

**DAHL**

**& ASSOCIATES, INC.**

Environmental Compliance Management Systems

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DEC 02 1994

MPCA, HAZARDOUS  
WASTE DIVISION

CPM

December 1, 1994

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

RE: Fact Sheets 7 & 11, Conoco Store #23034, 1126 South Robert, West St. Paul, Minnesota  
LEAK#00000858

Dear Mr. Scheer:

Enclosed are Site Monitoring and CAD System Monitoring Worksheets, for the above referenced site. The data included in these worksheets bring to date all data collected by DAHL at the site.

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

Sincerely,  
DAHL & ASSOCIATES, INC.

*Mike Watson*  
Mike Watson  
Project Manager

MPW/rl

enclosure

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cc: Mr. Jeff Smail, Conoco Inc.

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DEC 02 1994

MPCA, HAZARDOUS  
WASTE DIVISION

SITE MONITORING WORKSHEET  
Fact Sheet #7  
Minnesota Pollution Control Agency  
LUST Cleanup Program  
April 1993

The Minnesota Pollution Control Agency (MPCA) staff expect this worksheet to simplify the required post-investigation site monitoring reports. Submit this worksheet:

- \* quarterly, after the remedial investigation (RI) is complete but before corrective action is taken;
- \* quarterly, during corrective action design (CAD) installation; and
- \* quarterly, after CAD is operational, along with "CAD System Monitoring Worksheet," (fact sheet #11).

Completion and submittal according to the above schedule fulfills your quarterly site monitoring report requirements. You may include a short cover letter whenever circumstances require. However, you must still submit an annual progress report as described in "Petroleum Tank Release Reports" (fact sheet #3). [NOTE: MPCA staff may reduce the frequency of progress reporting on a site specific basis.]

Where attachments are requested (tables, maps, graphs, etc.), please check off those items attached. The only table not mandatory is that for dissolved oxygen.

MPCA Leak Number: 858

I. Ground Water Monitoring

Please attach the following:

- X Cumulative table of ground water monitoring results, including all sample blanks.
- X Copies of most recent laboratory reports for ground water analyses, including a copy of the Chain of Custody.
- X Cumulative table of ground water elevation and product thickness results.
- X Hydrograph for all monitoring and recovery wells.
- X Graph(s) showing contaminant concentrations over time for all monitoring and recovery wells.
- X Ground water contour map based on the most recent ground water elevation data.  
Table of dissolved oxygen sample results (if collected)

Please describe unusual circumstances that may have influenced the sampling results:

Please detail significant observations made at the site:

## II. Vapor Impact Monitoring

If vapor impacts were detected during the remedial investigation, please attach:

- a cumulative table of vapor monitoring results. The table should identify the location of all vapor monitoring points (i.e., sewer manholes, basements, etc.)
- a map of vapor monitoring locations.

Sampling instrument used:  
Sampling method:

NOTE: If vapor concentrations exceed 10 percent of the lower explosive limit, exit the building and contact the local fire department immediately. Then contact the MPCA spills unit at voice 612/297-8610, TDD 612/297-5353 or Greater Minnesota TDD 1-800-627-3529.

Vapor mitigation is required.

## III. Recommendations

Use this space to detail any recommendations for modifying the current monitoring schedule:

TABLE 1

GROUNDWATER ELEVATION DATA

Conoco Store #23034

1126 South Robert St., W. St. Paul, Minnesota (24930601)

WELL #	ELEVATION	DATE	D.T.P	D.T.W	P.T.	W.T.E.	
MW-1	100.47	10/23/89	0.00	17.99	0.00	82.48	
	100.47	12/15/89	0.00	18.89	0.00	81.58	
	100.47	01/08/90	0.00	19.15	0.00	81.32	
	100.47	02/05/90	0.00	19.61	0.00	80.86	
	100.47	03/13/90	0.00	20.12	0.00	80.35	
	100.47	03/29/90	0.00	19.81	0.00	80.66	
	100.47	04/24/90	0.00	19.94	0.00	80.53	
*Resurvey	100.45	05/03/90	0.00	20.07	0.00	80.38	
	100.45	05/15/90	0.00	19.66	0.00	80.79	
	100.45	06/06/90	0.00	19.40	0.00	81.05	
	100.45	06/12/90	0.00	18.75	0.00	81.70	
	100.45	06/15/90	0.00	18.66	0.00	81.79	
	100.45	06/29/90	0.00	17.82	0.00	82.63	
	100.45	07/06/90	0.00	17.52	0.00	82.93	
	100.45	07/13/90	0.00	17.30	0.00	83.15	
	100.45	07/20/90	0.00	17.04	0.00	83.41	
	100.45	08/22/90	0.00	15.90	0.00	84.55	
	100.45	09/10/90	0.00	15.90	0.00	84.55	
	100.45	10/10/90	0.00	15.90	0.00	84.55	
	100.45	11/06/90	0.00	16.64	0.00	83.81	
	100.45	01/14/91	0.00	17.77	0.00	82.68	
	100.45	02/05/91	0.00	18.29	0.00	82.16	
	100.45	03/13/91	0.00	18.76	0.00	81.69	
	100.45	04/04/91	0.00	18.51	0.00	81.94	
	100.45	05/10/91	0.00	17.81	0.00	82.64	
	100.45	06/16/91	0.00	16.32	0.00	84.13	
	100.45	07/03/91	0.00	15.56	0.00	84.89	
	100.45	08/06/91	0.00	15.22	0.00	85.23	
	100.45	09/09/91	0.00	15.15	0.00	85.30	
	100.45	09/10/91	0.00	15.30	0.00	85.15	
	100.45	10/08/91	0.00	14.68	0.00	85.77	
	100.45	11/19/91	0.00	15.32	0.00	85.13	
	100.45	12/26/91	0.00	14.93	0.00	85.52	
	100.45	01/13/92	0.00	14.79	0.00	85.66	
	100.45	02/10/92	0.00	15.02	0.00	85.43	
	100.45	03/13/92	0.00	14.56	0.00	85.89	
	100.45	04/20/92	0.00	14.27	0.00	86.18	
	100.45	05/11/92	0.00	13.94	0.00	86.51	
	100.45	06/12/92	0.00	14.11	0.00	86.34	
	100.45	09/10/92	0.00	13.72	0.00	86.73	
*Resurvey	100.45	12/23/92	0.00	14.30	0.00	86.15	
	100.45	03/09/93	0.00	15.87	0.00	84.58	
	100.45	06/10/93	0.00	13.90	0.00	86.55	
	100.45	07/19/93	0.00	11.99	0.00	88.46	
	100.45	07/28/93	0.00	12.08	0.00	88.37	
	100.45	09/17/93	0.00	12.55	0.00	87.90	
	12:00 hrs.	100.45	09/29/93	0.00	12.75	0.00	87.70
	14:30 hrs.	100.45	09/29/93	0.00	12.72	0.00	87.73

	100.45	09/30/93	0.00	12.40	0.00	88.05
	100.45	10/07/93	0.00	12.79	0.00	87.66
	100.45	10/22/93	0.00	13.51	0.00	86.94
	100.45	12/21/93	0.00	14.59	0.00	85.86
	100.45	01/25/94	0.00	15.46	0.00	84.99
12:00 hrs.	100.45	01/28/94	0.00	15.38	0.00	85.07
2:00 hrs.	100.45	01/28/94	0.00	15.38	0.00	85.07
2:30 hrs.	100.45	01/28/94	0.00	15.38	0.00	85.07
	100.45	02/03/94	0.00	15.65	0.00	84.80
	100.45	02/04/94	0.00	15.70	0.00	84.75
	100.45	02/11/94	0.00	15.93	0.00	84.52
	100.45	02/18/94	0.00	15.87	0.00	84.58
	100.45	03/21/94	0.00	16.48	0.00	83.97
	100.45	04/15/94	0.00	16.54	0.00	83.91
	100.45	05/31/94	0.00	15.37	0.00	85.08
	100.45	06/30/94	0.00	14.78	0.00	85.67
	100.45	07/08/94	0.00	14.71	0.00	85.74
	100.45	07/19/94	0.00	14.62	0.00	85.83
09:30	100.45	08/15/94	0.00	14.92	0.00	85.53
11:50	100.45	08/15/94	0.00	14.92	0.00	85.53
	100.45	08/31/94	0.00	14.91	0.00	85.54
	100.45	10/31/94	0.00	13.92	0.00	86.53
MW-2	100.77	10/23/89	0.00	19.23	0.00	81.54
	100.77	12/15/89	0.00	20.14	0.00	80.63
	100.77	01/08/90	0.00	20.40	0.00	80.37
	100.77	02/05/90	0.00	20.93	0.00	79.84
	100.77	03/13/90	0.00	21.30	0.00	79.47
	100.77	03/29/90	0.00	20.87	0.00	79.90
	100.77	04/24/90	0.00	21.18	0.00	79.59
*Resurvey	100.74	05/03/90	0.00	21.48	0.00	79.26
	100.74	05/15/90	0.00	20.89	0.00	79.85
	100.74	06/06/90	0.00	20.62	0.00	80.12
	100.74	06/12/90	0.00	19.92	0.00	80.82
	100.74	06/15/90	0.00	19.85	0.00	80.89
	100.74	06/29/90	0.00	18.93	0.00	81.81
	100.74	07/06/90	0.00	18.63	0.00	82.11
	100.74	07/13/90	0.00	18.39	0.00	82.35
	100.74	07/20/90	0.00	18.15	0.00	82.59
	100.74	08/22/90	0.00	16.93	0.00	83.81
	100.74	09/10/90	0.00	17.00	0.00	83.74
	100.74	10/10/90	0.00	17.13	0.00	83.61
	100.74	11/06/90	0.00	17.81	0.00	82.93
	100.74	01/14/91	0.00	19.00	0.00	81.74
	100.74	02/05/91	0.00	19.50	0.00	81.24
	100.74	03/13/91	0.00	19.92	0.00	80.82
	100.74	04/04/91	0.00	19.51	0.00	81.23
	100.74	05/10/91	0.00	19.30	0.00	81.44
	100.74	06/16/91	0.00	17.38	0.00	83.36
	100.74	07/03/91	0.00	16.55	0.00	84.19
	100.74	08/06/91	0.00	16.29	0.00	84.45
	100.74	09/09/91	0.00	16.23	0.00	84.51
	100.74	09/10/91	0.00	16.36	0.00	84.38
	100.74	10/08/91	0.00	15.68	0.00	85.06
	100.74	11/19/91	0.00	16.30	0.00	84.44
	100.74	12/26/91	0.00	16.03	0.00	84.71
	100.74	01/13/92	0.00	15.94	0.00	84.80
	100.74	02/10/92	0.00	16.20	0.00	84.54
	100.74	03/13/92	0.00	15.65	0.00	85.09
	100.74	04/20/92	0.00	15.30	0.00	85.44

	100.74	05/11/92	0.00	14.85	0.00	85.89
	100.74	06/12/92	0.00	15.00	0.00	85.74
	100.74	09/10/92	0.00	14.70	0.00	86.04
*Resurvey	100.77	12/23/92	0.00	15.40	0.00	85.37
	100.77	03/09/93	0.00	16.96	0.00	83.81
	100.77	06/10/93	0.00	14.90	0.00	85.87
	100.77	07/19/93	0.00	12.85	0.00	87.92
	100.77	07/28/93	0.00	12.99	0.00	87.78
	100.77	09/17/93	0.00	13.49	0.00	87.28
12:00 hrs.	100.77	09/29/93	0.00	13.73	0.00	87.04
14:30 hrs.	100.77	09/29/93	0.00	13.70	0.00	87.07
	100.77	09/30/93	0.00	13.37	0.00	87.40
	100.77	10/07/93	0.00	13.78	0.00	86.99
	100.77	10/22/93	0.00	14.69	0.00	86.08
	100.77	12/21/93	0.00	15.67	0.00	85.10
	100.77	01/25/94	0.00	16.61	0.00	84.16
12:00 hrs.	100.77	01/28/94	0.00	16.50	0.00	84.27
2:00 hrs.	100.77	01/28/94	0.00	16.50	0.00	84.27
2:30 hrs.	100.77	01/28/94	0.00	16.50	0.00	84.27
	100.77	02/03/94	0.00	16.86	0.00	83.91
	100.77	02/04/94	0.00	16.99	0.00	83.78
	100.77	02/11/94	0.00	17.17	0.00	83.60
	100.77	02/18/94	0.00	17.11	0.00	83.66
	100.77	03/21/94	0.00	17.74	0.00	83.03
	100.77	04/15/94	0.00	17.94	0.00	82.83
	100.77	05/31/94	0.00	16.53	0.00	84.24
	100.77	06/30/94	0.00	15.95	0.00	84.82
	100.77	07/08/94	0.00	15.86	0.00	84.91
	100.77	07/19/94	0.00	15.76	0.00	85.01
09:30	100.77	08/15/94	0.00	16.00	0.00	84.77
11:50	100.77	08/15/94	0.00	16.00	0.00	84.77
	100.77	08/31/94	0.00	14.92	0.00	85.85
	100.77	10/31/94	0.00	14.97	0.00	85.80
MW-3	101.05	10/23/89	0.00	20.77	0.00	80.28
	101.05	12/15/89	21.54	22.35	0.81	78.70
	101.05	01/08/90	22.07	22.47	0.40	78.58
	101.05	02/05/90	22.53	22.91	0.38	78.14
	101.05	03/13/90	22.91	23.37	0.46	77.68
	101.05	03/29/90	22.82	23.14	0.32	77.91
	101.05	04/24/90	22.99	23.39	0.40	77.66
*Resurvey	101.05	05/03/90	22.99	23.30	0.31	77.75
	101.05	05/15/90	22.71	22.92	0.21	78.13
	101.05	06/06/90	21.33	22.60	1.27	78.45
	101.05	06/12/90 ^	22.22	23.00	0.78	78.05
	101.05	06/15/90 ^	21.20	21.74	0.54	79.31
	101.05	06/29/90 ^	19.39	20.08	0.69	80.97
	101.05	07/06/90	19.67	19.70	0.03	81.35
	101.05	07/13/90	0.00	19.41	0.00	81.64
	101.05	07/20/90	0.00	19.22	0.00	81.83
	101.05	08/22/90	0.00	18.04	0.00	83.01
	101.05	09/10/90	0.00	18.27	0.00	82.78
	101.05	10/10/90	0.00	18.49	0.00	82.56
	101.05	11/06/90	0.00	19.24	0.00	81.81
	101.05	01/14/91	20.50	20.58	0.08	80.47
	101.05	02/05/91	21.00	21.05	0.05	80.00
	101.05	03/13/91	21.66	21.68	0.02	79.37
	101.05	04/04/91	0.00	21.28	0.00	79.77
	101.05	05/10/91	0.00	20.42	0.00	80.63
	101.05	06/16/91	0.00	18.26	0.00	82.79

	101.05	07/03/91	0.00	17.62	0.00	83.43
	101.05	08/06/91	0.00	17.36	0.00	83.69
	101.05	09/09/91	0.00	17.51	0.00	83.54
	101.05	09/10/91	0.00	17.67	0.00	83.38
	101.05	10/08/91	0.00	16.96	0.00	84.09
	101.05	11/19/91	0.00	17.81	0.00	83.24
	101.05	12/26/91	0.00	17.38	0.00	83.67
	101.05	01/13/92	0.00	17.39	0.00	83.66
	101.05	02/10/92	0.00	17.65	0.00	83.40
	101.05	03/13/92	0.00	17.28	0.00	83.77
	101.05	04/20/92	0.00	16.57	0.00	84.48
	101.05	05/11/92	0.00	16.04	0.00	85.01
	101.05	06/12/92	0.00	16.42	0.00	84.63
	101.05	09/10/92	0.00	16.00	0.00	85.05
*Resurvey	101.04	12/23/92	0.00	16.61	0.00	84.43
	101.04	03/09/93	0.00	18.38	0.00	82.66
	101.04	06/10/93	0.00	16.02	0.00	85.02
	101.04	07/19/93	0.00	13.79	0.00	87.25
	101.04	07/28/93	0.00	14.12	0.00	86.92
	101.04	09/17/93	0.00	14.71	0.00	86.33
12:00 hrs.	101.04	09/29/93	0.00	14.97	0.00	86.07
14:30 hrs.	101.04	09/29/93	0.00	15.52	0.00	85.52
	101.04	09/30/93	0.00	15.48	0.00	85.56
	101.04	10/07/93	0.00	15.08	0.00	85.96
	101.04	10/22/93	0.00	16.86	0.00	84.18
	101.04	12/21/93	0.00	17.17	0.00	83.87
	101.04	01/25/94	0.00	18.04	0.00	83.00
12:00	101.04	01/28/94	0.00	17.94	0.00	83.10
02:00	101.04	01/28/94	0.00	18.28	0.00	82.76
02:30	101.04	01/28/94	0.00	18.30	0.00	82.74
	101.04	02/03/94	0.00	19.02	0.00	82.02
	101.04	02/04/94	0.00	19.15	0.00	81.89
	101.04	02/11/94	0.00	19.34	0.00	81.70
	101.04	02/18/94	0.00	19.37	0.00	81.67
	101.04	03/21/94	0.00	19.90	0.00	81.14
	101.04	04/15/94	0.00	20.43	0.00	80.61
	101.04	05/31/94	0.00	18.52	0.00	82.52
	101.04	06/30/94	0.00	17.88	0.00	83.16
	101.04	07/08/94	0.00	17.78	0.00	83.26
	101.04	07/19/94	0.00	17.70	0.00	83.34
09:30	101.04	08/15/94	0.00	17.34	0.00	83.70
11:50	101.04	08/15/94	0.00	17.35	0.00	83.69
	101.04	08/31/94	0.00	17.51	0.00	83.53
	101.04	10/31/94	0.00	16.66	0.00	84.38
MW-4	100.68	05/03/90	0.00	23.93	0.00	76.75
	100.68	07/13/90	0.00	19.82	0.00	80.86
	100.68	07/20/90	0.00	19.65	0.00	81.03
	100.68	08/22/90	0.00	18.60	0.00	82.08
	100.68	09/10/90	0.00	18.94	0.00	81.74
	100.68	10/10/90	0.00	19.22	0.00	81.46
	100.68	11/06/90	0.00	19.99	0.00	80.69
	100.68	01/14/91	0.00	21.30	0.00	79.38
	100.68	02/05/91	0.00	21.83	0.00	78.85
	100.68	03/13/91	0.00	22.35	0.00	78.33
	100.68	04/04/91	0.00	22.21	0.00	78.47
	100.68	05/10/91	0.00	21.14	0.00	79.54
	100.68	06/16/91	0.00	18.53	0.00	82.15
	100.68	07/03/91	0.00	18.14	0.00	82.54
	100.68	08/06/91	0.00	18.10	0.00	82.58

	100.68	09/09/91	0.00	18.35	0.00	82.33
	100.68	09/10/91	0.00	18.40	0.00	82.28
	100.68	10/08/91	0.00	17.76	0.00	82.92
	100.68	11/19/91	0.00	17.70	0.00	82.98
	100.68	12/26/91	0.00	18.10	0.00	82.58
	100.68	01/13/92	0.00	18.18	0.00	82.50
	100.68	02/10/92	0.00	18.50	0.00	82.18
	100.68	03/13/92	0.00	17.88	0.00	82.80
	100.68	04/20/92	0.00	17.22	0.00	83.46
	100.68	05/11/92	0.00	16.63	0.00	84.05
	100.68	06/12/92	0.00	17.19	0.00	83.49
	100.68	09/10/92	0.00	16.84	0.00	83.84
*Resurvey	100.66	12/23/92	0.00	17.42	0.00	83.24
	100.66	03/09/93	0.00	19.19	0.00	81.47
	100.66	06/10/93	0.00	16.20	0.00	84.46
	100.66	07/19/93	0.00	14.42	0.00	86.24
	100.66	07/28/93	0.00	14.90	0.00	85.76
	100.66	09/17/93	0.00	15.57	0.00	85.09
12:00 hrs.	100.66	09/29/93	0.00	15.81	0.00	84.85
14:30 hrs.	100.66	09/29/93	0.00	15.78	0.00	84.88
	100.66	09/30/93	0.00	15.49	0.00	85.17
	100.66	10/07/93	0.00	15.96	0.00	84.70
	100.66	10/22/93	0.00	16.96	0.00	83.70
	100.66	12/21/93	0.00	18.07	0.00	82.59
	100.66	01/25/94	0.00	18.89	0.00	81.77
12:00 hrs.	100.66	01/28/94	0.00	18.80	0.00	81.86
2:00 hrs.	100.66	01/28/94	0.00	18.80	0.00	81.86
2:30 hrs.	100.66	01/28/94	0.00	18.80	0.00	81.86
	100.66	02/03/94	0.00	19.14	0.00	81.52
	100.66	02/04/94	0.00	19.15	0.00	81.51
	100.66	02/11/94	0.00	19.40	0.00	81.26
	100.66	02/18/94	0.00	19.40	0.00	81.26
	100.66	03/21/94	0.00	19.88	0.00	80.78
	100.66	04/15/94	0.00	20.15	0.00	80.51
	100.66	05/31/94	0.00	18.47	0.00	82.19
	100.66	06/30/94	0.00	19.93	0.00	80.73
	100.66	07/08/94	0.00	17.90	0.00	82.76
	100.66	07/19/94	0.00	17.79	0.00	82.87
09:30	100.66	08/15/94	0.00	18.17	0.00	82.49
11:50	100.66	08/15/94	0.00	18.17	0.00	82.49
	100.66	08/31/94	0.00	18.39	0.00	82.27
	100.66	10/31/94	0.00	16.56	0.00	84.10
MW-5	102.13	12/23/92	0.00	17.03	0.00	85.10
	102.13	03/09/93	0.00	18.73	0.00	83.40
	102.13	06/10/93	0.00	16.53	0.00	85.60
	102.13	07/19/93	0.00	14.40	0.00	87.73
	102.13	07/28/93	0.00	14.62	0.00	87.51
	102.13	09/17/93	0.00	15.15	0.00	86.98
12:00 hrs.	102.13	09/29/93	0.00	15.41	0.00	86.72
14:30 hrs.	102.13	09/29/93	0.00	15.43	0.00	86.70
	102.13	09/30/93	0.00	15.28	0.00	86.85
	102.13	10/07/93	0.00	15.10	0.00	87.03
	102.13	10/22/93	0.00	16.67	0.00	85.46
	102.13	12/21/93	0.00	17.54	0.00	84.59
	102.13	01/25/94	0.00	18.45	0.00	83.68
12:00 hrs.	102.13	01/28/94	0.00	18.35	0.00	83.78
2:00 hrs.	102.13	01/28/94	0.00	18.37	0.00	83.76
2:30 hrs.	102.13	01/28/94	0.00	18.37	0.00	83.76
	102.13	02/03/94	0.00	18.91	0.00	83.22

	102.13	02/04/94	0.00	19.05	0.00	83.08
	102.13	02/11/94	0.00	19.25	0.00	82.88
	102.13	02/18/94	0.00	19.26	0.00	82.87
	102.13	03/21/94	0.00	19.81	0.00	82.32
	102.13	04/15/94	0.00	20.15	0.00	81.98
	102.13	05/31/94	0.00	18.61	0.00	83.52
	102.13	06/30/94	0.00	17.91	0.00	84.22
	102.13	07/08/94	0.00	17.72	0.00	84.41
	102.13	07/19/94	0.00	17.73	0.00	84.40
09:30	102.13	08/15/94	0.00	17.77	0.00	84.36
11:50	102.13	08/15/94	0.00	17.78	0.00	84.35
	102.13	08/31/94	0.00	17.78	0.00	84.35
	102.13	10/31/94	0.00	16.82	0.00	85.31
RW-1	100.61	12/23/92	0.00	16.00	0.00	84.61
	100.61	03/09/93	0.00	17.92	0.00	82.69
	100.61	06/10/93	0.00	15.54	0.00	85.07
	100.61	07/19/93	0.00	13.82	0.00	86.79
	100.61	07/28/93	0.00	14.13	0.00	86.48
	100.61	09/17/93	0.00	14.74	0.00	85.87
	100.61	09/20/93	0.00	16.13	0.00	84.48
	100.61	09/27/93	0.00	14.12	0.00	86.49
12:00 hrs.	100.61	09/29/93	0.00	14.94	0.00	85.67
14:30 hrs.	100.61	09/29/93	0.00	25.40	0.00	75.21
	100.61	09/30/93	0.00	25.64	0.00	74.97
	100.61	10/07/93	0.00	15.10	0.00	85.51
	100.61	10/22/93	0.00	25.72	0.00	74.89
	100.61	12/08/93	0.00	16.65	0.00	83.96
	100.61	12/21/93	0.00	16.92	0.00	83.69
12:00 hrs.	100.61	01/28/94	0.00	17.71	0.00	82.90
2:00 hrs.	100.61	01/28/94	0.00	27.20	0.00	73.41
2:30 hrs.	100.61	01/28/94	0.00	27.35	0.00	73.26
	100.61	02/03/94	0.00	28.20	0.00	72.41
	100.61	02/04/94	0.00	27.05	0.00	73.56
	100.61	02/11/94	0.00	27.35	0.00	73.26
	100.61	02/18/94	0.00	28.35	0.00	72.26
	100.61	03/21/94	0.00	27.07	0.00	73.54
	100.61	04/15/94	0.00	28.62	0.00	71.99
	100.61	05/31/94	0.00	28.58	0.00	72.03
	100.61	06/30/94	0.00	26.96	0.00	73.65
	100.61	07/08/94	0.00	26.20	0.00	74.41
	100.61	07/19/94	0.00	25.98	0.00	74.63
	100.61	08/15/94	0.00	13.90	0.00	86.71
	100.61	08/31/94	0.00	17.39	0.00	83.22
	100.61	10/31/94	0.00	26.18	0.00	74.43

*Explanation:*

*All measurments are in feet (ft).*

*D.T.P - Depth-to-Product*

*D.T.W - Depth-to-Water*

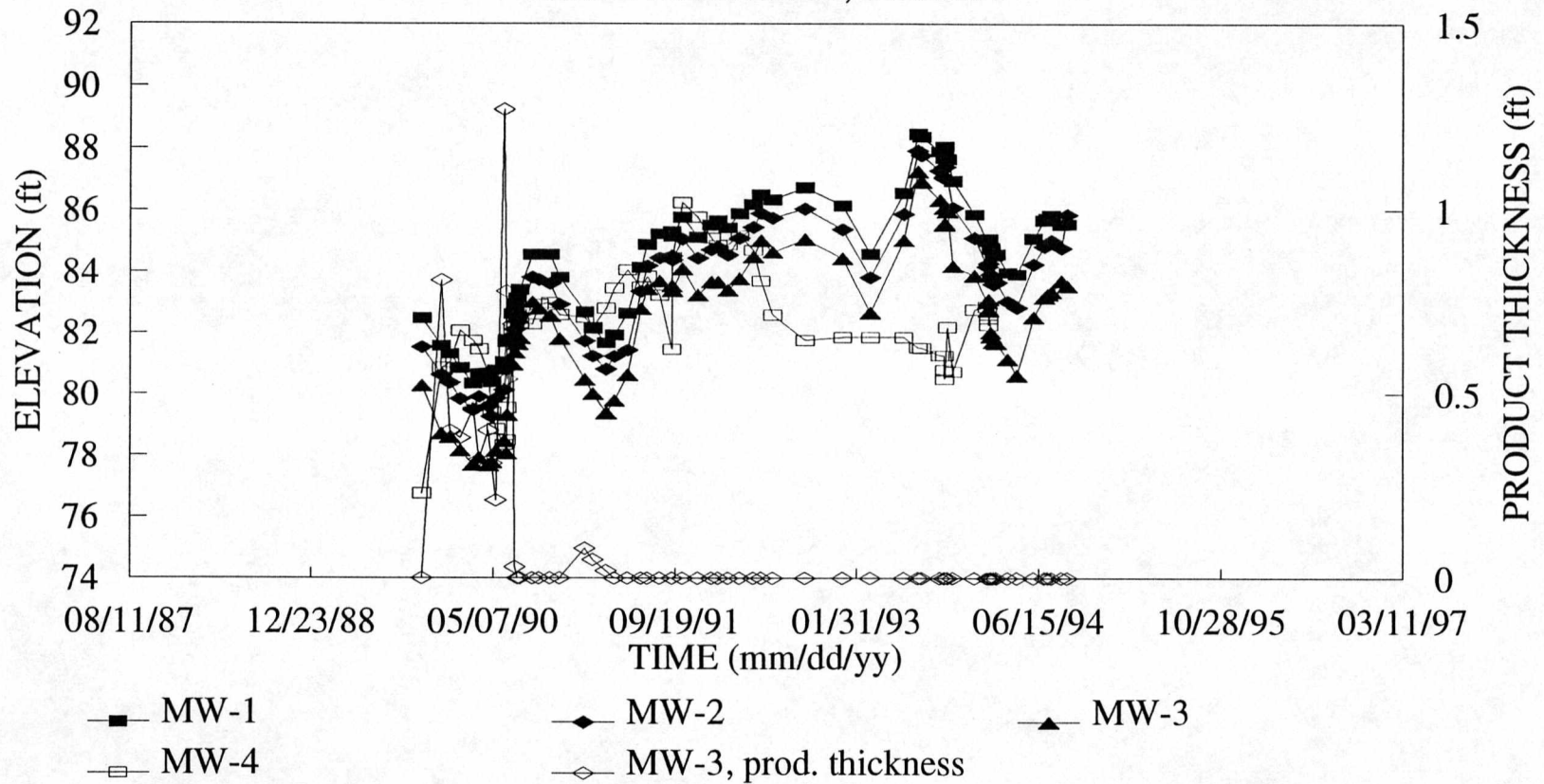
*P.T. - Product Thickness*

*W.T.E - Water-Table-Elevation*

*^ - Data corrected for possible base measurement error.*

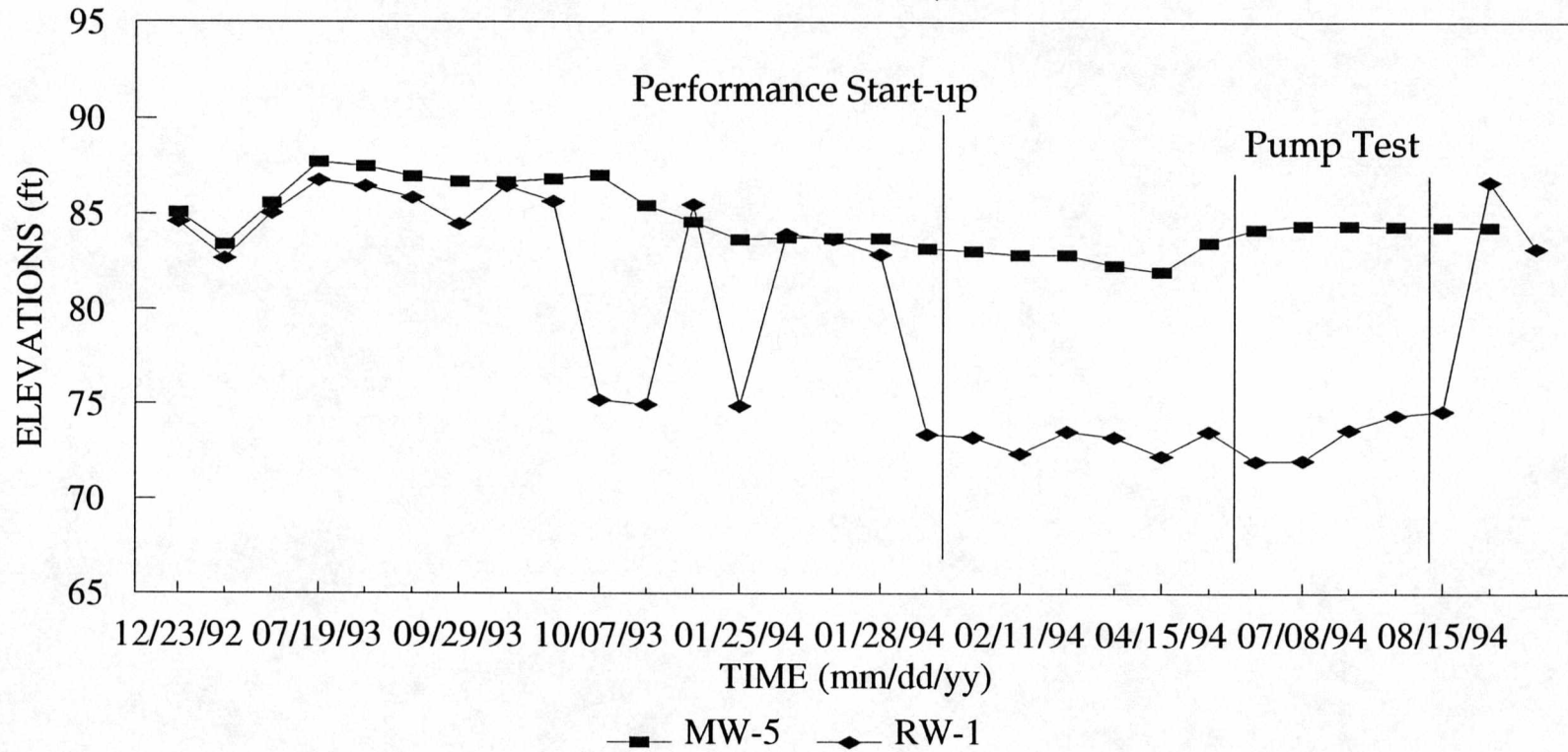
# GROUNDWATER ELEVATIONS/PRODUCT THICKNESS

Conoco South Robert, 24930601



# GROUNDWATER ELEVATIONS, MW-5 & RW-1

Conoco South Robert, 24930601



# CONCENTRATIONS vs. TIME, MW-2 & MW-3

Conoco South Robert, 24930601

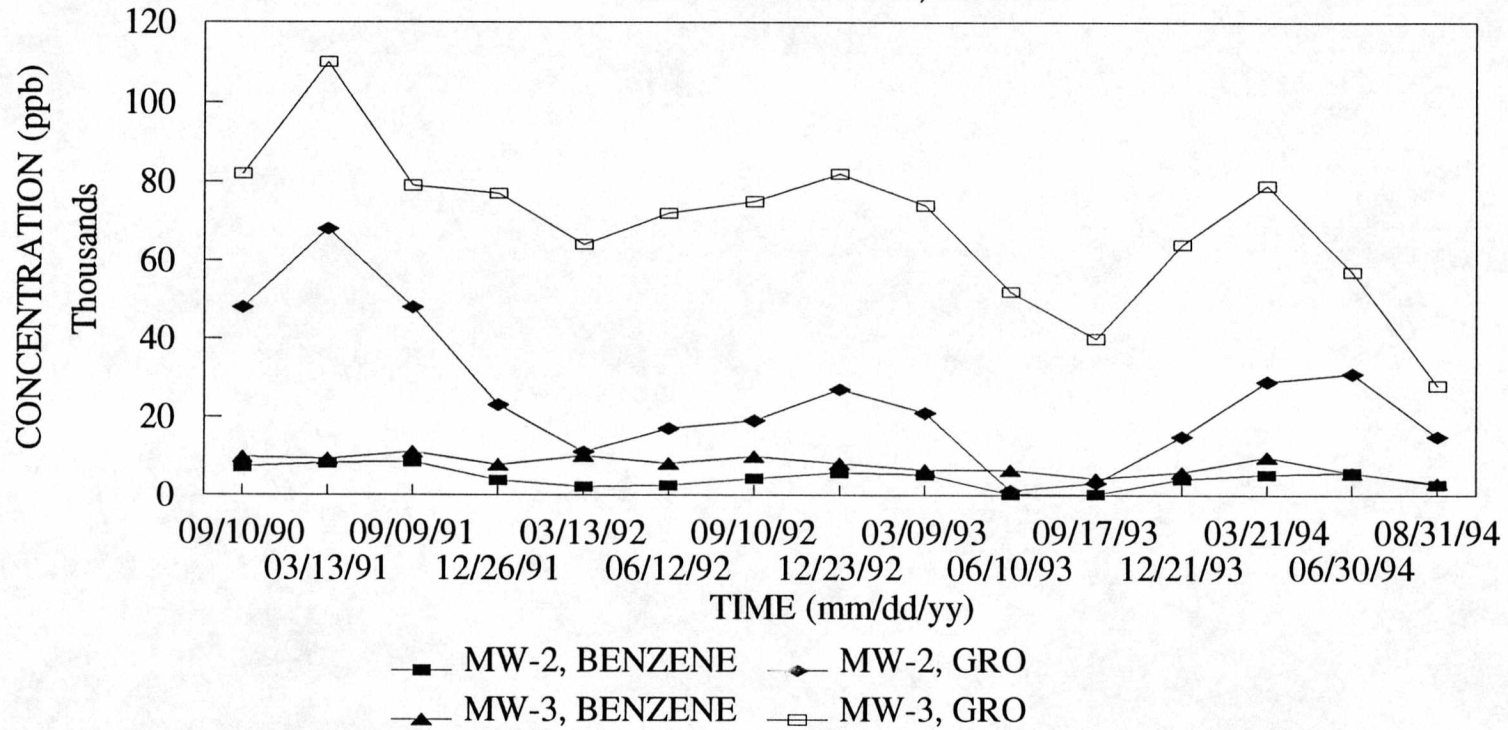


TABLE 2

GROUNDWATER ANALYTICAL DATA  
 Conoco Store #23034  
 1126 South Robert St., W. St. Paul, Minnesota (24930601)

WELL #	DATE	B	E	T	X	THG/GRO	MTBE
MW-1	05/03/90	ND	ND	ND	ND	ND	ND
	09/10/90	ND	ND	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND	ND	ND
	09/09/91	ND	ND	ND	ND	ND	ND
	12/26/91	ND	ND	ND	ND	ND	ND
	03/13/92	ND	ND	ND	ND	ND	ND
	06/12/92	ND	ND	ND	ND	ND	ND
	09/10/92	ND	ND	ND	ND	ND	ND
	12/23/92	ND	ND	ND	ND	ND	ND
	03/09/93	ND	ND	ND	ND	ND	ND
	06/10/93	ND	ND	ND	ND	ND	ND
	09/17/93	ND	ND	ND	ND	ND	ND
	12/21/93	ND	ND	ND	ND	ND	ND
	03/21/94	ND	ND	ND	ND	ND	ND
	06/30/94	ND	ND	ND	ND	ND	ND
08/31/94	ND	ND	ND	ND	ND	ND	
MW-2	05/03/90	6600	4	12	6900	27000	1600
	09/10/90	7300	950	17000	9600	48000	1600
	03/13/91	8200	1200	13000	10000	68000	3000
	09/09/91	8500	1300	9300	10000	48000	3000
	12/26/91	3800	1200	1100	4400	23000	ND
	03/13/92	2100	800	1200	2300	11000	ND
	06/12/92	2500	1100	1000	2600	17000	220
	09/10/92	4200	1300	1400	3100	19000	ND
	12/23/92	5800	1500	2800	4000	27000	ND
	03/09/93	5300	1300	3800	4500	21000	ND
	06/10/93	240	ND	120	230	1200	ND
	09/17/93	210	250	ND	370	3100	ND
	12/21/93	4100	1500	360	1900	15000	ND
	03/21/94	5300	1800	2800	4800	29000	270
	06/30/94	5700	1800	3700	6500	31000	200
08/31/94	2700	630	1900	3400	15000	ND	
MW-3	05/03/90						
	09/10/90	9700	2000	23000	16000	82000	1500
	03/13/91	9200	3900	23000	26000	110000	2600
	09/09/91	11000	3000	22000	20000	79000	4900
	12/26/91	7700	2300	10000	14000	77000	1600
	03/13/92	10000	2800	17000	15000	64000	ND
	06/12/92	8100	2500	16000	14000	72000	290
09/10/92	9800	ND	22000	17000	75000	ND	

	12/23/92	8100	2700	16000	15000	82000	ND
	03/09/93	6500	3000	20000	17000	74000	ND
	06/10/93	6400	2700	11000	13000	52000	ND
	09/17/93	4300	2200	14000	11000	40000	ND
	12/21/93	5900	3100	20000	16000	64000	ND
	03/21/94	9700	3500	24000	18000	79000	ND
	06/30/94 *	5600	2600	14000	14000	57000	ND
	08/31/94	3100	1800	3100	7900	28000	ND
MW-4	05/03/90	ND	ND	ND	2	41	ND
	09/10/90	ND	ND	ND	ND	19	ND
	03/13/91	ND	ND	ND	1	40	ND
	09/09/91	ND	ND	ND	ND	ND	16
	12/26/91	ND	ND	ND	ND	ND	ND
	03/13/92	ND	ND	ND	ND	ND	ND
	06/12/92	ND	ND	ND	ND	ND	ND
	09/10/92	ND	ND	ND	ND	ND	ND
	12/23/92	ND	ND	ND	ND	ND	ND
	03/09/93	ND	ND	ND	ND	ND	ND
	06/10/93	ND	ND	ND	ND	ND	ND
	09/17/93	ND	ND	ND	ND	ND	ND
	12/21/93	ND	ND	ND	ND	ND	ND
	03/21/94	ND	ND	ND	ND	ND	ND
	06/30/94	ND	ND	ND	ND	ND	ND
	08/31/94	ND	ND	ND	ND	ND	ND
MW-5	12/23/92	ND	ND	ND	ND	ND	ND
	03/09/93	ND	ND	ND	ND	ND	ND
	06/10/93	ND	ND	ND	ND	ND	ND
	09/17/93	ND	ND	ND	ND	ND	ND
	12/21/93	ND	ND	ND	ND	ND	ND
	03/21/94	ND	ND	ND	ND	60	ND
	06/30/94	ND	ND	ND	ND	47	ND
	08/31/94	ND	ND	ND	ND	ND	ND

*Explanation:*

*B=benzene*

*E=ethyl benzene*

*T=toluene*

*X=total xylenes*

*THG=total hydrocarbons as gasoline*

*MTBE=methyl-tert-butyl-ether*

*Pb=lead*

*THFO=total hydrocarbons as #2 fuel oil*

*GRO=gasoline range organics*

*\* = indicates sample contains higher boiling hydrocarbons*

# Huntingdon

Huntingdon Engineering & Environmental, Inc.

737 Pelham Boulevard  
St. Paul, Minnesota 55114-1739

(612) 659-7600  
FAX (612) 659-7515

## REPORT OF: CHEMICAL ANALYSES

PROJECT: 2493-0601

DATE: September 13, 1994

REPORTED TO: Dahl & Associates  
Attn: Mike Watson  
4390 McMenemy Drive  
St. Paul, MN 55127

Conoco Inc.

---

LABORATORY NO: 4413 94-6184  
HPN: 6184

### INTRODUCTION

This report presents the results of the analyses of five samples received on September 2, 1994, 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 Huntingdon Standard Operating Procedures. The procedures are based on the references stated in the analytical results tables.

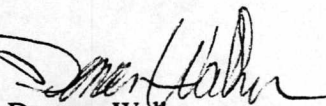
### RESULTS

The results are listed in the attached tables.

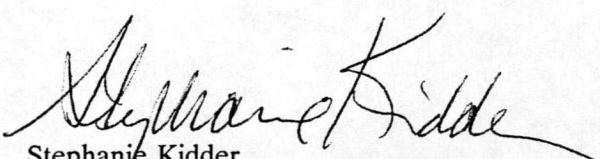
### REMARKS

The samples were collected on August 31, 1994. If samples are not consumed in the analysis, they are held for two months from the date of sample receipt and then disposed, unless written instructions to the contrary are received.

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.

  
Deneen Walker  
Project Manager

DW/SK/lml

  
Stephanie Kidder  
Laboratory Manager

VER

# Huntingdon

## PETROLEUM VOLATILE ORGANIC COMPOUND RESULTS EPA METHOD 8020

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

Client ID:	Method Blank	MW-1	
TCT ID:		32219	
<b>Parameter:</b>			<b><u>PQL</u></b>
Benzene	ND	ND	5
Toluene	ND	ND	5
Ethyl benzene	ND	ND	5
Total xylenes	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	5
<b>Surrogate Recovery:</b>			
$\alpha,\alpha,\alpha$ -Trifluorotoluene	104%	102%	
Gasoline Range Organics	ND	ND	30
<b>Surrogate Recovery:</b>			
$\alpha,\alpha,\alpha$ -Trifluorotoluene	103%	104%	
<b>Date Collected:</b>		8/31/94	
<b>Date Analyzed:</b>	9/6/94	9/8/94	

PQL = Practical Quantitation Limit  
ND = Not Detected

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, July 1992, 3rd Edition.  
Wisconsin Department of Natural Resources, PUBL-SW-140, July 1993.

LABORATORY NO: 4413 94-6184

# Huntingdon

## PETROLEUM VOLATILE ORGANIC COMPOUND RESULTS EPA METHOD 8020

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

Client ID: MW-2

TCT ID: 32220

---

<u>Parameter:</u>		<u>PQL</u>
Benzene	2,700	120
Toluene	1,900	120
Ethyl benzene	630	120
Total xylenes	3,400	120
Methyl-tert-Butyl Ether	ND	120
<b>Surrogate Recovery:</b>		
$\alpha, \alpha, \alpha$ -Trifluorotoluene	103%	
Gasoline Range Organics	15,000	750
<b>Surrogate Recovery:</b>		
$\alpha, \alpha, \alpha$ -Trifluorotoluene	101%	
Date Collected:	8/31/94	
Date Analyzed:	9/8/94	

---

PQL = Practical Quantitation Limit  
ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, July 1992, 3rd Edition.  
Wisconsin Department of Natural Resources, PUBL-SW-140, July 1993.

LABORATORY NO: 4413 94-6184

# Huntingdon

## PETROLEUM VOLATILE ORGANIC COMPOUND RESULTS EPA METHOD 8020

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

Client ID: MW-3

TCT ID: 32221

---

<u>Parameter:</u>		<u>PQL</u>
Benzene	3,100	500
Toluene	3,100	500
Ethyl benzene	1,800	500
Total xylenes	7,900	500
Methyl-tert-Butyl Ether	ND	500
<b>Surrogate Recovery:</b>		
$\alpha, \alpha, \alpha$ -Trifluorotoluene	101%	
Gasoline Range Organics	28,000	3,000
<b>Surrogate Recovery:</b>		
$\alpha, \alpha, \alpha$ -Trifluorotoluene	100%	
<b>Date Collected:</b>	8/31/94	
<b>Date Analyzed:</b>	9/6/94	

---

PQL = Practical Quantitation Limit  
ND = Not Detected

**Reference:** EPA Test Methods for Evaluating Solid Waste, SW-846, July 1992, 3rd Edition.  
Wisconsin Department of Natural Resources, PUBL-SW-140, July 1993.

LABORATORY NO: 4413 94-6184

# Huntingdon

## PETROLEUM VOLATILE ORGANIC COMPOUND RESULTS EPA METHOD 8020

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

Client ID:	MW-4	MW-5	
TCT ID:	32222	32223	
<b>Parameter:</b>			<b><u>PQL</u></b>
Benzene	ND	ND	5
Toluene	ND	ND	5
Ethyl benzene	ND	ND	5
Total xylenes	ND	ND	5
Methyl-tert-Butyl Ether	ND	ND	5
<b>Surrogate Recovery:</b>			
$\alpha, \alpha, \alpha$ -Trifluorotoluene	104%	102%	
Gasoline Range Organics	ND	ND	30
<b>Surrogate Recovery:</b>			
$\alpha, \alpha, \alpha$ -Trifluorotoluene	104%	102%	
Date Collected:	8/31/94	8/31/94	
Date Analyzed:	9/6/94	9/6/94	

PQL = Practical Quantitation Limit  
ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, July 1992, 3rd Edition.  
Wisconsin Department of Natural Resources, PUBL-SW-140, July 1993.

LABORATORY NO: 4413 94-6184



737 PELHAM AVENUE  
DOCK 4  
ST. PAUL, MN 55114  
PHONE 612/659-7555

### CHAIN-OF-CUSTODY RECORD

*MW*

TCT NO. 49785

DAWL + ASSOCIATES  
CLIENT NAME  
4390 MEMENEMY RD  
CLIENT ADDRESS (STREET NUMBER, SUITE, ETC.)  
ST PAUL MN 55127  
CLIENT ADDRESS (CITY, STATE, ZIP)

612-490-2905  
CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE PHONE

Mark Smith / [Signature]  
SAMPLED BY PRINT NAME/SIGNATURE

POSSIBLE HAZARD: YES \_\_\_\_\_ UNKNOWN  (COMMENT BELOW)

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

D. WALKER  
TCT CONTACT  
PROJECT NAME 24930601  
CLIENT P.O. # / PROJECT NO. DAWL  
BILL TO (CO. NAME, ADDRESS) MIKE WATSON  
REPORT TO

TCT USE ONLY	
PROJ. MGR.	<u>Den</u>
PRIORITY	<u>Normal</u>
INVOICE #	<u>-</u>
JOB NAME	<u>HAN 6/84</u>
CUSTODY SEAL INTACT/NUMBER Y/N	<u>NA</u>
TEMPERATURE OF CONTAINER	<u>ON ICE</u>
SAMPLE CONDITION	<u>OK</u>

PREPAY Y/N	
CHECK NO.	
CHECK AMOUNT	

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			
				<u>EE</u>	<u>Y</u>	<u>BETR</u>
				<u>EE</u>	<u>Y</u>	<u>MTBG</u>
				<u>EE</u>	<u>Y</u>	<u>GRD</u>

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	DATE SAMPLED	TIME SAMPLED							NO. OF CONTAINERS	CONTAINER TYPE	TCT NO.
1	<u>MW-1</u>	<u>H2O</u>	<u>8/31/94*</u>		<u>X</u>	<u>X</u>	<u>X</u>				<u>3 (1)</u>	<u>4uml PFT</u>	<u>32219</u>
2	<u>MW-2</u>	<u>✓</u>			<u>X</u>	<u>X</u>	<u>X</u>				<u>↓</u>	<u>↓</u>	<u>32220</u>
3	<u>MW-3</u>	<u>✓</u>			<u>X</u>	<u>X</u>	<u>X</u>				<u>↓</u>	<u>↓</u>	<u>32221</u>
4	<u>MW-4</u>	<u>✓</u>			<u>X</u>	<u>X</u>	<u>X</u>				<u>↓</u>	<u>↓</u>	<u>32222</u>
5	<u>MW-5</u>	<u>✓</u>			<u>X</u>	<u>X</u>	<u>X</u>				<u>↓</u>	<u>↓</u>	<u>32223</u>
6													
7													
8													
9													
10													

Additional Comments	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
<u>* 9/7/94 Date sampled 8/31/94</u>	<u>Mark Smith</u>			<u>[Signature]</u>	<u>9/2</u>	<u>3:45</u>
<u>per Mike 8:45 Saw</u>				<u>T. Foster</u>	<u>9/2/94</u>	<u>10:54</u>

DAHL & ASSOCIATES  
 CLIENT NAME  
4530 MEMPHIS RD  
 CLIENT ADDRESS (STREET NUMBER, SUITE, ETC.)  
ST PAUL MN 55127  
 CLIENT ADDRESS (CITY, STATE, ZIP)

D. WALKER  
 TCT CONTACT  
 PROJECT NAME  
24930601  
 CLIENT P.O. # / PROJECT NO.  
DAHL  
 BILL TO (CO. NAME, ADDRESS)  
MIKE WATSON  
 REPORT TO

TCT USE ONLY	
PROJ. MGR.	
PRIORITY	
INVOICE #	
JOB NAME	
CUSTODY SEAL INTACT/NUMBER Y/N	
TEMPERATURE OF CONTAINER	
SAMPLE CONDITION	

612-490-2905  
 CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE PHONE

Mark Smith / Mark Smith  
 SAMPLED BY PRINT NAME/SIGNATURE

POSSIBLE HAZARD: YES  UNKNOWN  (COMMENT BELOW)

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

ANALYSES REQUEST	FILTERED (YES/NO)	N	N	N					
	PRESERVED (CODE)	E	E	E					
	REFRIGERATED (Y/N)	Y	Y	Y					
	CODE A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCl F -	BET	MDC	GRD					

PREPAY Y/N	
CHECK NO.	
CHECK AMOUNT	

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	DATE SAMPLED	TIME SAMPLED							NO. OF CONTAINERS	CONTAINER TYPE	TCT NO.
1	m-1	H2O	8/30/94		X	X	X				3	110ml P+T	
2	m-2				X	X	X						
3	m-3				X	X	X						
4	m-4				X	X	X						
5	m-5				X	X	X						
6													
7													
8													
9													
10													

Additional Comments	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
		<u>Mark Smith</u>			<u>[Signature]</u>	9/2

SOUTH ROBERT STREET

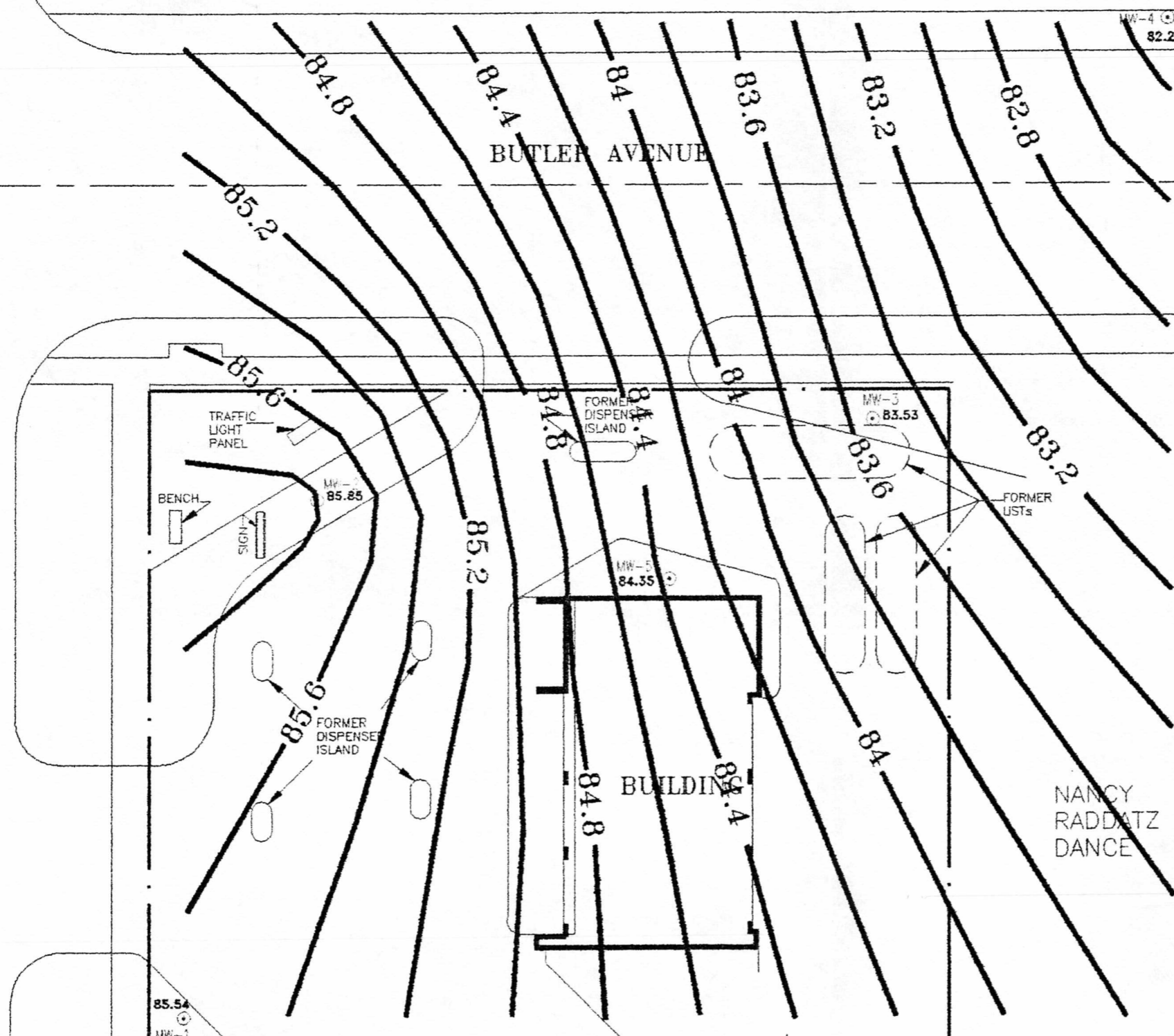
DAIRY QUEEN

BUTLER AVENUE

BUILDING

NANCY RADDATZ DANCE

STOFFEL'S CHIRO

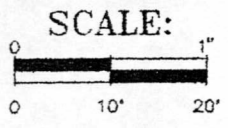


EXPLANATION

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

GROUNDWATER GRADIENT DATA:  
 \* BASED ON DATA COLLECTED ON 08/31/94  
 AVERAGE GRADIENT=1.56 x 10<sup>-2</sup> ft/ft



4390 McMenamy Road  
 Saint Paul, MN. 55127  
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**DAHL**  
 & ASSOCIATES, INC.  
 Environmental Consultants, Contractors & Engineers

DAHL STD NO: VEMN0601-B-00-B

GROUNDWATER MAP  
 08/31/94

1126 ROBERT STREET SOUTH  
 WEST ST. PAUL, MINNESOTA

PLOT SCALE 1" = 20'

AutocAD FILE NAME 0601-15E

PLOT DATE 12/1/94

DATE DRAWN	10/26/93
DRAWN BY	JACOB STALLONE
APPROVED BY	
DRAWING NUMBER	B-15-E
PROJECT NUMBER	VEMN0601
FIGURE NUMBER	



**SOIL VENTING SYSTEMS**

**Emission concentrations**

- X Attach a table including field screening results for each vapor extraction point.
- X Attach a table of soil vent system emissions concentrations. The table should include all analytical samples taken since system startup. The samples should be collected from a sampling port located before the blower. Samples should be analyzed for benzene, ethyl benzene, toluene and xylene (BETX) using EPA Method 18.

**Operating parameters**

Extraction airflow rate: 75 standard cubic feet/minute (scfm)

- X Attach a table of cumulative vacuum data from vent points and monitoring points.

**Bioactivity measurements**

Attach a table of cumulative extraction system CO<sub>2</sub> and O<sub>2</sub> concentrations.

**Contaminant mass removal:**

Estimated contaminant mass removal rate: kg/day x gal/kg .04 gal/day  
Estimated contaminant mass removal to date: 358.04 gallons

**SOIL VENTING/AIR SPARGING SYSTEMS**

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

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

Total air injection rate: 2.0 scfm  
Total air removal rate: 75 scfm

**TOTAL SITE CONTAMINANT MASS REMOVAL**

Fill out this section if ground water pump-out is used in combination with a soil venting system or a soil venting/air sparging system.

Total estimated contaminant mass removal rate for the site: .0414 gallons/day  
Total estimated contaminant mass removal to date for the site: 358.34 gallons

**SYSTEM CHANGES**

Use this space to describe in detail any changes in system operation or configuration that were made during this reporting period (attach additional pages if needed). Also explain any periods during which the system was not operating.

**System was down from 8-15-94 to 9-22-94 due to pump failure. Pump was replaced and system is currently operational.**

**RECOMMENDATIONS**

Use this space to detail any recommendations for modifying the corrective action system operation or configuration (attach additional pages if needed):

**DAHL will continue to monitor the site monthly and adjustments to the system will be made for optimum efficiency.**

**Included with all of the results is a lab from an air sample that was collected two weeks after the groundwater vent (sparge point) was turned on line. Emission concentrations remain below significant emission rates (SER's).**

Upon request, this document can be made available in other formats, including braille, large print and audio tape. TDD users, call the Minnesota State Relay Service, 612/297-5353 or Greater Minnesota TDD 1-800-627-3529.

Printed on recycled paper containing at least 10 percent fibers from paper recycled by consumers.

**TABLE 3**  
**INFLUENT/EFFLUENT ANALYTICAL DATA**  
*Conoco Store #23034*  
*1126 South Robert St., W. St. Paul, Minnesota (24930601)*

								CO	TSS
								(ppm)	(ppm)
Influent	10/15/93	730	530	3700	3900	14000	ND		
	10/22/93	1100	440	4200	4600	16000	ND		
	02/04/94	120	14	270	600	2900	ND		
	03/21/94	56	ND	50	230	910	ND		
	06/30/94	ND	ND	ND	ND	190	ND		
Effluent	10/15/93	ND	ND	21	30	210	ND		
	10/22/93	8	ND	32	47	310	ND		
	02/04/94	ND	ND	ND	ND	ND	ND	7	21
	02/11/94	ND	ND	ND	5	ND	ND	ND	26
	03/21/94	ND	ND	ND	ND	ND	ND	31	ND
	04/15/94	ND	ND	ND	ND	63	ND	27	ND
	06/01/94	ND	ND	ND	ND	ND	ND	100	12
	06/30/94	ND	ND	ND	ND	ND	ND	68	10
	07/19/94	ND	ND	ND	ND	ND	ND	61	ND

*Explanation:*

*All values are expressed in ug/L which is equivalent to parts-per-billion (ppb) unless otherwise specified.*

*B = benzene*

*E = ethyl benzene*

*T = toluene*

*X = xylenes*

*THG = total hydrocarbons as gasoline*

*GRO = gasoline range organics*

*MTBE = methyl-tert-butyl ether*

TABLE 5

FID READINGS from SOIL VAPOR VENTS  
 Conoco Store #23034  
 1126 South Robert St., W. St. Paul, Minnesota (24930601)

DATE	SVV-1	SVV-2	SVV-3	SVV-4	SVV-5	SVV-6	SVV-7	SVV-8	SVV-9	SVV-10	SVV-11	SVP-1(W)SVP-1(E)	SVP-2(W)SVP-2(E)	SVP-3(W)SVP-3(E)	SVP-4(W)SVP-4(E)		
02/03/94	2800	10000	5000	1000	10000	180	290	150	800	10000	10000	10000	10000	10000	10000	30	50
02/04/94	400	10000	800	400	10000	290	250	110	330	10000	10000	8000	8500	10000	10000	20	35
02/11/94	325	3600	500	225	9500	250	240	65	130	2000	2000	3000	3200	10000	10000	38	42
02/18/94	300	10000	2000	175	10000	500	225	210	150	3000	9500	42	45	80	1250	*	*
03/21/94	120	1000	4200	900	10000	3500	700	16	190	10000	10000	125	600	10000	150	10000	10000
04/15/94	150	3200	400	45	4000	70	200	14	18	1200	1250	*	*	*	*	*	*
05/31/94	40	1100	55	35	475	12	75	125	16	175	200	10	25	7	8	8	7
06/30/94	50	1200	38	10	400	10	50	80	10	175	175	7	25	18	8	12	15
07/08/94	40	500	12	12	150	10	30	50	5	135	90	15	20	30	1000	20	0
08/15/94	40	450	20	10	350	20	33	19	25	58	60	15	40	30	12	15	20
08/15/94	40	450	20	10	350	20	33	19	25	58	60	10	35	30	10	15	18
08/31/94	80	1200	200	250	450	10	18	14	12	48	95	22	70	10000	80	40	28
10/31/94	45	550	45	50	200	15	30	25	22	50	65	14	14	24	260	24	10

EXPLANATION:

Readings are measured in parts-per-million (ppm)

\* - indicates measurement not taken

DAHL

TABLE 6

VACUUM DATA from SOIL VAPOR VENTS  
 Conoco Store #23034  
 1126 South Robert St., W. St. Paul, Minnesota (24930601)

DATE	SVV-1	SVV-2	SVV-3	SVV-4	SVV-5	SVV-6	SVV-7	SVV-8	SVV-9	SVV-10	SVV-11	SVP-1(W)	SVP-1(E)	SVP-2(W)	SVP-2(E)	SVP-3(W)	SVP-3(E)	SVP-4(W)	SVP-4(E)
02/03/94	-23	-23	-24	-22	-19	-30	-21	-20	-24	-23	-23	-3.5	-6	-2.5	-0.7	-4	-4	-3.8	-3.6
02/04/94	-22	-20	-25	-23	-20	-19	-30	-19	-25	-24	-23	-4.6	-3.2	0	-2	-3.5	-3.5	-3.2	-3.2
02/11/94	-47	-47	-39	-46	-47	-18	-50	-51	-30	-24	-45	-1	-2.6	-0.6	0	-0.41	-0.85	-3.1	-2.9
02/18/94	-30	-40	-46	-20	-44	-24	-41	-22	-49	-21	-12	-0.07	12	-0.54	-0.52	*	*	*	*
03/21/94	-48	-48	-48	-48	-26	-10	-45	-48	-35	-20	-14	-1.2	-1.4	-0.62	-0.61	-0.66	-0.28	-2.9	-3.1
04/15/94	-10	-9	-15	-11	-22	-7	-30	-60	-19	-22	-14	-1.1	-1.2	0	-0.42	-0.22	-0.54	-2.5	-2.9
05/31/94	-46	-46	-39	-46	-50	-46	-40	-51	-39	-50	-42	-4.3	-4.8	-0.22	-3.1	-5.4	-3.4	-4	-4.1
06/30/94	-45	-47	-40	-49	-51	-46	-22	-52	-38	-51	-44	-3.8	-2.8	-2.7	0.03	-4.5	0	-2.2	-2.3
07/08/94	-43	-47	-20	-46	-28	-46	-19	-15	-48	-8	-43	-2.1	-2.2	-3	0	0	-4.6	-2.1	-2.1
08/15/94	-42	-48	-17	-44	-12	-44	-17	-31	-48	-14	-44	-3.9	-2.5	-2.4	0	-4.5	0	-2.4	-2.2
08/15/94	-42	-48	-17	-44	-12	-44	-17	-31	-48	-14	-44	-4	-2.8	-2.5	-0.1	-4.5	0	-2.4	-2.5
08/31/94	-20	-20	-20	-20	-20	-30	-20	-20	-20	-20	-20	-2.5	0	18	-1	-2.2	0	-1.8	-1.6
10/31/94	-21	-25	-24	-26	-25	-34	-41	-28	-29	-25	-19	-2.6	-0.05	-1.7	0	0	-2.4	0	-0.9

EXPLANATION:

Readings are measured in parts-per-million (ppm)

\* - indicates measurement not taken

DAHL

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**TABLE 5****SOIL VENT SYSTEM EFFLUENT DATA***Conoco Store #23034**1126 South Robert St., W. St. Paul, Minnesota (24930601)*

---

DATE	B	E	T	X	THG/GRO
02/04/94	21	24	63	73	3900
02/11/94	8.7	17	36	56	2000
02/18/94	7.7	23	46	77	2200
03/21/94	6.9	11	30	36	2400
06/30/94	9.6	26	68	120	1400
08/31/94	0.21	0.28	0.99	1.1	39

---

**EXPLANATION:***B=benzene**E=ethyl benzene**T=toluene**X=xylene**THG/GRO=total hydrocarbons as gasoline/gasoline range organics**All values are in parts-per-billion (ppb) unless otherwise specified.*

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**DAHL**