

DAHL

& ASSOCIATES, INC.

Environmental Consultants, Contractors & Engineers

April 29, 1996

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MAY 01 1996

MPCA, HAZARDOUS
WASTE DIVISION

Ms. Cathy Malave
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

Dear Ms. Malave:

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

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.

DAHL is coordinating and scheduling the proposed remedial system upgrades approved in your letter April 11, 1996.

If I can provide you with any additional information or if you have any questions, please contact Mike Watson or me at our office.

Sincerely,

DAHL & Associates, Inc.



Mark Smith
Staff Scientist

mps

enclosures

cc: Mr. Mark Silverstone, Conoco Inc.
Mr. John Ehret, Asst. Fire Chief, City of West St. Paul
Mr. Terry Maruska, Building Inspector, City of West St. Paul

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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: 00000858

I. Ground Water Monitoring

Please attach the following:

Table 1	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.
Table 2	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 10	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:

DAHL will continue the present schedule of monitoring.

CAD SYSTEM MONITORING WORKSHEET

Fact sheet #11

Minnesota Pollution Control Agency

LUST Cleanup Program

April 1993

This worksheet documents ongoing system emissions and efficiency, in part to fulfill U.S. Environmental Protection Agency (EPA) requirements. Submit this document with the "Site Monitoring Worksheet" (fact sheet #7) in lieu of quarterly progress reports.

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 gallon/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: 4/24/96

FREE PRODUCT RECOVERY SYSTEMS

Attach a table of free product thickness in all monitoring and recovery wells (to 0.1 feet).

Free product recovery rate: gallons/day
Total product recovered to date: gallons

GROUND WATER PUMP-OUT SYSTEMS

Influent/Effluent concentrations

Table 3 Attach a table of cumulative ground water influent and effluent discharge concentrations (in parts per billion).

Operating parameters

Pumping rate: 0.24 gallons per minute
Amount of water table drawdown: 1 feet

Contaminant mass removal

Estimated contaminant mass removal rate: 0.016 gallons/day
Estimated contaminant mass removal to date: 12.97 gallons

SOIL VENTING SYSTEMS

Emission concentrations

Table 6 Attach a table including field screening results for each vapor extraction point.

Table 7 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: 61 standard cubic feet/minute (scfm)

Table 5 Attach a table of cumulative vacuum data from vent points and monitoring points.

Bioactivity measurements

Attach a table of cumulative extraction system CO₂ and O₂ concentrations.

Contaminant mass removal:

Estimated contaminant mass removal rate: kg/day x gal/kg 0.55 gal/day

Estimated contaminant mass removal to date: 424 gallons

SOIL VENTING/AIR SPARGING SYSTEMS

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

Table 9 Attach a table of air injection rates for each sparge point in the system.

Total air injection rate: 3.5 scfm

Total air removal rate: 61 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: 0.567 gallons/day
Total estimated contaminant mass removal to date for the site: 436.97 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.

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 with the current monitoring schedule.

TABLE 1
GROUNDWATER ANALYTICAL DATA
Former 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
	12/27/94	ND	ND	ND	ND	36	ND
	03/09/95	ND	ND	ND	ND	ND	ND
	06/20/95	ND	ND	ND	ND	ND	ND
	09/21/95	ND	ND	ND	ND	ND	ND
	12/22/95	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
	12/27/94	42	8	31	67	400	ND
	03/09/95	550	160	210	610	2700	ND
	06/20/95	170	59	240	480	1800	ND
	09/21/95	7	5.7	7.3	23	120	ND
	12/22/95	43.5	20	39	74.1	540	ND
	03/14/96	117.0	86	167	422.0	1980	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

MW-3	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
	12/27/94	ND	ND	ND	ND	ND	ND
	03/09/95	3100	3000	1000	11000	53000	ND
	06/20/95	2000	3100	230	9300	43000	ND
	09/21/95	3140	2810	509	6490	38000	ND
	12/22/95	1650	3580	1730	6340	77500	<250
	03/14/96	889	2650	BDL	3790	21000	<100
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
	12/27/94	ND	ND	ND	ND	ND	ND
	03/09/95	ND	ND	ND	ND	ND	ND
	06/20/95	ND	ND	ND	ND	ND	ND
	09/21/95	ND	ND	ND	ND	ND	ND
	12/22/95	ND	ND	4	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
	12/27/94	ND	ND	ND	ND	56	ND
	03/09/95	ND	ND	ND	ND	ND	ND
	06/20/95	ND	ND	ND	ND	ND	ND
	09/21/95	ND	ND	ND	ND	ND	ND
	12/22/95	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

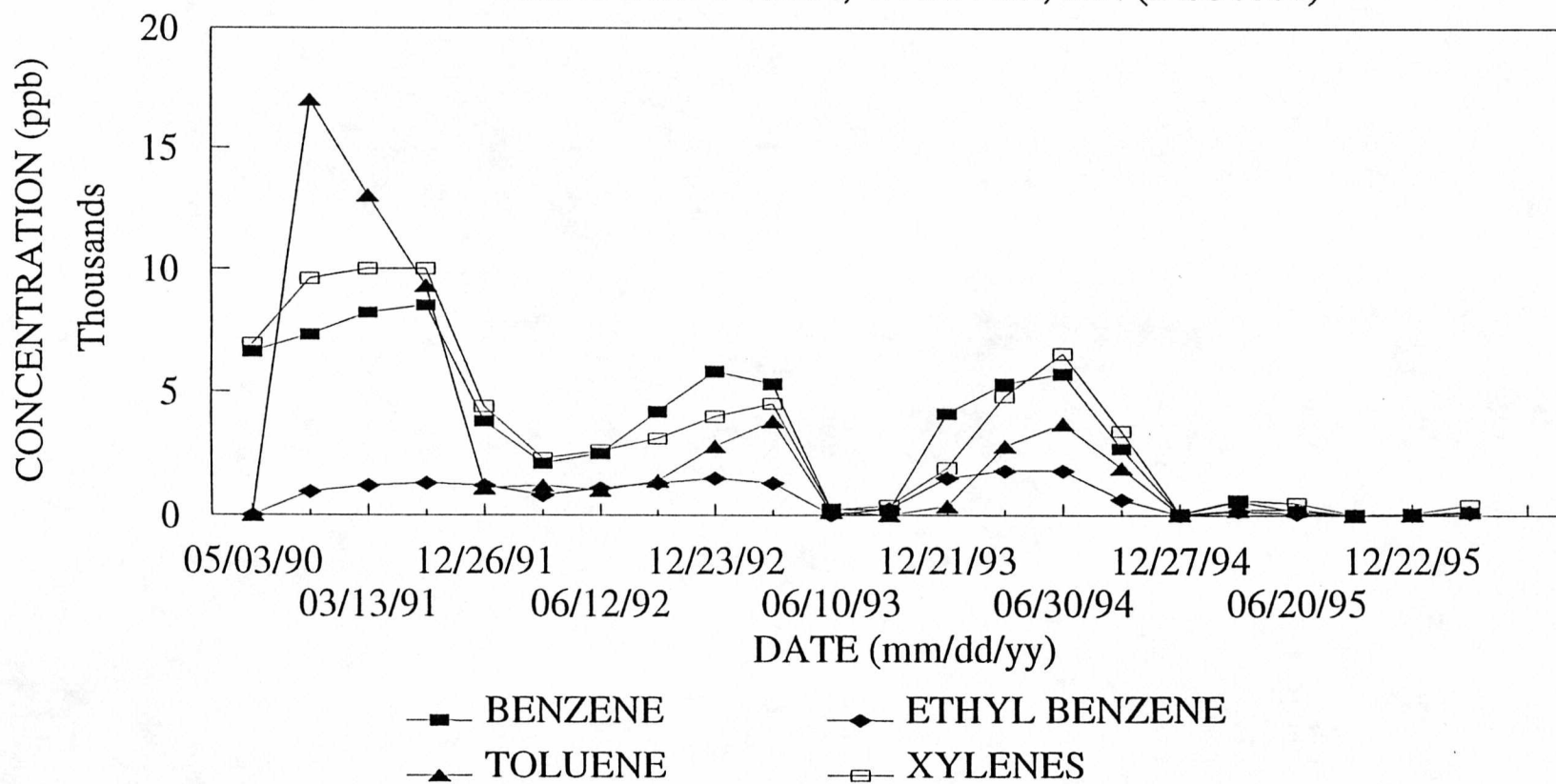
GRO=gasoline range organics

** = indicates sample contains higher boiling hydrocarbons*

DAHL

GROUNDWATER ANALYTICAL DATA MW-2

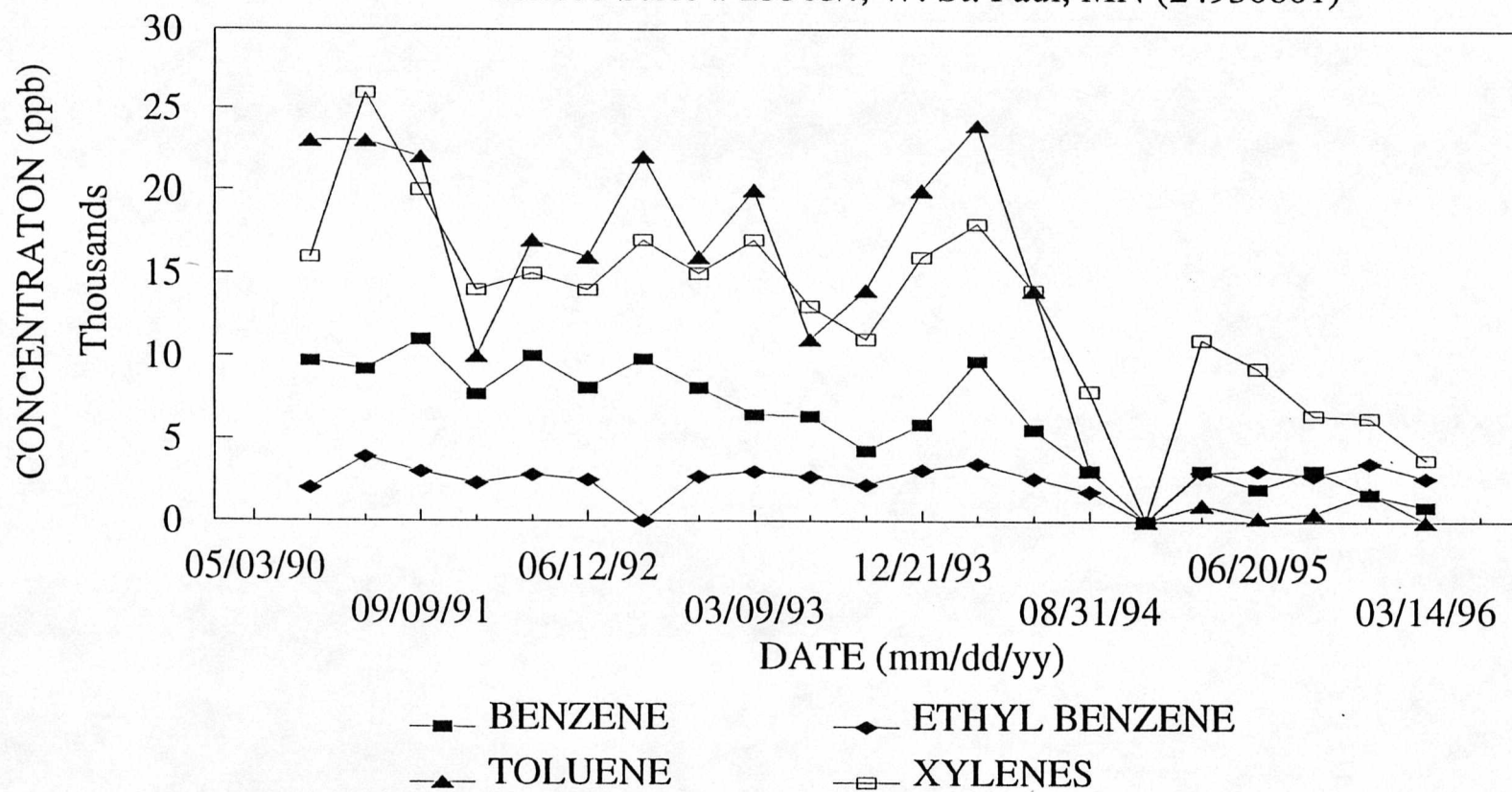
Conoco Store # 23034, W. St. Paul, MN (24930601)



0601LABANAL

GROUNDWATER ANALYTICAL DATA MW-3

Conoco Store # 233034, W. St. Paul, MN (24930601)



0601LABANAL2

TABLE 2

GROUNDWATER ELEVATION DATA

Former 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	87.70
	14:30 hrs.	100.45	09/29/93	0.00	12.72	87.73

MW-1		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
		100.45	11/17/94	0.00	13.83	0.00	86.62
		100.45	12/27/94	0.00	14.94	0.00	85.51
		100.45	01/16/95	0.00	15.22	0.00	85.23
		100.45	02/09/95	0.00	17.74	0.00	82.71
		100.45	03/09/95	0.00	16.51	0.00	83.94
		100.45	04/06/95	0.00	16.24	0.00	84.21
		100.45	05/11/95	0.00	15.52	0.00	84.93
		100.45	06/20/95	0.00	14.78	0.00	85.67
		100.45	07/31/95	0.00	13.82	0.00	86.63
		100.45	08/29/95	0.00	13.62	0.00	86.83
		100.45	09/21/95	0.00	14.11	0.00	86.34
		100.45	10/03/95	0.00	14.44	0.00	86.01
		100.45	11/21/95	0.00	15.02	0.00	85.43
		100.45	12/22/95	0.00	15.67	0.00	84.78
		100.45	01/12/96	0.00	16.10	0.00	84.35
		100.45	02/27/96	0.00	17.47	0.00	82.98
		100.45	03/14/96	0.00	16.92	0.00	83.53
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
	MW-2	100.74	06/06/90	0.00	20.62	0.00	80.12
MW-2		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

MW-2		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
		100.77	09/29/93	0.00	13.73	0.00	87.04
		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
	12:00 hrs. 14:30 hrs.	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
		100.77	01/28/94	0.00	16.50	0.00	84.27
		100.77	01/28/94	0.00	16.50	0.00	84.27
		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
	12:00 hrs. 2:00 hrs. 2:30 hrs.	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
		100.77	08/15/94	0.00	16.00	0.00	84.77
		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
	09:30 11:50	100.77	11/17/94	0.00	13.75	0.00	87.02
		100.77	12/27/94	0.00	14.91	0.00	85.86
		100.77	01/16/95	0.00	15.56	0.00	85.21
		100.77	02/09/95	0.00	18.07	0.00	82.70
		100.77	03/09/95	0.00	17.88	0.00	82.89
		100.77	04/06/95	0.00	16.73	0.00	84.04
		100.77	05/11/95	0.00	15.64	0.00	85.13
		100.77	06/20/95	0.00	14.69	0.00	86.08
		100.77	07/31/95	0.00	14.32	0.00	86.45
		100.77	08/31/95	0.00	13.78	0.00	86.99

MW-2	100.77	09/21/95	0.00	13.72	0.00	87.05	
	100.77	10/03/95	0.00	13.94	0.00	86.83	
	100.77	11/21/95	0.00	14.56	0.00	86.21	
	100.77	12/22/95	0.00	17.16	0.00	83.61	
	100.77	01/12/96	0.00	16.22	0.00	84.55	
	100.77	02/27/96	0.00	17.50	0.00	83.27	
	100.77	03/14/96	0.00	17.01	0.00	83.76	
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

MW-3

	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
	101.04	11/17/94	0.00	16.93	0.00	84.11
	101.04	12/27/94	0.00	18.04	0.00	83.00
	101.04	01/16/95	0.00	18.41	0.00	82.63
	101.04	02/09/95	0.00	18.84	0.00	82.20
	101.04	03/09/95	0.00	19.84	0.00	81.20
	101.04	04/06/95	0.00	19.81	0.00	81.23
	101.04	05/11/95	0.00	19.08	0.00	81.96
	101.04	06/20/95	0.00	18.20	0.00	82.84
	101.04	07/31/95	0.00	16.21	0.00	84.83
	101.04	08/31/95	0.00	15.78	0.00	85.26
	101.04	09/21/95	0.00	18.00	0.00	83.04
	101.04	10/03/95	0.00	17.76	0.00	83.28
	101.04	11/21/95	0.00	18.48	0.00	82.56
	101.04	12/22/95	0.00	19.14	0.00	81.90
	101.04	01/12/96	0.00	19.36	0.00	81.68
	101.04	02/27/96	0.00	20.16	0.00	80.88
	101.04	03/14/96	0.00	20.34	0.00	80.70

MW-4

100.68	10/23/89				
100.68	12/15/89				
100.68	01/08/90				
100.68	02/05/90				
100.68	03/13/90				
100.68	03/29/90				
100.68	04/24/90				
100.68	05/03/90	0.00	23.93	0.00	76.75
100.68	05/15/90				
100.68	06/06/90				
100.68	06/12/90				
100.68	06/15/90				
100.68	06/29/90				
100.68	07/06/90				
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

MW-4	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
	100.66	11/17/94	0.00	16.87	0.00	83.79
	100.66	12/27/94	0.00	18.23	0.00	82.43
	100.66	01/16/95	0.00	18.72	0.00	81.94
	100.66	02/09/95	0.00	19.15	0.00	81.51
	100.66	03/09/95	0.00	19.95	0.00	80.71
	100.66	04/06/95	0.00	19.61	0.00	81.05
	100.66	05/11/95	0.00	18.51	0.00	82.15
	100.66	06/20/95	0.00	17.83	0.00	82.83
	100.66	07/31/95	0.00	16.93	0.00	83.73
	100.66	08/31/95	0.00	16.59	0.00	84.07
	100.66	09/21/95	0.00	17.54	0.00	83.12
	100.66	10/03/95	0.00	17.78	0.00	82.88
	100.66	11/21/95	0.00	18.34	0.00	82.32
	100.66	12/22/95	0.00	19.12	0.00	81.54

MW-4	100.66	01/12/96	0.00	19.57	0.00	81.09
	100.66	02/27/96	0.00	20.27	0.00	80.39
	100.66	03/14/96	0.00	20.48	0.00	80.18
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
	102.13	09/20/93				
	102.13	09/27/93				
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	12/08/93				
	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
	102.13	11/17/94	0.00	16.87	0.00	85.26
	102.13	12/27/94	0.00	18.17	0.00	83.96
	102.13	01/16/95	0.00	18.44	0.00	83.69
	102.13	02/09/95	0.00	18.97	0.00	83.16
	102.13	03/09/95	0.00	19.88	0.00	82.25
	102.13	04/06/95	0.00	19.64	0.00	82.49
	102.13	05/11/95	0.00	18.85	0.00	83.28
	102.13	06/20/95	0.00	17.99	0.00	84.14
	102.13	07/31/95	0.00	16.49	0.00	85.64
	102.13	08/31/95	0.00	16.14	0.00	85.99
	102.13	09/21/95	0.00	17.22	0.00	84.91
	102.13	10/03/95	0.00	17.40	0.00	84.73
	102.13	11/21/95	0.00	18.30	0.00	83.83
	102.13	12/22/95	0.00	19.12	0.00	83.01
	102.13	01/12/96	0.00	19.54	0.00	82.59
	102.13	02/27/96	0.00	19.83	0.00	82.30
	102.13	03/14/96	0.00	19.97	0.00	82.16
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

RW-1		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
		100.61	01/25/94				
	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				
		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
		100.61	11/17/94	0.00	26.80	0.00	73.81
		100.61	12/27/94	0.00	25.86	0.00	74.75
		100.61	01/16/95	0.00	16.22	0.00	84.39
		100.61	02/09/95	0.00	27.63	0.00	72.98
		100.61	03/09/95	0.00	26.58	0.00	74.03
		100.61	04/06/95	0.00	26.30	0.00	74.31
		100.61	05/11/95	0.00	27.31	0.00	73.30
		100.61	06/20/95	0.00	26.58	0.00	74.03
		100.61	07/31/95	0.00	14.32	0.00	86.29
		100.61	08/31/95	0.00	15.55	0.00	85.06
		100.61	09/21/95	0.00	26.52	0.00	74.09
		100.61	10/03/95	0.00	26.65	0.00	73.96
		100.61	11/21/95	0.00	26.35	0.00	74.26
		100.61	12/22/95	0.00	26.77	0.00	73.84
		100.61	01/12/96	0.00	20.69	0.00	79.92
		100.61	02/27/96	0.00	25.26	0.00	75.35
		100.61	03/14/96	0.00		0.00	

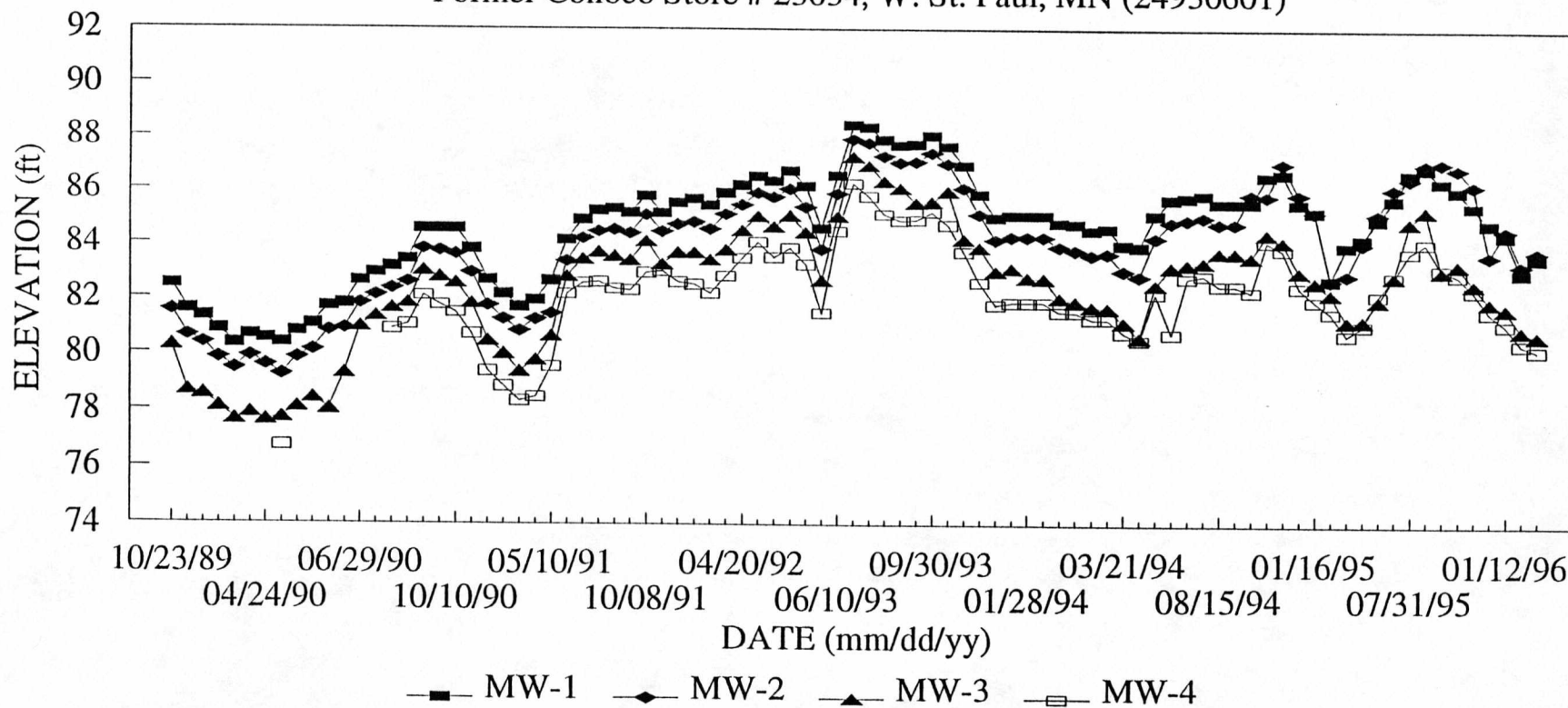
Explanation:

*All measurments are recorded 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*

DAHL

GROUNDWATER ELEVATION DATA

Former Conoco Store # 23034, W. St. Paul, MN (24930601)



0601WTE.ALL

GROUNDWATER ELEVATIONS, MW-5 & RW-1

Former Conoco Store # 23034, W. St. Paul, MN (24930601)

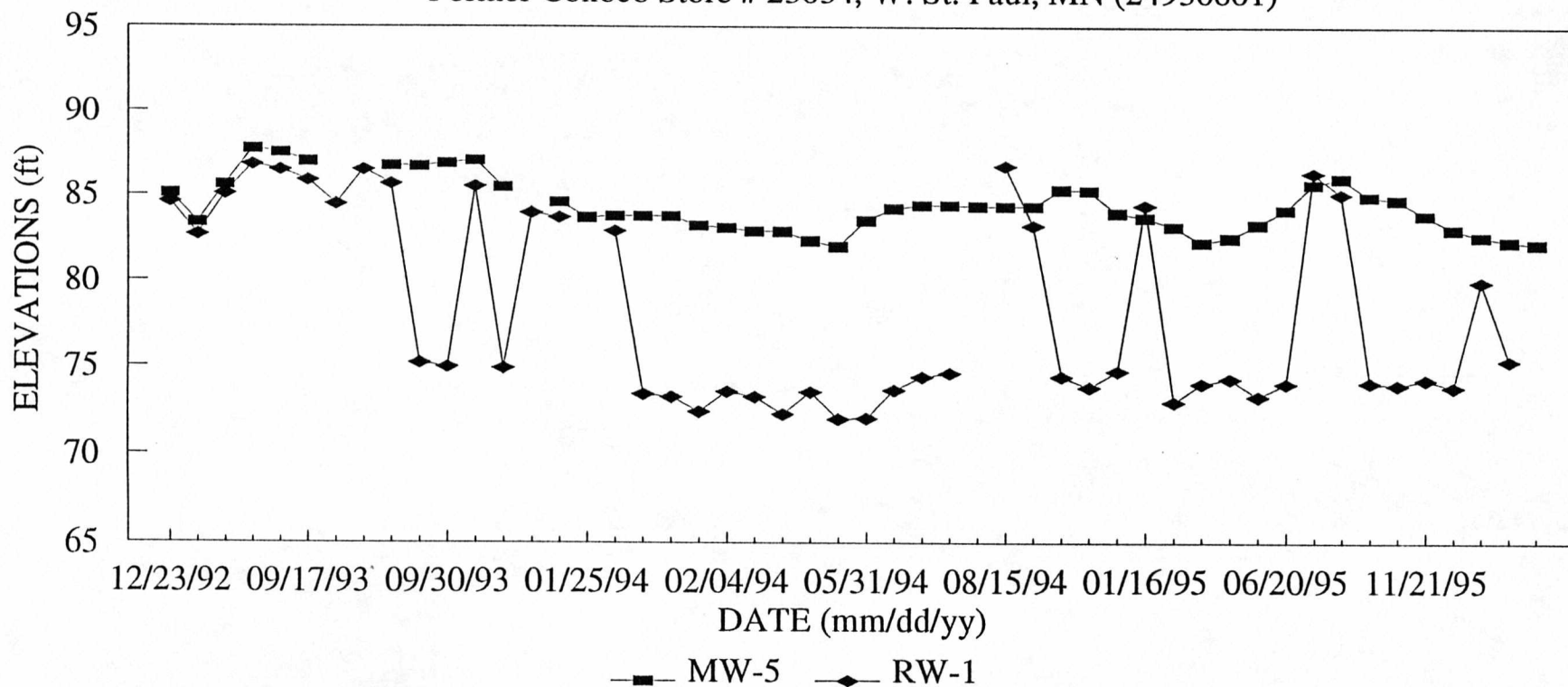


TABLE 3

INFLUENT/EFFLUENT ANALYTICAL DATA

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

	DATE	B	E	T	X	THG/GRO	MTBE	COD (ppm)	TSS (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		
	12/27/94	970	280	700	1200	7000	ND		
	03/09/95	510	170	740	1300	9200	ND		
	06/20/95	390	41	270	990	11000	ND		
	09/21/95	545	420	423	1910	7840	<50		
	12/22/95	266	163	239	985	4800	<20		
	03/14/96	159	152	147	425	2780	<10		
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
	10/31/94	ND	ND	ND	6	60	ND	ND	6
	11/17/94	ND	ND	ND	7	50	ND	39	4
	12/27/94	ND	ND	ND	ND	35	ND	85	20
	01/16/95	ND	ND	1.7	ND	11	ND	50	10
	02/09/95	ND	ND	ND	8.4	92	ND	490	ND
	03/09/95	2.3	ND	ND	20	160	ND	ND	ND
	04/08/95	ND	ND	ND	2.8	ND	ND	74	ND
	05/11/95	ND	ND	ND	3.6	46	ND	50	ND
	06/20/95	ND	ND	ND	28	ND	ND	ND	ND
	09/21/95	ND	ND	ND	6.7	ND	ND	53	7.2
	10/03/95	ND	ND	1.1	ND	ND	ND	30	17.6
	11/21/95	BDL	BDL	BDL	BDL	BDL	BDL	36	8.4
	12/22/95	1.3	BDL	2.2	BDL	BDL	BDL	30	11.6
	01/12/96	BDL	BDL	1.3	BDL	BDL	BDL	22	6.4
	02/27/96	BDL	BDL	BDL	BDL	BDL	BDL	32	9.2
	03/14/96	BDL	BDL	BDL	BDL	BDL	BDL	26	11.2

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 4
GROUNDWATER SYSTEM PRODUCT REMOVAL DATA
Former Conoco Store # 23034
1126 South Robert St., W. St. Paul, Minnesota (24930601)

DATE	Cinfluent Conc.(ug/L)	Days of Operation	Geffluent (gal)	COEF	Product Removed (gal)
01/28/94	0	0	0	1.400E-09	0.000
02/04/94	2,900	7	18,892	1.400E-09	0.077
02/11/94	2,900	14	27,493	1.400E-09	0.188
03/21/94	910	45	58,072	1.400E-09	0.262
06/30/94	190	139	119,173	1.400E-09	0.294
12/27/94	7,000	180	141,103	1.400E-09	1.677
03/09/95	9,200	72	186,272	1.400E-09	4.076
06/20/95	11,000	103	210,554	1.400E-09	7.319
09/21/95	7,840	93	223,965	1.400E-09	9.777
12/22/95	4800	92	288,989	1.400E-09	11.719
03/14/96	2780	83	320,500	1.400E-09	12.966
TOTAL DAYS		828			
AVERAGE EFFLUENT GPM		0.242 GPM			
AVERAGE PRODUCT REMOVED		0.016 GPD			
TOTAL PRODUCT REMOVED		12.97 GALLONS			

Explanation:

gal = gallons

GPD = gallons per day

DAHL

TABLE 5

VACUUM DATA from SOIL VAPOR VENTS

Former 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
08/31/94	-20	-20	-20	-20	-20	-30	-20	-20	-20	-20	-20	-4	-2.8	-2.5	-0.1	-4.5	0	-2.4	-2.5
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
11/17/94	-22	-24	-22	-22	-38	-29	-44	-25	-20	-15	-15	-2	-0.02	-0.4	-0.02	-0.04	-1.6	-0.49	-0.48
12/27/94	-18	-24	-24	-18	-29	-34	-42	-11	-10	-12	-16	0	3.1	3.4	0	8.2	-2.2	-0.72	-0.74
01/16/95	-35	-39	-36	-20	-30	-13	-52	-4	-10	-16	-11	*	*	2.8	-1.6	-2.6	0	-0.08	-0.03
02/09/95	-30	-26	-36	-22	-32	-50	-50	-4	-7	-18	-8	*	*	*	*	*	*	*	*
03/09/95	SYSTEM SHUT DOWN																		
04/06/95	-26	-14	-26	-25	-27	-16	-16	-15	-20	-20	-19	-3.9	-4.5	-1.7	-1.5	-2.3	-1.8	-5	-4.4
05/11/95	-30	-15	-28	-28	-28	-26	-18	-16	-21	-22	-20	-3.8	-3.2	-1.4	-1.2	-1.8	-1	-4.8	-4
06/20/95	-24	-25	-16	-15	-15	-29	-24	-16	-18	-14	-20	-0.08	0.02	-1.6	1	0.02	-0.12	-0.16	-0.16
07/31/95	-34	-28	-20	-29	-27	-37	-33	-20	-34	-30	-30	-2.4	-0.4	-0.78	0.7	0	1.9	-1.4	0
08/31/95	-40	-44	-30	-36	-30	-41	-39	-38	-32	-27	-36	-1	0	0.16	0.3	0	-0.02	0	-0.49
09/21/95	-18	0	-10	-11	0	-13	-15	-10	-9	-2	-8	-0.8	0	-0.1	0.18	0	0	0	-0.4
10/03/95	-18	-15	-13	-12	-13	-16	-20	-28	-15	-14	-15	*	*	*	*	*	*	*	*
11/21/95	-20	-15	-16	-12	-14	-18	-34	-25	-15	-15	-9	-0.82	0	-1.1	0.1	0	0.02	*	*
12/22/95	-46	-14	-12	-13	-12	-15	-4	-25	-9	-12	-20	-1.5	-0.9	-0.8	-0.5	-1.7	-1.7	-1	-1.2
01/12/96	-46	-13	-15	-8	-9	-30	-8	-24	-10	-13	-26	*	*	*	*	*	*	*	*
02/27/96	-40	-48	-21	-49	-27	-22	-48	-51	-26	-18	-26	-2.1	-1.2	-1.0	-1.2	-0.72	-1.0	-3.0	-3.0
03/14/96	-26	-52	-28	-49	-4.1	-1.5	-50	-49	-1	-9	-8	*	*	*	*	*	*	*	*

Readings are measured in Inches of Water Column (IWCC)

* - indicates measurement not taken

TABLE 6

FID READINGS from SOIL VAPOR VENTS

Former Conoco Store # 23034

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

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)
2800	10000	5000	1000	10000	180	290	150	800	10000	10000	10000	10000	10000	10000	10000	10000	30	50
400	10000	800	400	10000	290	250	110	330	10000	10000	8000	8500	10000	10000	10000	10000	20	35
325	3600	500	225	9500	250	240	65	130	2000	2000	3000	3200	10000	10000	7000	7500	38	42
300	10000	2000	175	10000	500	225	210	150	3000	9500	42	45	80	1250	*	*	*	*
120	1000	4200	900	10000	3500	700	16	190	10000	10000	125	600	10000	150	10000	10000	20	50
150	3200	400	45	4000	70	200	14	18	1200	1250	*	*	*	*	*	*	*	*
40	1100	55	35	475	12	75	125	16	175	200	10	25	7	8	8	7	5	5
50	1200	38	10	400	10	50	80	10	175	175	7	25	18	8	12	15	6	6
40	500	12	12	150	10	30	50	5	135	90	15	20	30	1000	20	0	5	6
40	450	20	10	350	20	33	19	25	58	60	15	40	30	12	15	20	10	10
40	450	20	10	350	20	33	19	25	58	60	10	35	30	10	15	18	6	6
80	1200	200	250	450	10	18	14	12	48	95	22	70	10000	80	40	28	14	20
45	550	45	50	200	15	30	25	22	50	65	14	14	24	260	24	10	9	10
25	230	50	42	100	4	10	3	6	15	25	60	140	5100	9000	1000	18	5	4
16	375	68	60	100	12	15	10	8	36	30	75	200	10000	10000	1750	280	12	15
60	490	90	90	160	10	50	80	10	60	60	*	*	*	*	*	*	*	*
40	600	60	45	280	75	48	40	50	50	65	*	*	*	*	*	*	*	*
SYSTEM SHUT DOWN																		
100	700	125	65	350	30	35	14	20	100	150	30	25	450	1000	32	55	16	21
100	400	100	70	210	18	30	11	20	32	75	25	20	400	850	26	40	12	20
125	600	170	90	310	70	45	40	30	72	87	20	20	450	650	50	65	17	20
100	580	86	40	350	2	6	2	5	26	25	66	98	260	450	1000	18	2	1
150	700	90	38	650	75	27	30	39	36	20	45	120	660	600	10000	200	15	14
200	275	110	40	160	7	16	8	8	20	32	40	100	600	550	10000	180	20	22
55	300	35	21	160	17	7	7	10	14	14	*	*	*	*	*	*	*	*
60	250	40	30	150	14	14	8	10	12	20	40	80	500	500	10000	140	*	*
5	25	15	3	15	3	3	3	3	3	5	5	3	1	15	3	7	1.5	1.5
23	125	50	36	60	30	22	70	28	35	24	*	*	*	*	*	*	*	*
16	100	44	32	78	6	8	3	6	35	25	5	12	60	30	150	300	6	6
35	510	630	38	54	36	25	14	15	350	125	*	*	*	*	*	*	*	*

ON:

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

* - indicates measurement not taken

TABLE 7

SOIL VENT SYSTEM ANALYTICAL 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
12/27/94	1.8	3.4	15	12	430
06/20/95	1.6	1.5	1.7	14	290
09/21/95	1.8	6.1	7.7	25	570
12/22/95	5.2	3.5	4.7	13	220
03/14/96	10	<4.0	7.7	8.3	619

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.*

DAHL

TABLE 8

SOIL VENT SYSTEM PRODUCT REMOVAL DATA

*Former Conoco Store # 23034**1126 South Robert St., W. St. Paul, Minnesota (24930601)*

DATE	Days of Operation	Stack Sample (THG)	Flow Rate (SCFM)	Product Removed (GPD)	Total Product Removed (gal)
02/03/94	0	0	0	0	
02/04/94	1	3900	103	6.066	3.032835
02/11/94	7	2000	83	2.507	33.03578
02/18/94	7	2200	47	1.561	47.27357
03/21/94	31	2400	51	1.848	100.12206
06/30/94	101	1400	57	1.205	254.30967
08/31/94	62	39	75	0.044	293.0332425
12/27/94	118	430	34	0.221	308.664083
03/01/95	64	0	0	0.000	308.664083
06/20/95	111	290	66	0.289	340.744637
09/21/95	93	570	32	0.275	366.359069
12/22/95	92	220	36	0.120	377.361533
03/14/96	83	610	61	0.562	423.996826
TOTAL DAYS	770				
AVE. PRODUCT REMOVED		0.551 GPD			
TOTAL PRODUCT REMOVED		424.00 GALLONS			

*Explanation:**THG=total hydrocarbons as gasoline in ug/L.**SCFM=standard cubic feet per minute**GPD=gallons per day**gal=gallons*

DAHL

TABLE 9

GROUNDWATER VENT PERFORMANCE DATA

*Former Conoco Store #23034**1126 South Robert St., W. St. Paul, Minnesota (24930601)*

Monitoring Point	Date	Pressure 1 (PSI)	Pressure 2 (PSI)	Flow (Initial)	Flow (Adjusted)	Temperature (C)
GWV-1	08/15/94	11	11.8	2	2	50
	08/15/94	8	8.8	2	2	55
	08/31/94	9	9	2	2	57
	11/17/94	8.9	9.5	2.5	2.5	50
	12/27/94	9.3	9	2.5	2	52
	01/16/95	9.5	7.9	2	2	52
	02/09/95	9.2	0	2.5	2.5	49
	03/27/95	9		2.5		
	04/06/95	9.5	8.2	2.5	3.5	54
	05/11/95	9.6	8.2	3	2.5	58
	06/20/95	10	9.5	3.2	3.2	77
	07/31/95	10.4	9.4	3.4	3.4	74
	08/31/95	10	10	3	3.5	70
	09/21/95	11.4	10	4	3.5	67
	10/03/95	12.2	10.6	3	4	69
	11/21/95	11	10.7	4	3.5	62
	12/22/95	12.3	10.4	3.1	3.1	60
	01/12/96	12	10	3	3.5	64
	02/27/96	12	9.6	3.6	3.5	62
	03/14/96	12.25	9.5	3.25	3.5	

*Explanation:**GWV = Groundwater vent**PSI = Pounds per square inch**Flow rates are measured in standard cubic feet per minute (SCFM).**Temperature is measured in degrees Celcius (C).*

DAHL

TABLE 10

DISSOLVED OXYGEN DATA

Conoco Store # 23034

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

DATE	TIME	MW-1	MW-2	MW-3	MW-4	MW-5	SVV-1	SVV-2	SVV-3	SVV-4	SVV-5	SVV-6	SVV-7	SVV-8	SVV-9	SVV-10	SVV-11
07/08/94		2	1.5	2.1	3	6.5	7.5	7.5	1.8	1.4	2.2	2.6	2	1.9	2	*	1.8
08/15/94	09:30	0.6	0.6	1	2.5	2.5	7	6.5	1	*	1.5	6.2	2	1	1.5	*	1.5
08/15/94	11:50	0.7	0.7	1	2.6	2.7	7.2	6.5	1	*	1.5	6.5	2.1	1	1.5	*	1.4
01/16/95		*	1	*	*	*	1	7.8	*	4	6.2	1.1	1	0.8	*	*	1
03/09/95		0.5	0.4	0.5	0.5	1.3	*	*	*	2.4	*	*	*	*	*	*	*
04/06/95		*	*	*	*	*	*	10	2.8	*	1.6	*	*	*	*	*	*
05/11/95		*	*	*	*	*	3.6	9.6	2.1	2.6	9.2	3.8	0.6	1.6	4.2	2.1	2.4
06/20/95		1.5	1.2	1.4	1.8	1.5	1.6	8.2	0.7	2.8	1.4	0.8	1	1	1.2	1	0.9
08/02/95		0.9	0.8	1	1.2	1.4	1	6	0.6	2.2	1.4	1	1.2	0.8	1	1	0.8
08/29/95		1.4	1.5	1.6	1.6	4.2	2.6	6.4	3.1	2.2	3.2	1.3	1.6	1.3	6.2	1.6	1.3
09/21/95		1.2	1.2	1.4	1.5	2.8	2.8	6.8	4	3	3.8	2	2	1.5	6	2	1.2
10/03/95		0.6	1.4	1.1	1.4	1.5	0.7	3.6	0.9	1	*	*	*	*	*	*	*
11/21/95		1.0	1.0	1.3	1.1	3.0	1.0	3.8	*	1.0	1.8	*	*	*	*	*	*
12/22/95		*	*	*	*	*	0.6	4.2	0.5	2.2	*	*	*	*	*	*	*
01/12/96		*	*	*	*	*	*	7.0	*	6.2	9.8	*	*	*	*	*	*
02/27/96		*	*	*	*	*	5.5	DRY	7.2	10.4	*	*	*	*	*	*	*
03/14/96		2.0	1.2	1.7	1.0	9.3	*	*	*	*	*	*	*	*	*	*	*

Explanation:

Measurements in mg/l

* = Data not collected

DAHL

LEGEND

TECHNICAL SERVICES, INC.

April 1, 1996

Mr. Mike Watson
Dahl and Associates
4390 McMenemy Road
St. Paul, MN 55127

SUBJECT: 24930601
LEGEND No. 96-0639

1.0 INTRODUCTION

LEGEND TECHNICAL SERVICES, INC. (LEGEND) received one charcoal tube sample from a representative of Dahl and Associates on March 21, 1996. The parameters and analytical results are listed on the attached table.

2.0 SAMPLE IDENTIFICATION

LABORATORY NO.	CLIENT IDENTIFICATION
SN96-53095	SVS-Stack

3.0 METHODOLOGY

Charcoal Tube

The charcoal tube contents were desorbed using carbon disulfide. The solution was analyzed using an HP 5890 gas chromatograph equipped with a flame ionization detector. Compounds were identified by retention times and quantified by comparison to known compounds using an HP Chemserver laboratory data system.

4.0 CASE NARRATIVE

The sample was taken on March 14, 1996, and was received in acceptable condition.

5.0 REMARKS

The sample was consumed in the analysis.

Submitted by,

LEGEND TECHNICAL SERVICES, INC.

Lisa Reuder
Lisa Reuder (JWR)
Project Manager

Chris Bremer
Chris Bremer
Laboratory Manager

LR/CB/edt

INDOOR ENVIRONMENTAL QUALITY AND LABORATORY SERVICES

775 Vandalia Street St. Paul, MN 55114

"An Equal Opportunity Employer"

tel 612.642.1150 fax 612.642.1239

ms

LEGEND TECHNICAL SERVICES, INC.

TABLE #1
LEGEND No. 96-0639

DAHL AND ASSOCIATES, INC.

PETROLEUM VOLATILE ORGANIC COMPOUNDS

Compound	SVS Stack Front ($\mu\text{g}/\text{tube}$)	SVS Stack Back ($\mu\text{g}/\text{tube}$)	Method Blank ($\mu\text{g}/\text{tube}$)	PQL ($\mu\text{g}/\text{tube}$)
Total hydrocarbons as gasoline	6,100	< 50	< 50	50
Benzene	100	< 4.0	< 4.0	4.0
Toluene	77	< 4.0	< 4.0	4.0
Ethyl benzene	< 4.0	< 4.0	< 4.0	4.0
Total xylenes	83	< 8.0	< 8.0	8.0
DATE ANALYZED:	3/23/96	3/23/96	3/22/96	----

< = Less than number shown

PQL = Practical quantitation limit

$\mu\text{g}/\text{tube}$ is equal to micrograms per tube

CHAIN-OF-CUSTODY RECORD

96-0639

Client Name:		Laboratory Project No.:		Analysis/# of Containers:	
Report To: Dahl & Assoc. 4390 McMenamy Rd St. Paul MN 55127		Turnaround Time:		P R I E D A D F I N G S L S	
Attn: Mike Watson		☒ Normal Date Needed: _____		BETX THG	
Sampled By: Richard Joyce		☐ Rush Date Needed: _____			
Project No.: 24930601		Condition Received: <i>mt</i>			

Item No.	Field ID No.	Sample Description	Collection		Sample Matrix	Lab ID No.													
			Date	Time															
1		SVS - Stack	3/14/96	12 ²⁹	Air	96-53095		X											
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			

Transfer No.	Item No.	Relinquished By	Accepted By	Date	Time	Comments
1	1	Richard Joyce				
2	1	Richard Joyce	Erica Thomas	3/21/96	8 ³⁰	
3						
4						

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

MIDWEST ANALYTICAL SERVICES

LAB
METRO
FAX

(612) 689-2175
(612) 444-9270
(612) 689-3660

MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156



March 28, 1996

Jeff Ryan
Dahl & Associates
4390 McMenemy Road
St. Paul, MN 55127

Project ID: 24930601
Chain of Custody: 16453
Date Sampled: 03-14-96
Date Received: 03-18-96
Matrix: Water
Sample Identification:
Lab ID: 96-02072 MW-2
96-02073 MW-3
96-02074 Influent
96-02075 Effluent

Samples were analyzed for GRO by the Wisconsin Modified GRO procedure and for TPH as Gasoline by the USGS/California Method. The results are reported on the following page.

Sincerely,

Chad Holzengel 3/29

Chad Holzengel
Chemist

Deb Marlton 3/29

Deb Marlton
Biologist

MIDWEST ANALYTICAL SERVICES

Page 2
COC 16453

Date Analyzed: 03-25-96

Parameter:	MTBE	Benzene	Toluene	Ethyl Benzene	Xylenes	Total Hydrocarbons as GRO
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
MDL:	10.0	1.0	1.0	1.0	3.0	0.1
96-02072 MW-2	BDL	117	167	86.4	422	1.98
96-02073 MW-3	<100	889	<25.0	2650	3790	21.0

Date Analyzed: 03-25-96

Parameter:	MTBE	Benzene	Toluene	Ethyl Benzene	Xylenes	Total Petroleum Hydrocarbons as Gasoline
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
MDL:	10.0	1.0	1.0	1.0	3.0	0.1
96-02074 Influent	BDL	159	147	152	425	2.78
96-02075 Effluent	BDL	BDL	BDL	BDL	BDL	BDL

Lab ID:	96-02075 Effluent	Date Analyzed
COD (mg/L)	26	03-27-96
TSS (mg/L)	11.2	03-21-96

BDL = Below Detection Limit, MDL = Method Detection Limit

NOTE: Samples will be retained 30 days from the date of report or until the holding time for analyzed parameters expires, whichever comes first. Samples will be returned if requested within that time.



330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

REQUEST FOR ANALYSIS

(Instructions on Back of Form)

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

[illegible]

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

CHAIN OF CUSTODY RECORD

AND

REQUEST FOR ANALYSIS

(Instructions on Back of Form)

NO

16453

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

[illegible]

330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

MIDWEST ANALYTICAL SERVICES



MINNESOTA CERTIFIED LABORATORY
NUMBER 027-059-156

LAB
METRO
FAX

(612) 689-2175
(612) 444-9270
(612) 689-3660

March 7, 1996

Dahl & Associates
4390 McMenemy Road
St. Paul, MN 55127

Project ID: 24930601
Chain of Custody: 14749
Date Sampled: 02-27-96
Date Received: 02-28-96
Date Analyzed: See Below
Matrix: Water
Sample Identification:
Lab ID: 96-01433 (Effluent)

The results are reported on the following page.

Sincerely,

Chad Holzngel
Chemist

Deb Marlton
Biologist

WMC
3-20-96

Page 2
COC 14749

Parameter:	MTBE	Benzene	Toluene	Ethyl Benzene	Xylenes	Total Hydrocarbons as Gasoline
Units:	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
MDL:	10.0	1.0	1.0	1.0	3.0	0.1
96-01433 Effluent	BDL	BDL	BDL	BDL	BDL	BDL

BDL = Below Detection Limit, MDL = Method Detection Limit

Parameter	96-01433 Effluent	Date Analyzed
COD (mg/L)	32	02-29-96
TSS (mg/L)	9.2	03-06-96



330 SO. CLEVELAND ST.
P.O. BOX 349
CAMBRIDGE, MN 55008

AND

REQUEST FOR ANALYSIS

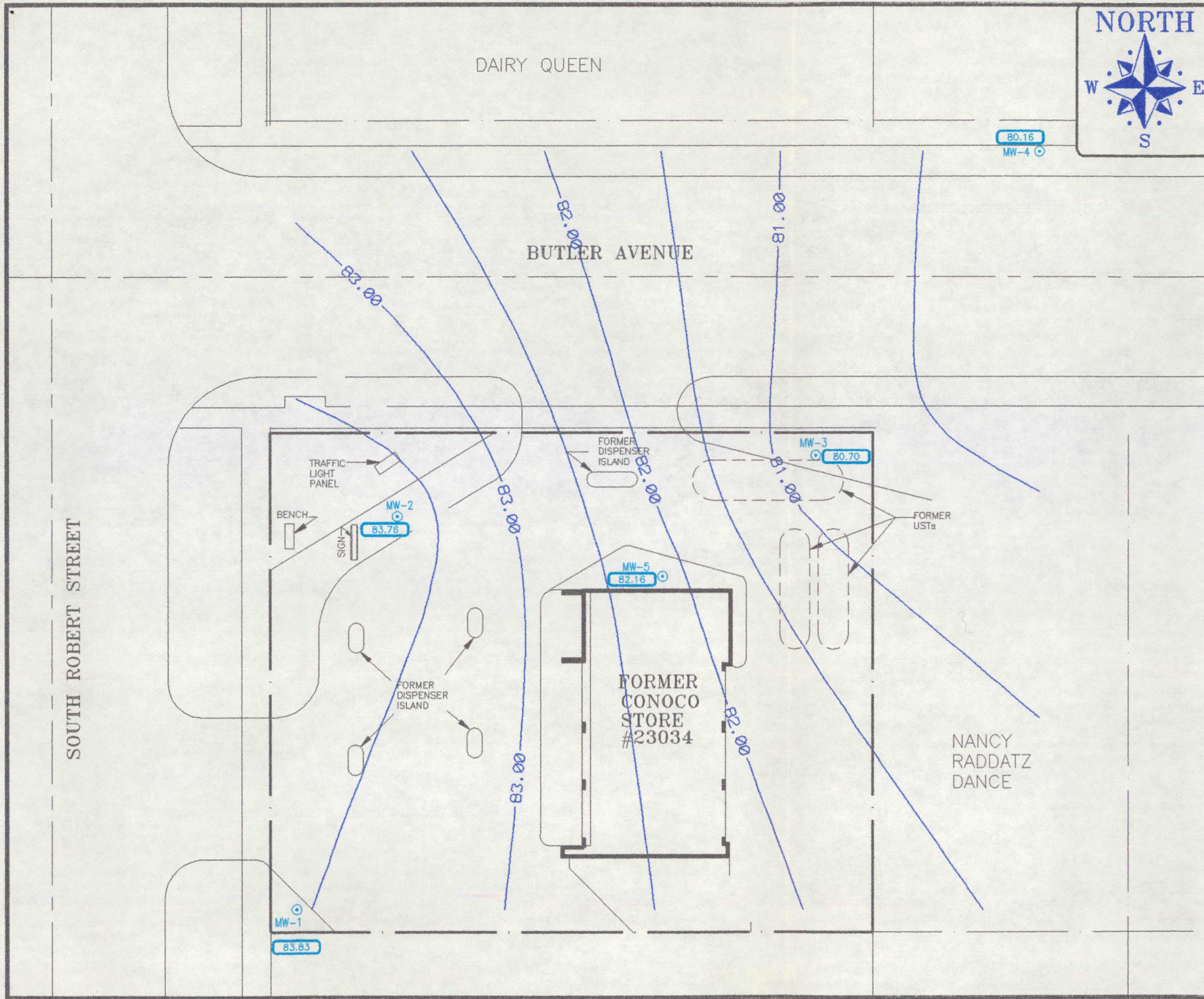
(Instructions on Back of Form)

KQ

14749

LAB (612) 689-2175
METRO (612) 444-9270
FAX (612) 689-3660

[illegible]

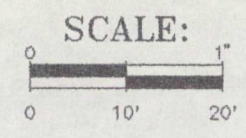


EXPLANATION

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 03/14/96
AVERAGE GRADIENT = 1.85×10^{-2} ft/ft



DAHL
& Associates, Inc.
Environmental Consultants, Contractors & Engineers

Offices: Santa Barbara, CA - Bettendorf, IA - Ann Arbor, MI
St. Paul, MN - Ponca City, OK - Tulsa, OK - Fort Worth, TX

DAHL STD NO: N:\VEMN0601\

GROUNDWATER GRADIENT 03/14/96

FORMER CONOCO - STORE #23034
1126 ROBERT STREET SOUTH
WEST ST. PAUL, MINNESOTA

PLOT DATE 04/29/96 AutoCAD FILE NAME 0601-15K PLOT SCALE 1" = 20'

DATE DRAWN	04/29/96
DRAWN BY	KAT
REVISION DATE	
DRAWING NUMBER	B- 15 -K
PROJECT NUMBER	VEMN0601
FIGURE NUMBER	