where attachments are requested, please check off those items attached.

For several remedial technologies, you are asked to provide contaminant mass removal rates in terms of gallons/day. To aid you in calculating these values, we provide a standard equation and have calculated the gallons/kilogram (gal/kg) values for various petroleum products. Please use these values in your calculations:

Product	gal/kg
gasoline	0.37
kerosene, JP4	0.33
fuel oil #1, diesel	0.31
fuel oil #2	0.30
fuel oil #4	0.29

Date Form Completed: 3/4/94

General System Information

MPCA Leak Number:000858

Date corrective action system installed: October, 1992

Date system activated: Ground-water system-January 28, 1994 Soil vent system-February 3, 1994

System was/was not (circle one) constructed as per MPCA approved corrective action design (CAD) report dated July 23, 1990

If system design or construction varied from approved design, attach construction diagrams and an explanation of why an alternative design was selected.

One ground-water ventilation vent was added to the original design. Further explanation can be found in DAHL's Annual Project Status Report dated February 16, 1994.

Attach a site map showing the location of all system elements.

FREE PRODUCT RECOVERY SYSTEMS

Product thickness in all monitoring and recovery wells (to 0.1 feet):

Well No.	Before system startup	14 days after system startup
----------	-----------------------	------------------------------

Free product recovery rate: gal/day  
Total product recovered to date: gallons  
If using a depression pump or total fluids pump:  
Amount of drawdown: feet  
Pumping rate: gallons per minute (gpm)  
Measured radius of influence: feet  
Discharge treatment type:

GROUND WATER PUMP-OUT SYSTEMS

Effluent concentrations

Ground water discharge concentrations at system startup (in parts per billion)

Compound	Influent	Effluent
Benzene	1100	8
Ethylbenzene	440	ND
Toluene	4200	32
Xylenes	4600	47
GRO	16000	310
DRO		
MTBE	ND	ND
Lead		
Others:		
TSS		13
COD		22

Operating parameters

- X Attach a map of the calculated ground water capture zone.  
Attach capture zone calculations and/or ground water modeling results.

(Ground Water Pumpout, cont.)

Pumping rate: 8 gpm  
Water table drawdown: 10 feet  
Pump depth: 27.5 feet

Contaminant mass removal

Estimated contaminant mass removal rate: .013 gal/day

Treatment system emissions

X If your system discharge requires treatment that results in air emissions, please attach completed emission rate calculation tables for the initial, 7 day, and 14 day samples from "Air Emission Controls: II. Air Strippers" (fact sheet #27).

Do the 7 day or 14 day emission rates exceed the Significant Emission Rates (SERs)?

(Y/N): NO

If yes, was an emission treatment system installed? (Y/N):

If yes, describe:

If no, explain why:

### SOIL VENTING SYSTEMS

Emissions

Attach completed emission rate calculation tables for the initial, 7 day, and 14 day samples from "Air Emission Controls: I. Soil Venting Systems" (fact sheet #26).

Do the 7 day or 14 day emission rates exceed the SERs? (Y/N): NO

If yes, was an emission treatment system installed? (Y/N):

If yes, describe:

If no, explain:

Contaminant mass removal

Estimated contaminant mass removal rate: kg/day x gal/kg = 3.9 gal/day

Bioactivity measurements (in parts per million (ppm) or milligrams/liter (mg/l), circle one)

(Collect samples from sample port before blower, using tedlar bag or draeger tubes.)

CAD Installation Notification Worksheet

Page 4

April 1993

(Soil Venting Systems, cont.)

	At startup	14 days after startup
Co <sub>2</sub>	.9%	.2%
o <sub>2</sub>	19.1%	20.1%

Operating parameters

Airflow rate: 112 standard cubic feet/minute (scfm)

Vacuum: attach a table of vacuum data from vent points and monitoring points.

Radius of influence of vent points: 21.79 feet

Explain how radius of influence was determined:

**Radius of influence was calculated based on individual flow rates as calculated from orifice plate differential data collected in the field from individual soil vapor vents, probes, and other monitoring points, assuming an air porosity and a gas exchange rate.**

SOIL VENTING/AIR SPARGING SYSTEMS

(Complete the soil venting systems section above for all air sparge/soil vent combination systems.)

Operating parameters

Attach a table of air injection rates for each sparge point.

Total air injection rate: scfm

Total air removal rate: scfm

Is air removal rate more than five times the rate of air injection? (Y/N):\_ - If no, explain:

Radius of influence of sparge points: feet

Explain how radius of influence was determined:

Attach the following tables:

Table of vacuum measurements from venting and monitoring points.

Table of pressure measurements from sparge and monitoring points

Form 1 - Air Stripper Screening Evaluation

DRAFT 4/26/91

Site Name: South Robert	Responsible Party Contact	Form Completed By:
Address: 1126 S. Robert St.	Name: Cindy Mueller	Dahl & Associates, Inc.
W. St. Paul, MN	Affiliation: Conoco Inc.	Date Form Completed: 3/3/94
MPCA Leak #:0000858	Phone#: (713) 293-3568	Sampling Date: 2/4/94

CONTAMINANT (CAS #)	A	B	C	D	E	Is ER > SER? (yes/no)
	Groundwater Concentration (ug/liter)	Stripper Influent Flow Rate (liters/sec)	Removal Factor	Emission Rate (ug/sec)	Significant Emission Rate (ug/sec)	
	GC	IFR	RF	ER	SER	
Benzene (71-43-2)	120	0.34	1	40.8	4,600	NO
Chloroform (67-66-3)					1,600	
Dichlorodifluoromethane (75-71-8)					767,200	
1,1-Dichloroethane (75-34-3)					1,918,000	
1,2-Dichloroethane (107-06-2)					1,500	
1,1-Dichloroethylene (75-35-4)					800	
1,2-Dichloroethylene (540-59-0)					2,083,900	
Dichlorofluoromethane (75-43-4)					105,300	
Ethylbenzene (100-41-4)	14	0.34	1	4.76	497,700	NO
Methylene Chloride (75-09-2)					80,600	
1,1,2,2-Tetrachloroethane (79-34-5)					700	
Tetrachloroethylene (127-18-4)					65,200	
1,1,1-Trichloroethane (71-55-6)					3,835,800	
1,1,2-Trichloroethane (79-00-5)					2400	
Trichloroethylene (79-01-6)					22600	
Trichlorofluoromethane (75-69-4)					2,685,100	
1,1,2-Trichlorotrifluoroethane (76-13-1)					20,048,000	
Toluene (108-88-3)	270	0.34	1	91.8	429,800	NO
Vinyl Chloride (75-01-4)					9,200	
Xylene (mixed) (1330-20-7)	600	0.34	1	204	497,700	NO
Other 1						

1 Contact MPCA Division of Air Quality Staff (296-7757) regarding contaminants not on this list.

Form 1 - Air Stripper Screening Evaluation

DRAFT 4/26/91

Site Name: South Robert	Responsible Party Contact	Form Completed By:
Address: 1126 S. Robert St.	Name: Cindy Mueller	Dahl & Associates, Inc.
W. St. Paul, MN	Affiliation: Conoco Inc.	Date Form Completed: 3/3/94
MPCA Leak #:0000858	Phone#: (713) 293-3568	Sampling Date: 2/11/94

CONTAMINANT (CAS #)	A	B	C	D	E	Is ER > SER? (yes/no)
	Groundwater Concentration (ug/liter)	Stripper Influent Flow Rate (liters/sec)	Removal Factor	Emission Rate (ug/sec)	Significant Emission Rate (ug/sec)	
	GC	IFR	RF	ER	SER	
Benzene (71-43-2)	120	0.5	1	60	4,600	NO
Chloroform (67-66-3)					1,600	
Dichlorodifluoromethane (75-71-8)					767,200	
1,1-Dichloroethane (75-34-3)					1,918,000	
1,2-Dichloroethane (107-06-2)					1,500	
1,1-Dichloroethylene (75-35-4)					800	
1,2-Dichloroethylene (540-59-0)					2,083,900	
Dichlorofluoromethane (75-43-4)					105,300	
Ethylbenzene (100-41-4)	14	0.5	1	7	497,700	NO
Methylene Chloride (75-09-2)					80,600	
1,1,2,2-Tetrachloroethane (79-34-5)					700	
Tetrachloroethylene (127-18-4)					65,200	
1,1,1-Trichloroethane (71-55-6)					3,835,800	
1,1,2-Trichloroethane (79-00-5)					2400	
Trichloroethylene (79-01-6)					22600	
Trichlorofluoromethane (75-69-4)					2,685,100	
1,1,2-Trichlorotrifluoroethane (76-13-1)					20,048,000	
Toluene (108-88-3)	270	0.5	1	135	429,800	NO
Vinyl Chloride (75-01-4)					9,200	
Xylene (mixed) (1330-20-7)	600	0.5	1	300	497,700	NO
Other 1						

1 Contact MPCA Division of Air Quality Staff (296-7757) regarding contaminants not on this list.

## Form 2 - Offgas Screening Evaluation

DRAFT 4/26/91

Site Name: South Robert	Responsible Party Contact	Form Completed By:
Address: 1126 S. Robert St.	Name: Cindy Mueller	Dahl & Associates, Inc.
W. St. Paul, MN	Affiliation: Conoco Inc.	Date Form Completed: 2/23/94
MPCA Leak #:0000858	Phone#: (713) 293-3568	Sampling Date: 2/11/94

CONTAMINANT (CAS #)	A Test Method	B Emission Concentration (ug/m3)		C Gas flow rate through vent stack (m3/sec) (GF)	D Emission Rate (ug/sec) (ER)	E Significant Emission Rate (ug/sec) (SER)	Is ER > SER? (yes/no)
		(EC)	X				
Benzene (71-43-2)	EPA Method 18		8700	0.04	348	4,600	NO
Toluene (108-88-3)	EPA Method 18		36000	0.04	1440	429,800	NO
Xylene (mixed) (1330-20-7)	EPA Method 18		56000	0.04	2240	497,700	NO
Ethylbenzene (100-41-4)	EPA Method 18		17000	0.04	680	497,700	NO
Chloroform (67-66-3)	see footnote 1					1,600	
Dichlorodifluoromethane (75-71-8)	see footnote 1					767,200	
1,1-Dichloroethane (75-34-3)	see footnote 1					1,918,000	
1,2-Dichloroethane (107-06-2)	see footnote 1					1,500	
1,1-Dichloroethylene (75-35-4)	see footnote 1					800	
1,2-Dichloroethylene (540-59-0)	see footnote 1					2,083,900	
Dichlorofluoromethane (75-43-4)	see footnote 1					105,300	
Methylene Chloride (75-09-2)	see footnote 1					80,600	
1,1,2,2-Tetrachloroethane (79-34-5)	see footnote 1					700	
Tetrachloroethylene (127-18-4)	see footnote 1					65,200	
1,1,1-Trichloroethane (71-55-6)	see footnote 1					3,835,800	
1,1,2-Trichloroethane (79-00-5)	see footnote 1					2,400	
Trichloroethylene (79-01-6)	see footnote 1					22,600	
Trichlorofluoromethane (75-69-4)	see footnote 1					2,685,100	
1,1,2-Trichlorotrifluoroethane (76-13-1)	see footnote 1					20,048,000	
Vinyl chloride (75-01-4)	see footnote 1					9,200	
Other 1							

1 Contact MPCA Division of Air Quality Staff (296-7757) regarding contaminants not on this list, or for test methods other than for BETX.

## Form 2 - Offgas Screening Evaluation

DRAFT 4/26/91

Site Name: South Robert	Responsible Party Contact	Form Completed By:
Address: 1126 S. Robert St.	Name: Cindy Mueller	Dahl & Associates, Inc.
W. St. Paul, MN	Affiliation: Conoco Inc.	Date Form Completed: 2/23/94
MPCA Leak #:0000858	Phone#: (713) 293-3568	Sampling Date: 2/4/94

CONTAMINANT (CAS #)	A Test Method	B Emission Concentration (ug/m3)		C Gas flow rate through vent stack (m3/sec) (GF)	D Emission Rate (ug/sec) (ER)	E Significant Emission Rate (ug/sec) (SER)	Is ER > SER? (yes/no)
		(EC)	X				
Benzene (71-43-2)	EPA Method 18		21000	0.05	1050	4,600	NO
Toluene (108-88-3)	EPA Method 18		63000	0.05	3150	429,800	NO
Xylene (mixed) (1330-20-7)	EPA Method 18		73000	0.05	3650	497,700	NO
Ethylbenzene (100-41-4)	EPA Method 18		24000	0.05	1200	497,700	NO
Chloroform (67-66-3)	see footnote 1					1,600	
Dichlorodifluoromethane (75-71-8)	see footnote 1					767,200	
1,1-Dichloroethane (75-34-3)	see footnote 1					1,918,000	
1,2-Dichloroethane (107-06-2)	see footnote 1					1,500	
1,1-Dichloroethylene (75-35-4)	see footnote 1					800	
1,2-Dichloroethylene (540-59-0)	see footnote 1					2,083,900	
Dichlorofluoromethane (75-43-4)	see footnote 1					105,300	
Methylene Chloride (75-09-2)	see footnote 1					80,600	
1,1,2,2-Tetrachloroethane (79-34-5)	see footnote 1					700	
Tetrachloroethylene (127-18-4)	see footnote 1					65,200	
1,1,1-Trichloroethane (71-55-6)	see footnote 1					3,835,800	
1,1,2-Trichloroethane (79-00-5)	see footnote 1					2,400	
Trichloroethylene (79-01-6)	see footnote 1					22,600	
Trichlorofluoromethane (75-69-4)	see footnote 1					2,685,100	
1,1,2-Trichlorotrifluoroethane (76-13-1)	see footnote 1					20,048,000	
Vinyl chloride (75-01-4)	see footnote 1					9,200	
Other 1							

1 Contact MPCA Division of Air Quality Staff (296-7757) regarding contaminants not on this list, or for test methods other than for BETX.

## Form 2 - Offgas Screening Evaluation

DRAFT 4/26/91

Site Name: South Robert	Responsible Party Contact	Form Completed By:
Address: 1126 S. Robert St.	Name: Cindy Mueller	Dahl & Associates, Inc.
W. St. Paul, MN	Affiliation: Conoco Inc.	Date Form Completed: 3/4/94
MPCA Leak #:0000858	Phone#: (713) 293-3568	Sampling Date: 2/18/94

CONTAMINANT (CAS #)	A Test Method	B Emission Concentration (ug/m3)		C Gas flow rate through vent stack (m3/sec)	D Emission Rate (ug/sec)	E Significant Emission Rate (ug/sec)	Is ER > SER? (yes/no)
		(EC)	X				
Benzene (71-43-2)	EPA Method 18		7700	0.07	539	4,600	NO
Toluene (108-88-3)	EPA Method 18		46000	0.07	3220	429,800	NO
Xylene (mixed) (1330-20-7)	EPA Method 18		77000	0.07	5390	497,700	NO
Ethylbenzene (100-41-4)	EPA Method 18		23000	0.07	1610	497,700	NO
Chloroform (67-66-3)	see footnote 1					1,600	
Dichlorodifluoromethane (75-71-8)	see footnote 1					767,200	
1,1-Dichloroethane (75-34-3)	see footnote 1					1,918,000	
1,2-Dichloroethane (107-06-2)	see footnote 1					1,500	
1,1-Dichloroethylene (75-35-4)	see footnote 1					800	
1,2-Dichloroethylene (540-59-0)	see footnote 1					2,083,900	
Dichlorofluoromethane (75-43-4)	see footnote 1					105,300	
Methylene Chloride (75-09-2)	see footnote 1					80,600	
1,1,2,2-Tetrachloroethane (79-34-5)	see footnote 1					700	
Tetrachloroethylene (127-18-4)	see footnote 1					65,200	
1,1,1-Trichloroethane (71-55-6)	see footnote 1					3,835,800	
1,1,2-Trichloroethane (79-00-5)	see footnote 1					2,400	
Trichloroethylene (79-01-6)	see footnote 1					22,600	
Trichlorofluoromethane (75-69-4)	see footnote 1					2,685,100	
1,1,2-Trichlorotrifluoroethane (76-13-1)	see footnote 1					20,048,000	
Vinyl chloride (75-01-4)	see footnote 1					9,200	
Other 1							

1 Contact MPCA Division of Air Quality Staff (296-7757) regarding contaminants not on this list, or for test methods other than for BETX.

DAIRY QUEEN

NORTH

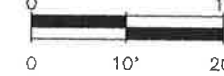


EXPLANATION

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.

- MW- MONITORING WELL
- ⊠ RW- RECOVERY WELL
- \* SVP- SOIL VAPOR VENT
- ⊕ SVP- SOIL VAPOR PROBE
- ⊙ GWV- GROUND-WATER VENT
- UTILITY POLE
- E — ELECTRIC
- T — TELEPHONE LINE
- ST — STORM SEWER
- SS — SANITARY SEWER
- W — WATER
- G — GAS

SCALE:



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

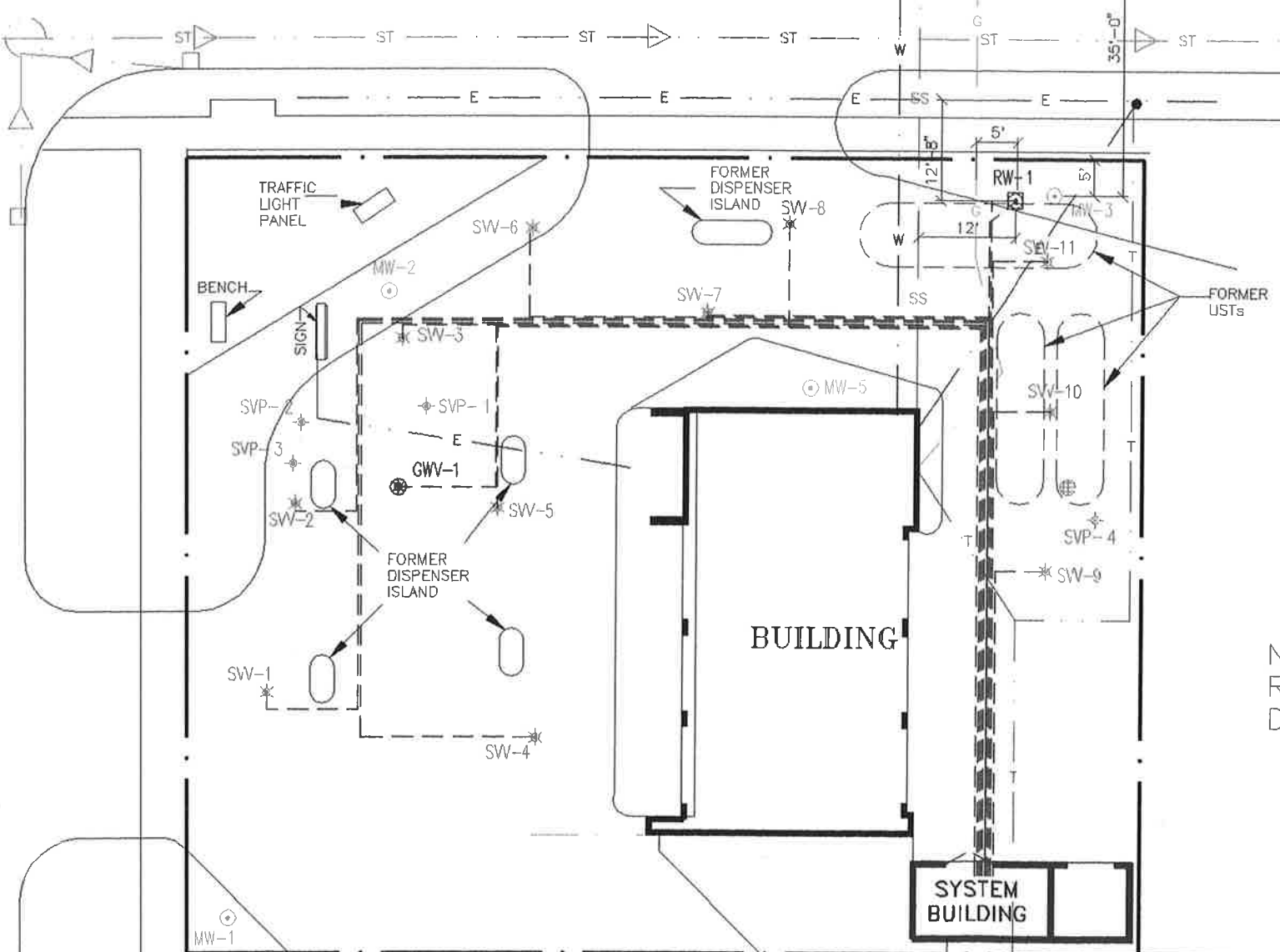
# DAHL

& ASSOCIATES, INC.  
Environmental Consultants, Contractors & Engineers

DAHL STD NO: VEMN0601-B-00-B

SOUTH ROBERT STREET

BUTLER AVENUE



## RECOVERY SYSTEM LAYOUT

S. ROBERT STREET  
WEST ST. PAUL, MINNESOTA

NANCY RADDATZ DANCE

STOFFEL'S CHIRO

PLOT DATE 03/07/94  
AutoCAD FILE NAME 0601-16D  
PLOT SCALE 1" = 20'

DATE DRAWN	02/15/93
DRAWN BY	Jim N.
APPROVED BY	
DRAWING NUMBER	B-16-D
PROJECT NUMBER	VEMN0601
FIGURE NUMBER	

SOUTH ROBERT STREET

DAIRY QUEEN

BUTLER AVENUE

BUILDING

NANCY RADDATZ DANCE

STOFFEL'S CHIRO

NORTH

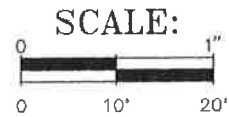


EXPLANATION

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.

⊙ MW- MONITORING WELL

GROUND-WATER GRADIENT DATA:  
\* BASED ON DATA COLLECTED ON 01/28/94



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

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

DAHL STD NO: VEMN0601-B-00-B

GROUND-WATER SYSTEM  
AREA OF INFLUENCE

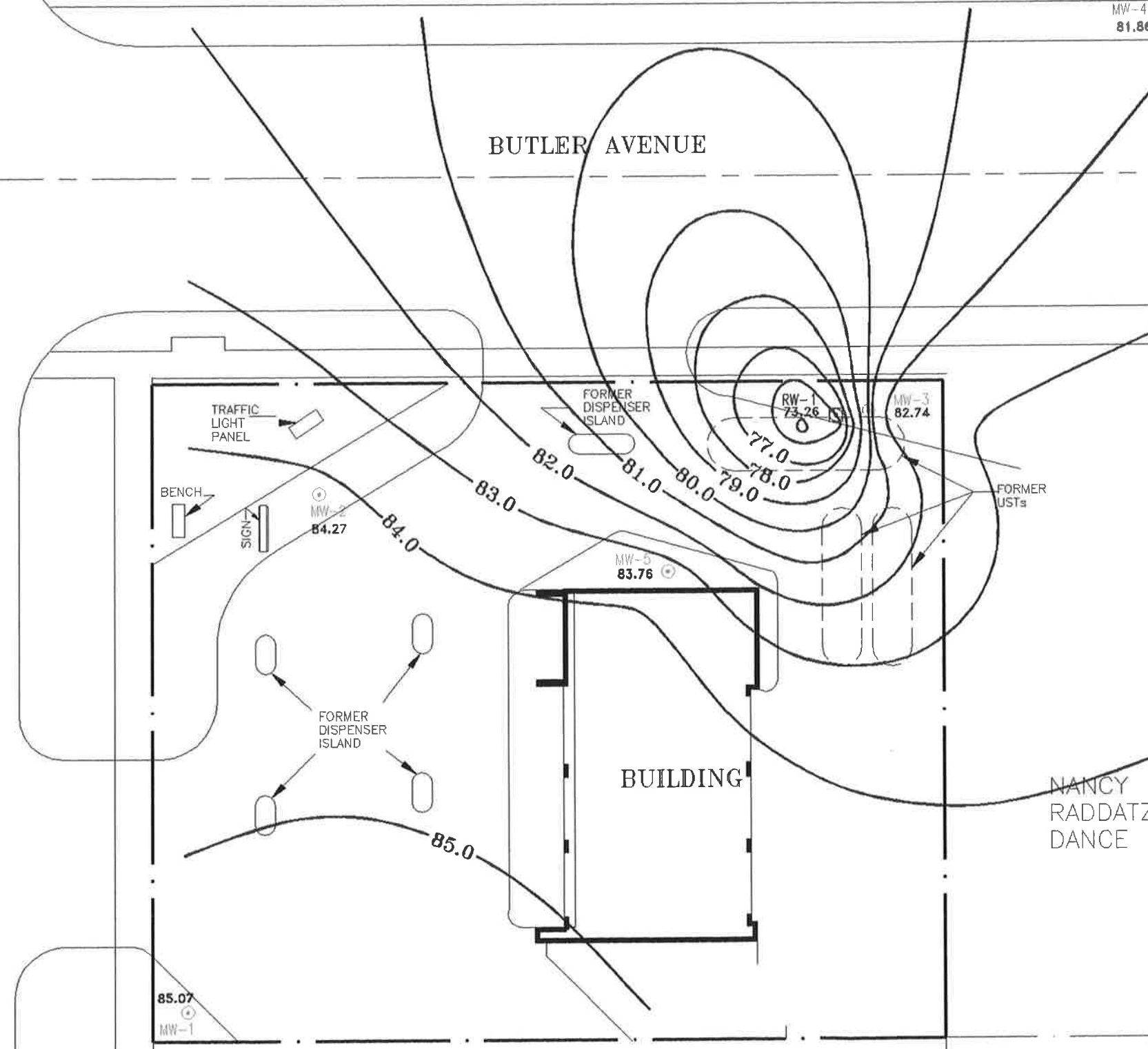
1126 ROBERT STREET SOUTH  
WEST ST. PAUL, MINNESOTA

PLOT SCALE 1" = 20'

AutoCAD FILE NAME 0601-15D

PLOT DATE 03/07/94

DATE DRAWN	10/26/93
DRAWN BY	Kelly P.
APPROVED BY	
DRAWING NUMBER	B-15-D
PROJECT NUMBER	VEMN0601
FIGURE NUMBER	



MW-1  
85.07

MW-2  
84.27

MW-5  
83.76

MW-3  
82.74

MW-4  
81.86

RW-1  
73.26

FORMER DISPENSER ISLAND

FORMER USTs

FORMER DISPENSER ISLAND

TRAFFIC LIGHT PANEL

BENCH

SIGN

85.0

84.0

83.0

82.0

81.0

80.0

79.0

78.0

77.0