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BWS

# **Holtz-Krause Landfill Wausau, Wisconsin**

2005 Annual Monitoring Report

March 29, 2006

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**2005 Annual Performance Evaluation Report  
Fifth-Year Supplemental Report  
Holtz Krause Landfill  
Wausau, Wisconsin**

**1.0 Introduction**

The Holtz-Krause Landfill (WDNR License No. 00674, Facility Id. No. 3737055880) is located in the City of Wausau in Marathon County, Wisconsin. This report documents the performance of the composite cover and gas extraction systems, and summarizes the results of the groundwater monitoring, for the year 2005.

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**2.0 Final Cover System**

**2.1 System Overview**

The Holtz Krause Landfill has a cover system consisting of 6" of topsoil, 2½' of soil, a 40 mil VLDPE geomembrane, and 2' of clay overlying the base grade and former landfill cap. The cap system has performed well during the year 2005.

**2.2 Vegetative Cover/Erosion**

The vegetative cover is well established in all areas and there have been no erosion problems over the last year. The landfill cover was mowed once during 2005, in August. The soccer fields were not mowed by the City/Committee during 2005 but the Wausau Panthers Football organization did mow a portion of the site to use as a practice area.

**2.3 Settlement/Surface Drainage**

The landfill has experienced differential settlement and the surface of the cap reflects that impact. The east and west sides drain away from the landfill at slopes of up to 25% but the main portion of the landfill cap was constructed to drain to the south at a 2% slope with a 1% grade for a length of about 250' near the middle. These flatter areas have always been slow to drain and the differential settlement is apparent with some areas having questionable drainage. ?

The O&M plan requires a settlement survey every three years and the required survey was conducted in June of 2005. The site contours on Figure 4 generally show the site drains to the south. There are a number of isolated depressions that do not drain but do not show up on the survey.

Figure 5 shows the total settlement between the initial cap construction and the 2005 survey. It indicates the area to the west of EW-18 has settled 2½' since the construction was completed. Reviewing the differential settlement is important to ensure that the header system is draining effectively and, in an extreme case, to be sure the plastic membrane is not stretched beyond its limit.

The settlement survey, as well as a walkover of the site, indicates the most extreme differential settlement is to the east of EW-13. The differential settlement is on the order of 2' over a distance of approximately 20'. This has caused a tear or crack in the turf but is not believed to be sufficient to cause an excessive strain in the geomembrane. A photo of the tear is included in the appendix.

Figure 6 shows the settlement between the 2002 and 2005 surveys. It indicates that the most active settlement areas (ie areas with at least 0.3' of settlement over the last 3 years) are to the east of EW13, to the west of EW25, and to the east of EW34. Overdrawing the gas extraction system could draw in oxygen and increase the amount of settlement in a given area.

✓  
Check for  
Gas &  
Crack  
?

## 2.4 Site Security

We did not have any significant vandalism incidents during 2005. The blower house, blower house gate, and extraction wells are protected by padlocks and we have not had problems with unauthorized persons accessing these facilities.

A locked gate is maintained at the end of the access road off of Kent Street but most of the site is not fenced or controlled. Signs have been posted since the fall of 1999 prohibiting motorized vehicles and motorcycle activity has been significantly reduced as a result.

Code ✓

## 3.0 Gas Extraction System

### 3.1 System Overview

The gas system consists of 35 extraction wells, header pipes interconnecting those wells, a blower building and candlestick flare, and a condensate drain line connected to the Wausau sanitary sewer system. A system of 10 gas probes around the perimeter of the landfill allows monitoring for methane.

### 3.2 Gas Extraction System Repairs/Construction

There were no repairs to the gas extraction system during 2005 but there are a number of issues that are being monitored.

Granular material collects in the base of the demister unit, as discussed in previous reports. This material may be mineral scale from the inside of the header system but it could be 3M fill that was used in the landfill construction. The amount of material is minimal, on the order of one cup each quarter. ?

The depths and water levels in the extraction wells were measured on March 17 and 18, 2004. The water level indicator initially encountered an obstruction at a depth of approximately 24' in EW-1 but was able to be advanced to the bottom of the extraction well at 32.3'. The initial obstruction may indicate a break in the well screen due to settlement or possibly a foreign object in the well. The well needs to be televised to verify its' condition. OK?

The header system has generally performed adequately but is beginning to develop problems related to differential settlement, as discussed in the following section.

### 3.3 Settlement of Gas Extraction System Header

The header system is designed to allow condensate to drain. Differential settlement can create low spots within the header pipe that fill with condensate and interfere with the gas extraction. vacuum readings??

The header line pressure readings taken during the monthly extraction well monitoring are reviewed to confirm that the header system is performing adequately.

Readings taken during June of 2004 indicated a marked drop in the header vacuum between extraction wells EW-25 and EW-26, and EW-26 through EW-35 had little vacuum or flow. Condensate was drained from the system as discussed in the 2004 report. The system has generally maintained vacuum in the header system during 2005 although there is relatively little flow from extraction wells EW-26 through EW-35. ←

Observations in previous years have also indicated that some condensate collects in the header system between EW-11 and EW-12. Any blockage at that location has not caused problems with the extraction system because the system is looped. longer solution

Inspections of the drip legs and drain line outfall in the Kent Street sanitary sewer manhole have not indicated any problems or deficiencies with those units. The drip legs maintain system vacuum while allowing condensate to drain to the sanitary sewer.

### 3.4 Blower House Monitoring

The blower house is monitored weekly as part of the O&M Plan. The blower ran continuously during 2005 except for short time periods during the year due to maintenance activities.

The gas extracted from the landfill should be balanced so that methane does not migrate off-site and oxygen is not drawn into the landfill waste. Increasing the flow rate would generally be expected to decrease the concentration of methane in the landfill gas. Maintaining the methane concentration at 45 to 50 percent is one rule of thumb used to determine the proper flow rate.

The blower has been operated at a flow rate of approximately 200 cfm in an effort to meet the conflicting goals. Measurements electronically recorded with the LANDTEC GEM 500 instrument generally indicate a slightly higher flow rate. The measurements manually recorded on the weekly inspection forms were made with a Magnehelic pressure gage, are usually more consistent, and are generally in a range of 200 to 210 cfm.

??  
Not sure  
about this  
Target ?

The methane levels at the blower averaged 23.8 percent, ranged from 16.2 to 38.6 percent, and are below the 45 to 50 percent guideline. The average methane concentration is less than previous years and is expected to continue to gradually decrease.

The flame at the blower house blows out easily if the methane concentration is in the 20 percent range. The blower system continues to operate if the flare is not lit. The flare was out on several occasions during 2005 depending on weather and barometric conditions

??

### 3.5 Extraction Well Monitoring

#### 3.5.1 Monthly Field Readings

A review of pressure readings throughout the header system and oxygen levels at the blower building does not indicate leaks.

The percentage of methane, carbon dioxide, and oxygen; relative pressure on the well and header sides of the control valve; flow; and temperature are monitored with the LANDTEC GEM 500 Gas Extraction Monitor. As with the blower, a rule of thumb for optimum methane levels in individual wells would be 45 to 50 percent.

#### 3.5.2 VOC Testing

The landfill gas at the blower house and extraction wells EW-3, EW-5, EW-6, EW-20, EW-21, and EW-27 are tested annually for VOC's. In addition, the blower house samples were analyzed for the percentage of carbon dioxide, carbon monoxide, nitrogen, oxygen, and methane. The samples were collected on March 22, 2005 and the results of these tests are summarized in Appendix A.

?

### 3.6 Gas Probe Monitoring

The perimeter gas probes are monitored quarterly in accordance with the O&M Plan to check for migration of methane. The Landtec GEM-500 is used for the gas probes as well as the extraction wells. Methane was not detected in any of the gas probes during 2005. The probe monitoring data indicates that the extraction system is effectively providing protection against gas migration to the surrounding properties.

✓  
?  
Parameters  
Monitoring  
results?

### 3.7 Condensate Testing

The flow or quantity of condensate produced is not measured but it appears to be a small amount and only during the winter months.

A sample of the condensate from the gas extraction system was collected from Condensate Drip Leg No 1 (WDNR ID 301) on March 22, 2005. The sample was tested for VOC's and the results are summarized in Appendix B.

Field data were collected with the condensate sample, as is done with groundwater samples, and the results are reported on the field data sheet in Appendix C. The pH from the water trap in the condensate drip leg was 1.7. Testing of "fresh" condensate from the base of the flare indicates a pH of 5.7. Past O&M practices would not have ensured that the water in the trap would have been completely flushed since the gas extraction system began operation and, since the flow through the trap is minimal, the acidity may have become more concentrated over time. The traps in CD-1 and CD-2 will be flushed with fresh water and monitored to maintain a more neutral pH.

## 4.0 Monitoring System Status

### 4.1 Gas Probes

The landfill perimeter gas probes presently consist of GP1S/GP1D, GP2S, GP3S/GP3D, GP4S, GP5S, GP6S, GP7R, GP9, GP10, and GP11. GP1S/GP1D and GP3S/GP3D are nested probes with one deep and one shallow probe within one protective casing. The gas probe locations are included in Figure 1.

?  
location  
Layout

The gas probes are monitored and inspected on a quarterly basis. Inspection activities include visual inspection of the access; labeling; conditions of the casing, lid, and lock; and of the condition of the PVC extension and petcock.

The protective casing for GP1S/GP1D has worked up by frost heave to the point where it is difficult to sample and needs to be repositioned. No other deficiencies with the gas probes were noted during 2005.



## **4.2 Groundwater Monitoring Wells**

The existing monitoring wells are listed on the table of current monitoring requirements in Appendix M. The well locations are included in Figure 1. The groundwater monitoring wells are sampled on an annual or semi-annual basis.

No deficiencies or problems with the wells have been noted and no well construction or abandonment was completed during 2005.

## **5.0 Groundwater Analytical Results**

### **5.1 Background**

Groundwater samples were collected in June and December in accordance with the sampling schedule. All wells are sampled annually in June and semi-annual samples are collected from some of the wells in December. The sampling schedule is included in Appendix M.

### **5.2 Groundwater Monitoring**

#### **5.2.1 Procedures**

The sampling and testing for 2005 was done in accordance with the SAP with the following exceptions:

- Water levels and field parameters were not obtained from EW-3R during June or December because of the presence of free-phase petroleum product.

#### **5.2.2 Groundwater Quality Data**

Tables summarizing the results for all parameters detected during 2005 are included in Appendix K (sorted by well) and Appendix L (sorted by parameter). Tables identifying WAC Chapter NR140 Pal and ES exceedances, sorted by parameter and by well, are included in Appendices D through G. Results of analytical testing have also been submitted to the WDNR on electronic media.

Field measurements of groundwater elevation, pH, specific conductance, temperature, oxidation-reduction potential (ORP), and dissolved oxygen (DO) are summarized for each sampling event in Appendix C.

The following parameters, as shown in the tables in Appendix E and G, had a PAL and or ES exceedance during 2005:

Arsenic: The arsenic ES has changed from 50 to 10 µg/l and PAL has dropped from 5 to 1 µg/l so the number of samples exceeding the arsenic standards has increased even though the average values have decreased. Arsenic exceeded the new ES (10 µg/l) in well MW-22B and the PAL in MW-4B, MW-8B, MW-8C, MW-12B, MW-22B, MW-24B, and MW-24C. Arsenic was detected at concentrations of up to 14 micrograms per liter (µg/l) and has been interpreted to be naturally occurring.

Benzene: Benzene exceeded the PAL (0.5 µg/l) in 10 wells and exceeded the ES (5 µg/l) in 5 of those wells during 2005. Benzene versus time graphs are included in Appendix H for all wells having a PAL exceedance in 2005. Results from all 10 wells are relatively steady or slightly decreasing.

Chloromethane: Chloromethane (methyl chloride) exceeded the PAL (0.3 µg/l) in 11 wells and the ES (3 µg/l) in 6 wells.

Fluorene: Fluorene was detected in MW 3R at 6150 µg/l exceeding the ES (400 µg/l). MW-3R is the only well tested for SVOC's and is impacted with free-phase petroleum product from an up-gradient, off-site source.

Naphthalene: Naphthalene exceeded the PAL (8 µg/l) in MW-3R. Method 8021 produced a result of 280 µg/l and Method 8270 produced a result of 2130 µg/l.

N-Nitrosodiphenylamine(1): MW-3R also had an exceedance for N-Nitrosodiphenylamine(1) which was detected at 4690 µg/l, exceeding the PAL (0.7 µg/l).

Vinyl Chloride: Vinyl chloride was detected at levels above the ES (0.2 µg/l) in 3 wells. Vinyl Chloride versus time graphs are included in Appendix I for those wells which have previously exceeded the enforcement standard. The reporting limit (0.2 µg/l) was the same as the enforcement standard.

### **5.2.3 Groundwater Level and Flow Data**

Groundwater elevation data was obtained from the June and December sampling events and is recorded on the Field Data Summary sheets in Appendix C. Groundwater contours are also presented on Figure 2 (June) and Figure 3 (December). Surface water is generally present in the stream along the east side of the landfill, in Horseshoe Slough and Pils Slough to the south of the site, and in Cemetery Slough to the east of the site.

The groundwater flow direction on the north-east side of the landfill is to the southwest but the flow changes to a predominantly westerly direction on the west side of the site. This flow mimics the surface water flow as the stream on the east flows to the south and, based on area topo maps, the sloughs to the south of the landfill are at a higher elevation than Cemetery slough on the west.

## 6.0 Expenses

The O&M expenses are summarized in the following table:

	2005 Projection	2005 Actual	2006 Projection
Mowing, Snow-plowing	\$1,500.00	\$1,205.29	\$1,500.00
Electric & Telephone	4,800.00	4,386.16	4,500.00
Laboratory Testing	12,500.00	7,632.00	12,500.00
Monitoring Well Construction	7,000.00	0.00	7,000.00
Consultant	14,000.00	9,028.42	16,000.00
Consultants - ROD Amendment	7,000.00	2,965.00	7,000.00
Settlement Survey	0.00	2,829.84	0.00
City Staff	12,000.00	9,884.95	12,000.00
Misc	1,500.00	326.13	1,000.00
<b>Total:</b>	<b>\$60,300.00</b>	<b>\$38,257.79</b>	<b>\$61,500.00</b>

The 2006 estimates are based on the following:

The entire landfill cap will be mowed once, the soccer fields will not be mowed

The 2006 estimated costs include the proposed construction, sampling, and testing of two additional monitoring wells. These wells had been included in the 2005 projection but were not completed pending resolution of the proposed ROD amendment. The estimated costs for the wells account for most of the difference between the 2005 projected and actual costs.

The 2006 estimates do not include contingencies for major repairs or unexpected expenses.

The agreement between the Steering Committee and the City of Wausau provides the financial assurance for the continued maintenance of the landfill. The balance remaining per that agreement is:

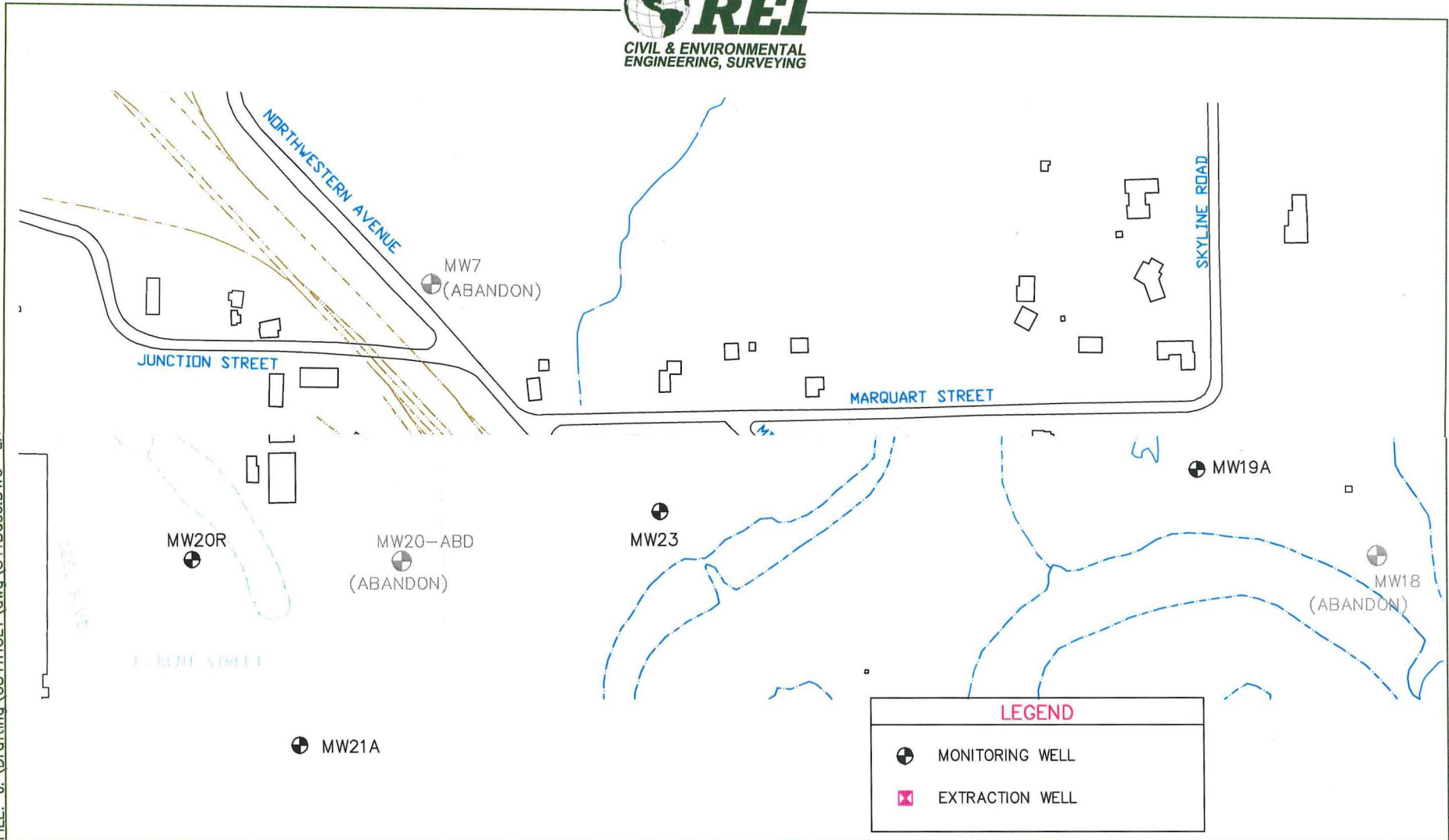
Balance 1/1/05:	\$2,011,108.34
Expenditures 2004	38,257.79
Interest Generated	59,831.48
Balance 1/1/06	\$2,033,887.32

This balance includes invoices for 2005 expenses that were paid in 2006.

# Figures

## Figures:

- Figure 1 - Site Map
- Figure 2 - Groundwater Contour Map 6/22/05
- Figure 3 - Groundwater Contour Map 12/22/05
- Figure 4 - Landfill Cap Surface Contours
- Figure 5 - Total Landfill Cap Settlement Contours
- Figure 6 - Landfill Cap Settlement Contours 2002 - 2005



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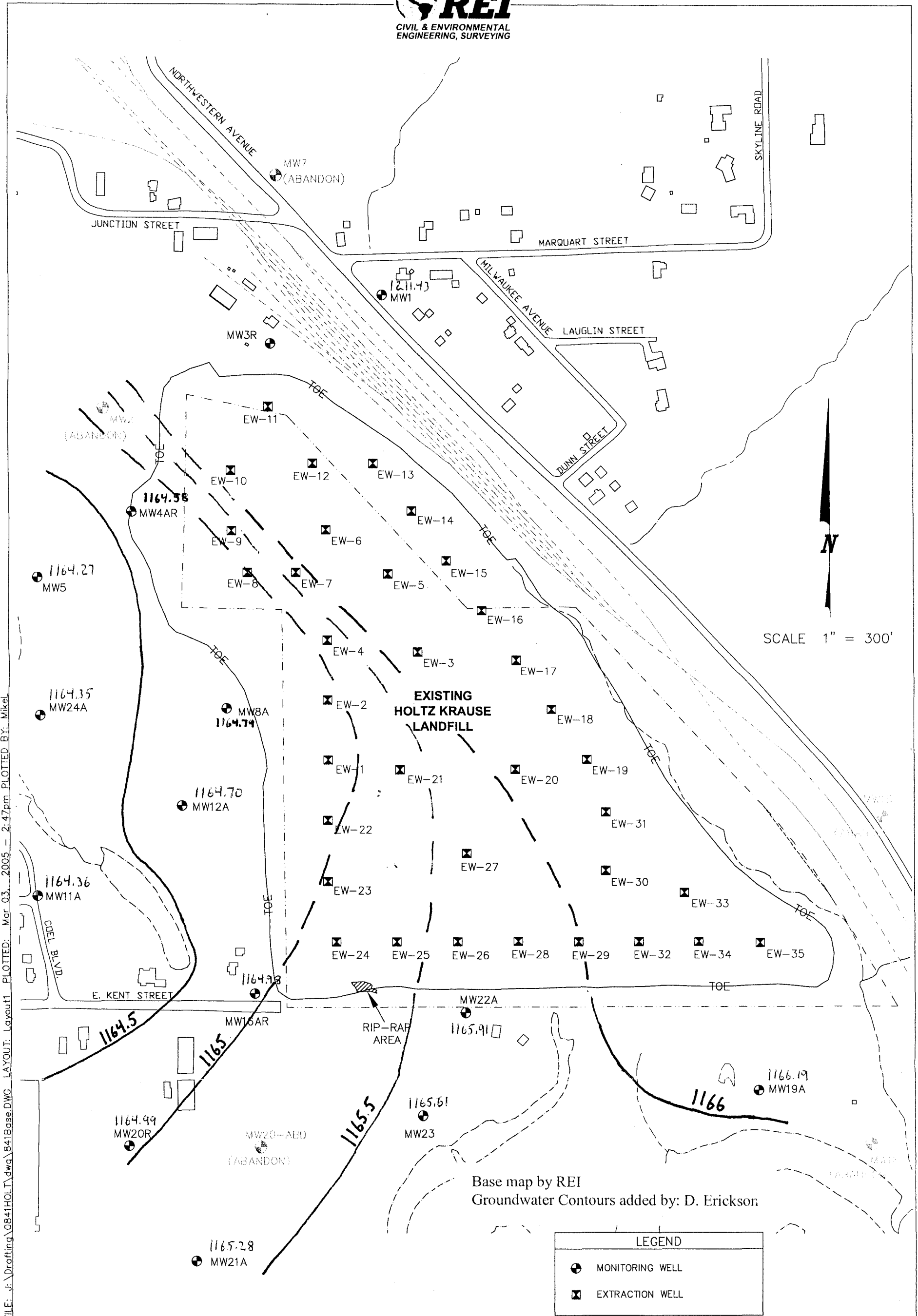
HOLTZ KRAUSE LANDFILL  
NORTHWESTERN AVE.  
WAUSAU, WISCONSIN

FIGURE 1 : SITE MAP

PROJECT No.  
841

PREPARED BY:  
MFL

DATE:  
2/22/05

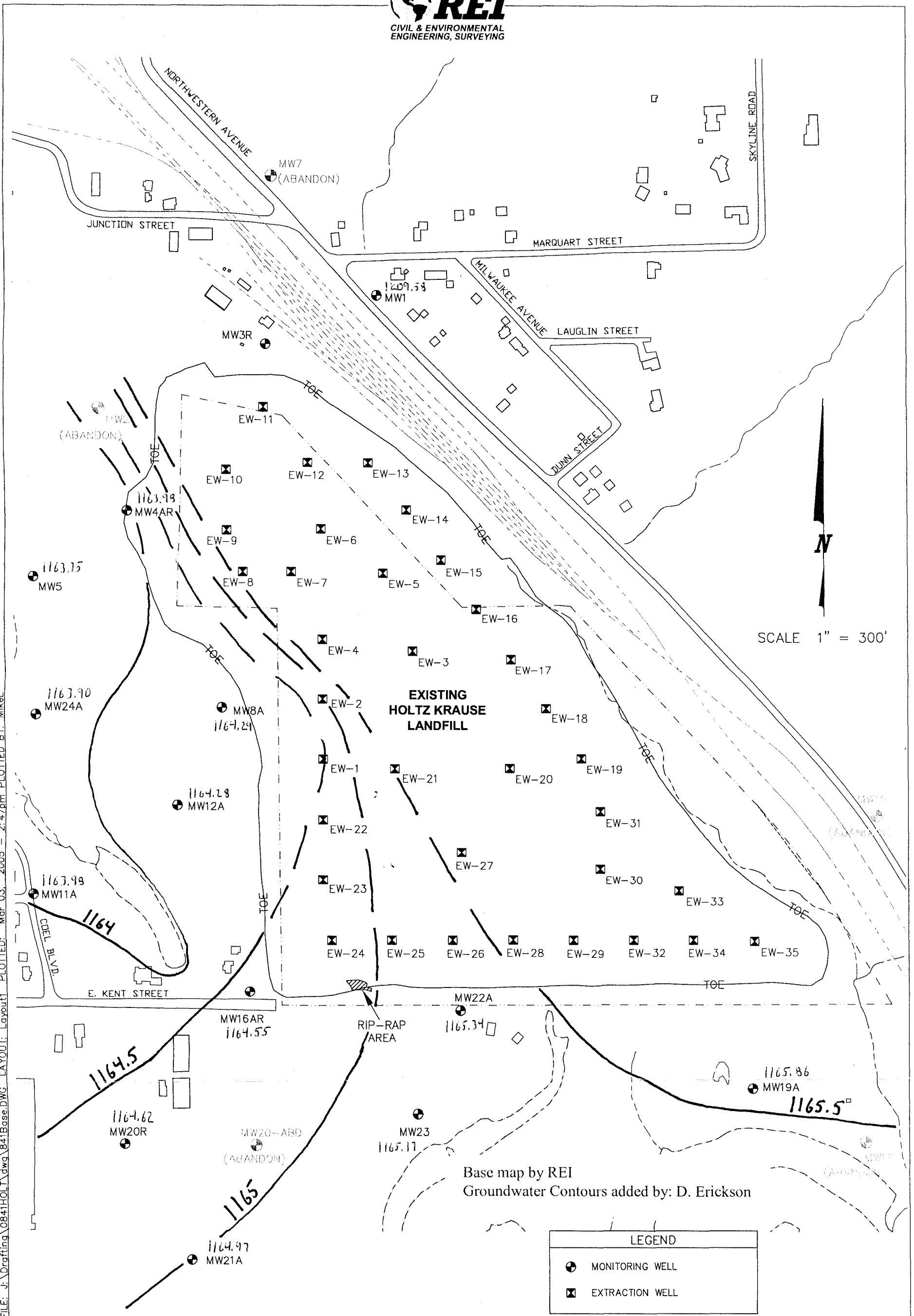


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HOLTZ KRAUSE LANDFILL  
 NORTHWESTERN AVE.  
 WAUSAU, WISCONSIN

FIGURE 2 : GROUNDWATER CONTOURS - JUNE 2005

PROJECT No. 841	PREPARED BY: MFL	DATE: 2/22/05
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HOLTZ KRAUSE LANDFILL  
 NORTHWESTERN AVE.  
 WAUSAU, WISCONSIN

FIGURE 3 : GROUNDWATER CONTOURS - DEC 2005

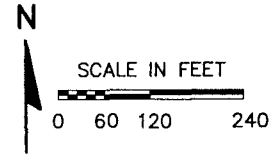
PROJECT No.  
841

PREPARED BY:  
MFL

DATE:  
2/22/05



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LEGEND	
	— CONTOUR W/ELEV
	— COLLECTION PIPE
	EW-00 — EXTRACTION WELL
	HV-0 — HEADER VALVE
	— LIMITS OF WASTE

**CITY OF WAUSAU**  
 Engineering Department  
 407 GRANT STREET WAUSAU, WI. 54403-4788  
 (715) 261-6740 FAX (715) 261-8789

SURVEYED BY: R.E.I.  
 FIELD BOOK NO. PG.  
 DESIGNED BY: R.E.I./P.R.NIKOLAI  
 DRAWN BY: R.E.I./P.R.NIKOLAI  
 APPROVED BY: DAERICKSON  
 POINT FILE:

ISSUED FOR: PRELIMINARY REVIEW/APPROVAL BIDDING/CONST. REC. REF. DWG. OFFICE USE

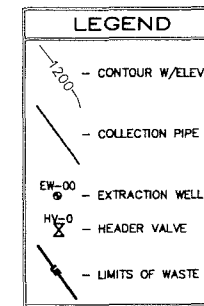
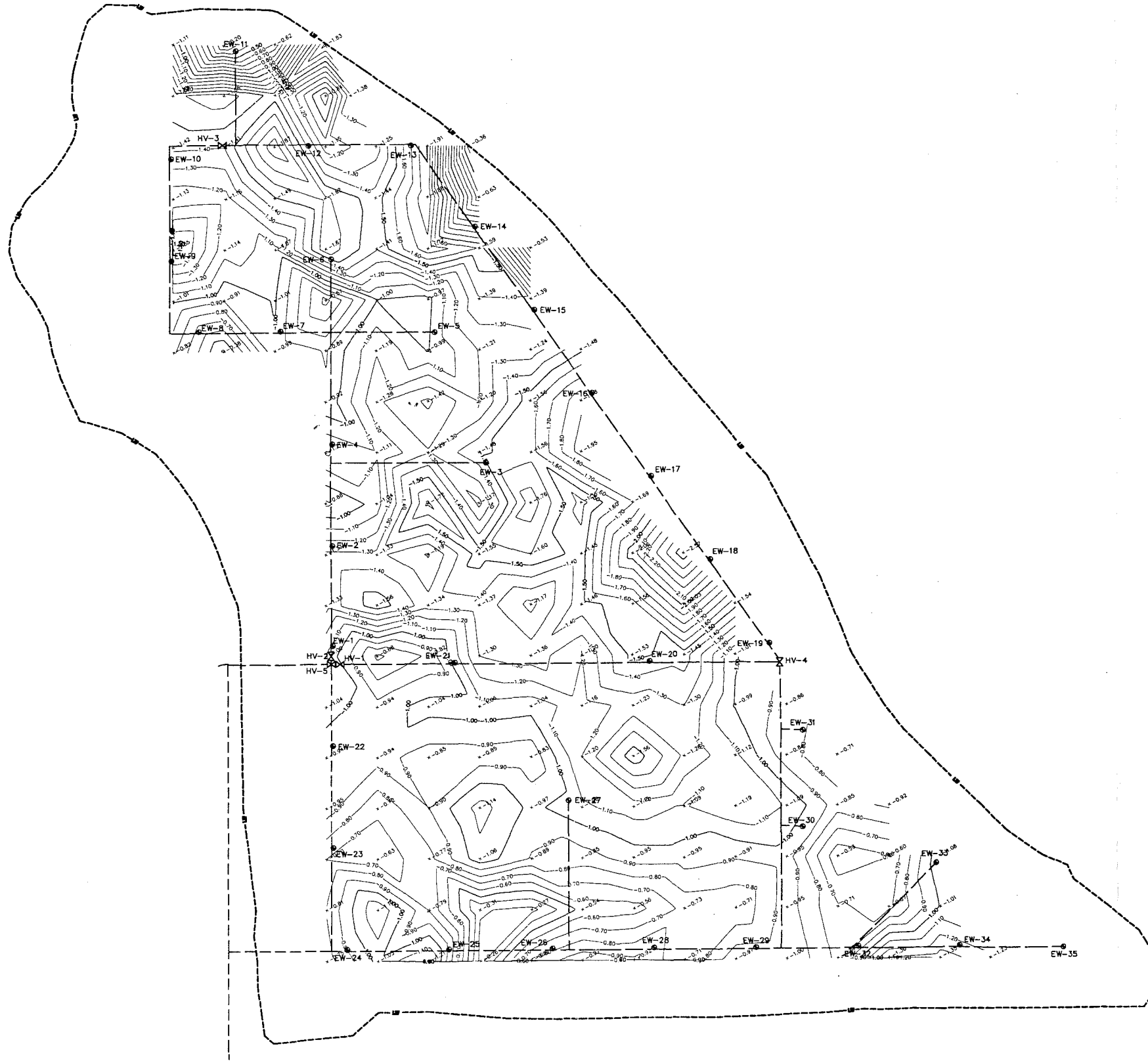
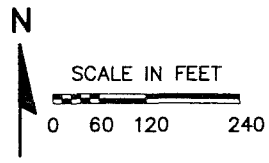
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DATE: FALL 1999 07/19/2005

**FIGURE 4**  
 Landfill Cap Surface Contours  
 Holtz Krause Landfill

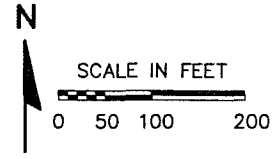
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 OF 1 SHEETS  
 FILE NUMBER 05-07-19

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		CITY OF WAUSAU Engineering Department 407 GRANT STREET WAUSAU, WI. 54403-4763 (715) 261-6740 FAX (715) 261-6759	
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ISSUED FOR PRELIMINARY REVIEW/APPROVAL BIDDING/CONST. REC. REF. DWG. OFFICE USE	DATE FALL 1999 07/19/2005	REVISIONS R.E.I.	P.R.NIKOLA
<b>FIGURE 5</b> Landfill Cap Settlement Contours Holtz Krause Landfill			
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LEGEND	
	- CONTOUR W/ELEV
	- COLLECTION PIPE
	EW-00 - EXTRACTION WELL
	HV-0 - HEADER VALVE
	- LIMITS OF WASTE

FIGURE 6

<b>CITY OF WAUSAU</b> Engineering Department 407 GRANT STREET WAUSAU, WI. 54483-4763 (715) 261-6740 FAX (715) 261-6769		SURVEYED BY: R.E.I. FIELD BOOK NO.: PG.	
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		03/01/2006	P.R.NIKOLAI
<b>Settlement Contours 2002 to 2005</b> Elevation difference from 2002 to 2005 Landfill Cap Settlement Contours Holtz Krause Landfill			
SHEET NO.		1	
OF 1 SHEETS			
FILE NUMBER		05-07-19	

2

# Appendix A

## Appendices:

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# Landfill Gas

## Summary of EPA 8260 Results

Location:  
 WDNR ID#:  
 Date Sampled:

BH-2	EW-3W	EW-5W	EW-6W	EW-20W	EW-21W	EW-27W
400	403	405	406	420	421	427
03/22/2005	03/22/2005	03/22/2005	03/22/2005	03/22/2005	03/22/2005	03/22/2005

### Volatiles - EPA 8260 (ppbv):

Code	Analyte	RL	BH-2	EW-3W	EW-5W	EW-6W	EW-20W	EW-21W	EW-27W
99375	Acetone	13447							
99001	Benzene	231	283	317	259	397	382	283	323
99340	Bromodichloromethane	73							
99342	Bromomethane	190							
99374	Carbon Disulfide	316							
99343	Carbon Tetrachloride	156							
99344	Chlorobenzene	106	221	189			228		
99345	Chloroethane	1117							
99346	Chloroform	101							
99347	Chloromethane	476							
99349	Dibromochloromethane	49							
99156	1,2-Dibromo-3-Chloropropane (DBCP)	153							
99384	1,2-Dibromoethane (EDB)	64							
99384	Dibromomethane	69							
99361	m-Dichlorobenzene	123							
99357	o-Dichlorobenzene	613							
99364	p-Dichlorobenzene	613							
99369	Dichlorodifluoromethane	149	425	838	336	584	779	376	411
99377	1,1-Dichloroethane	182							
99358	1,2-Dichloroethane	121							
99379	cis-1,2-Dichloroethene	248							
99376	trans-1,2-Dichloroethene	124							
99373	1,1-Dichloroethylene	186							
99350	Dichloromethane	566							
99360	1,2-Dichloropropane	106							
99362	cis-1,3-Dichloropropene	108							
99363	trans-1,3-Dichloropropene	108							

# Landfill Gas

## Summary of EPA 8260 Results

Location:	BH-2	EW-3W	EW-5W	EW-6W	EW-20W	EW-21W	EW-27W
WDNR ID#:	400	403	405	406	420	421	427
Date Sampled:	03/22/2005	03/22/2005	03/22/2005	03/22/2005	03/22/2005	03/22/2005	03/22/2005

### Volatiles - EPA 8260 (ppbv):

Code	Analyte	RL							
99008	Ethylbenzene	113	1547	1760	1733	2166	810	857	451
99372	Fluorotrichloromethane	175							
99380	Methyl Ethyl Ketone (MEK)	3334							
99289	Methyl Tert-Butyl Ether (MTBE)	136							
99180	Naphthalene	939							
99026	Styrene	116							
99351	Tetrachloroethylene	72							
99028	Toluene	522	751						
99365	Tribromomethane	95							
99354	1,1,1-Trichloroethane	181							
99355	1,1,2-Trichloroethane	90							
99381	Trichloroethylene (TCE)	184							
99353	Vinyl Chloride	288							
99014	m&p-Xylene	454	2722	2948	2318	2091	2261	1789	1692
99023	o-Xylene	113	345	320	445	160	173		124

### Gases (%):

Code	Analyte	RL	
85544	Carbon Dioxide	0.1	30.7
46113	Carbon Monoxide	0.1	
99181	Nitrogen	0.1	47.6
85550	Oxygen	0.5	
85547	Methane	0.1	20.5

## **Appendix B**



# Condensate Analytical Data Summary

March 2005

Sampled from Condensate Dripleg CD-1 (WDNR ID 301)

Code	Compound	Units	Result	Reporting Limit
81552	Acetone	UG/L	143	50
34030	Benzene (GC-MS)	UG/L		3.1
81555	Bromobenzene	UG/L		4.1
77297	Bromochloromethane	UG/L		7
32101	Bromodichloromethane	UG/L		3
32104	Bromoform	UG/L		4.4
34413	Bromomethane	UG/L		8
77342	n-Butylbenzene	UG/L		3.6
77350	sec-Butylbenzene	UG/L		4
77353	tert-Butylbenzene	UG/L		4
32102	Carbon Tetrachloride	UG/L		3
34301	Chlorobenzene	UG/L	7.15	7
34311	Chloroethane	UG/L		10
32106	Chloroform	UG/L		2
34418	Chloromethane	UG/L		2.9
77275	o-Chlorotoluene	UG/L		6
77277	p-Chlorotoluene	UG/L		10
32105	Dibromochloromethane	UG/L		8.7
38437	1,2-Dibromo-3-Chloropropane (DBCP)	UG/L		0.0047
77651	1,2-Dibromoethane (EDB)	UG/L		0.0063
77596	Dibromomethane	UG/L		30
34536	1,2-Dichlorobenzene	UG/L		6
34566	1,3-Dichlorobenzene	UG/L		5
34571	1,4-Dichlorobenzene	UG/L		6
34668	Dichlorodifluoromethane	UG/L		7
34496	1,1-Dichloroethane	UG/L		5
32103	1,2-Dichloroethane	UG/L		4
34501	1,1-Dichloroethene	UG/L		5
77093	1,2-Dichloroethylene (cis)	UG/L		4
34546	1,2-Dichloroethylene (trans)	UG/L		3.9
34541	1,2-Dichloropropane	UG/L		4
77173	1,3-Dichloropropane	UG/L		9
77170	2,2-Dichloropropane	UG/L		15
34704	cis-1,3-Dichloropropene	UG/L		5
34699	Trans-1,3-Dichloropropene	UG/L		2.5
77168	1,1-Dichloropropene	UG/L		4
81577	Diisopropylether	UG/L		3
78113	Ethylbenzene	UG/L	34.8	5
34488	Fluorotrichloromethane	UG/L		5
34391	Hexachlorobutadiene	UG/L		10
77223	Isopropylbenzene	UG/L		3.1
77356	p-Isopropyltoluene	UG/L		5
34423	Methylene Chloride	UG/L		3
81595	2-Butanone	UG/L	50.4	20

# Condensate Analytical Data Summary

March 2005

Sampled from Condensate Dripleg CD-1 (WDNR ID 301)

Code	Compound	Units	Result	Reporting Limit
78133	4-Methyl-2-Pentanone	UG/L	31.1	10
78032	Methyl Tert-Butyl Ether (MTBE)	UG/L		3
34696	Naphthalene	UG/L	12	8
77224	n-Propylbenzene	UG/L		3
77128	Styrene	UG/L		2.9
77562	1,1,1,2-Tetrachloroethane	UG/L		5.6
34516	1,1,2,2-Tetrachloroethane	UG/L		6.1
34475	Tetrachloroethene	UG/L		4.5
34010	Toluene	UG/L	18.2	3
77613	1,2,3-Trichlorobenzene	UG/L		5
34551	1,2,4-Trichlorobenzene	UG/L		10
34506	1,1,1-Trichloroethane	UG/L		4.2
34511	1,1,2-Trichloroethane	UG/L		3
39180	Trichloroethene	UG/L		5
77443	1,2,3-Trichloropropane	UG/L		12
77222	1,2,4-Trimethylbenzene	UG/L	10.8	4
77226	1,3,5-Trimethylbenzene	UG/L	3.68	3.1
39175	Vinyl Chloride	UG/L		2
85795	m&p-Xylene	UG/L	81.9	6.2
77135	o-Xylene	UG/L	15.1	3

## **Appendix C**

Holtz-Krause Landfill, Wausau, WI

Field Data Summary

Date:

Sampled by: J Puetz

Well	Well ID	TPVC Elev.	Depth to Water (TPVC) Elev.	Water Elev.	Date Sampled	Gallons Purged	Temp (C)	pH	Cond. @25C	ORP mV	D.O. ppm	Color	Odor	Turbidity	Remarks
CD-1	301	NA	NA	NA	3/22/05	NA	3.2	1.72	18600	234		Clear	Strong	Clear	Low pH



Holtz-Krause Landfill, Wausau, WI

Date:

Sampled by: C Stempa

Field Data Summary

All water levels measured on 12/21/05

Well	Well ID	Depth to		Date Sampled	Gallons Purged	Temp (C)	pH	Cond. @25C	ORP mV	D.O. ppm	Color	Odor	Turbidity	Remarks	
		TPVC Elev.	Water (TPVC) Elev.												
MW-1	100	1223.25	13.67	1209.58											
MW-3R	104	1216.75													
MW-4AR	106	1173.86	9.88	1163.98	12/22/2005	7	3.1	6.96	770	70	4.5	Light Brown	None	Slight	
MW-4B	107	1173.86	9.91	1163.95	12/22/2005	20	2.8	6.75	1010	-11	2	Light Brown	None	Slight	
MW-5	108	1174.50	10.75	1163.75											
MW-8A	110	1174.81	10.52	1164.29											
MW-8B	111	1174.52	10.26	1164.26	12/22/2005	22	7.4	6.18	1190	-22	1.5	Light Brown	None	Slight	
MW-8C	112	1174.60	10.35	1164.25	12/22/2005	22	5.8	6.26	1370	-23	3	Light Brown	None	Slight	
MW-11A	114	1209.60	45.62	1163.98											
MW-11B	115	1209.84	45.86	1163.98	12/21/2005	20	5.4	6.08	670	83	1.5	Clear	None	None	
MW-11C	116	1210.26	46.28	1163.98	12/21/2005	41	4.5	6.38	1160	-32	1.5	Brown	Moderate	Slight	
MW-11D	144	1210.25	46.27	1163.98											
MW-12A	117	1177.95	13.67	1164.28											
MW-12B	118	1177.56	13.31	1164.25	12/22/2005	19	6.5	6.56	1140	-3	2	Light Brown	None	Slight	
MW-16AR	124	1180.66	16.11	1164.55											
MW-16BR	125	1180.76	16.24	1164.52											
MW-19A	130	1178.69	12.83	1165.86	12/22/2005	6	6.3	6.16	560	36	1.5	Clear	None	Clear	
MW-19B	131	1178.99	12.44	1166.55											
MW-20R	143	1170.28	5.66	1164.62											
MW-21A	133	1171.32	6.35	1164.97											
MW-21B	134	1171.30	6.31	1164.99											
MW-21C	135	1170.82	5.84	1164.98											
MW-22A	136	1177.93	12.59	1165.34											
MW-22B	137	1177.43	12.22	1165.21	12/21/2005	20	4.4	6.28	980	-8	2	Light Brown	None	Slight	
MW-23	138	1174.18	9.01	1165.17	12/21/2005	5	3.7	6.00	150	134	1	Clear	None	None	
MW-24A	139	1172.70	8.80	1163.90											
MW-24B	140	1172.38	8.52	1163.86	12/22/2005	20	3.7	6.46	1340	-38	3	Light Brown	Strong	Slight	
MW-24C	141	1172.56	8.73	1163.83	12/22/2005	25	3.9	6.32	3100	-25	1	Light Brown	Strong	Moderate	
MW-24D	142	1172.40	8.60	1163.80	12/22/2005	32	5.9	5.74	1290	35	1	Clear	Clear	None	
MW-25D	145	1211.72	154.84	1056.88	12/21/2005	2	4.4	6.71	620	120	3.5	Brown	None	Slight	Purged well dry after sampling
Dup-1	107	-	-	-	12/22/2005	-	2.6	6.73	1010	-13	2	Light Brown	None	Slight	MW-4B Duplicate
Dup-2	138	-	-	-	12/21/2005	-	3.6	5.98	160	129	1	Clear	None	None	MW-23 Duplicate
FB-1	-	-	-	-	12/21/2005	-	3.7	4.55	0	214	7	Clear	None	None	
FB-2	-	-	-	-	12/22/2005	-	4.3	4.65	0	207	8	Clear	None	Clear	

## **Appendix D**

# PAL Exceedance Report

Sorted by Well

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
104	MW-3R	1,2,4-Trimethylbenzene	UG/L	227	480	96	Jun-05
104	MW-3R	Fluorene	UG/L	6150	400	80	Jun-05
104	MW-3R	Naphthalene	UG/L	280	40	8	Jun-05
104	MW-3R	Naphthalene	UG/L	2130	40	8	Jun-05
104	MW-3R	N-Nitrosodiphenylamine(1)	UG/L	4690	7	0.7	Jun-05
107	MW-4B	Arsenic, Dissolved	UG/L	3.3	10	1	Jun-05
107	MW-4B	Benzene (GC-MS)	UG/L	1.82	5	0.5	Jun-05
107	MW-4B	Benzene (GC-MS)	UG/L	1.62	5	0.5	Dec-05
107	MW-4B	Benzene (GC-MS)	UG/L	1.54	5	0.5	Dec-05
111	MW-8B	Arsenic, Dissolved	UG/L	7.8	10	1	Jun-05
111	MW-8B	Benzene (GC-MS)	UG/L	2.08	5	0.5	Jun-05
111	MW-8B	Benzene (GC-MS)	UG/L	5.38	5	0.5	Dec-05
111	MW-8B	Chloromethane	UG/L	3.71	3	0.3	Dec-05
112	MW-8C	Arsenic, Dissolved	UG/L	3.3	10	1	Jun-05
112	MW-8C	Arsenic, Dissolved	UG/L	3.2	10	1	Jun-05
112	MW-8C	Benzene (GC-MS)	UG/L	6.85	5	0.5	Jun-05
112	MW-8C	Benzene (GC-MS)	UG/L	6.49	5	0.5	Jun-05
112	MW-8C	Benzene (GC-MS)	UG/L	1.77	5	0.5	Dec-05
112	MW-8C	Chloromethane	UG/L	4.32	3	0.3	Jun-05
112	MW-8C	Chloromethane	UG/L	3.95	3	0.3	Jun-05
115	MW-11B	Chloromethane	UG/L	0.353	3	0.3	Jun-05
115	MW-11B	Vinyl Chloride	UG/L	0.229	0.2	0.02	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.2	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.48	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.95	5	0.5	Dec-05
116	MW-11C	Chloromethane	UG/L	2.75	3	0.3	Jun-05
116	MW-11C	Chloromethane	UG/L	3	3	0.3	Jun-05
116	MW-11C	Chloromethane	UG/L	5.58	3	0.3	Dec-05



# PAL Exceedance Report

Sorted by Well

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
118	MW-12B	Arsenic, Dissolved	UG/L	5.6	10	1	Jun-05
118	MW-12B	Benzene (GC-MS)	UG/L	4.93	5	0.5	Jun-05
118	MW-12B	Benzene (GC-MS)	UG/L	2.37	5	0.5	Dec-05
118	MW-12B	Chloromethane	UG/L	2.87	3	0.3	Jun-05
118	MW-12B	Chloromethane	UG/L	2.43	3	0.3	Dec-05
130	MW-19A	Benzene (GC-MS)	UG/L	0.583	5	0.5	Jun-05
130	MW-19A	Chloromethane	UG/L	0.987	3	0.3	Jun-05
137	MW-22B	Arsenic, Dissolved	UG/L	14	10	1	Jun-05
137	MW-22B	Benzene (GC-MS)	UG/L	3.82	5	0.5	Jun-05
137	MW-22B	Benzene (GC-MS)	UG/L	2.73	5	0.5	Dec-05
137	MW-22B	Chloromethane	UG/L	5.55	3	0.3	Jun-05
137	MW-22B	Chloromethane	UG/L	7.01	3	0.3	Dec-05
138	MW-23	Chloromethane	UG/L	0.4611	3	0.3	Jun-05
140	MW-24B	Arsenic, Dissolved	UG/L	9.7	10	1	Jun-05
140	MW-24B	Benzene (GC-MS)	UG/L	4.16	5	0.5	Jun-05
140	MW-24B	Benzene (GC-MS)	UG/L	0.646	5	0.5	Dec-05
140	MW-24B	Chloromethane	UG/L	0.344	3	0.3	Jun-05
140	MW-24B	Vinyl Chloride	UG/L	0.267	0.2	0.02	Jun-05
141	MW-24C	Arsenic, Dissolved	UG/L	5.3	10	1	Jun-05
141	MW-24C	Benzene (GC-MS)	UG/L	8.91	5	0.5	Jun-05
141	MW-24C	Benzene (GC-MS)	UG/L	6.81	5	0.5	Dec-05
141	MW-24C	Chloromethane	UG/L	2.95	3	0.3	Jun-05
141	MW-24C	Chloromethane	UG/L	3.65	3	0.3	Dec-05

# PAL Exceedance Report

Sorted by Well

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
142	MW-24D	Benzene (GC-MS)	UG/L	8.94	5	0.5	Jun-05
142	MW-24D	Benzene (GC-MS)	UG/L	9.03	5	0.5	Jun-05
142	MW-24D	Benzene (GC-MS)	UG/L	6.1	5	0.5	Dec-05
142	MW-24D	Chloromethane	UG/L	14.8	3	0.3	Jun-05
142	MW-24D	Chloromethane	UG/L	15.4	3	0.3	Jun-05
142	MW-24D	Chloromethane	UG/L	15.9	3	0.3	Dec-05
142	MW-24D	Vinyl Chloride	UG/L	6.06	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.78	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.16	0.2	0.02	Dec-05
997	Field Blank	Methylene Chloride	UG/L	6.84	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	5.64	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	4.81	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	5.06	5	0.5	Dec-05
997	Field Blank	Methylene Chloride	UG/L	4.45	5	0.5	Dec-05

# **Appendix E**

# PAL Exceedance Report

Sorted by Parameter

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
104	MW-3R	1,2,4-Trimethylbenzene	UG/L	227	480	96	Jun-05
107	MW-4B	Arsenic, Dissolved	UG/L	3.3	10	1	Jun-05
111	MW-8B	Arsenic, Dissolved	UG/L	7.8	10	1	Jun-05
112	MW-8C	Arsenic, Dissolved	UG/L	3.3	10	1	Jun-05
112	MW-8C	Arsenic, Dissolved	UG/L	3.2	10	1	Jun-05
118	MW-12B	Arsenic, Dissolved	UG/L	5.6	10	1	Jun-05
137	MW-22B	Arsenic, Dissolved	UG/L	14	10	1	Jun-05
140	MW-24B	Arsenic, Dissolved	UG/L	9.7	10	1	Jun-05
141	MW-24C	Arsenic, Dissolved	UG/L	5.3	10	1	Jun-05
107	MW-4B	Benzene (GC-MS)	UG/L	1.82	5	0.5	Jun-05
107	MW-4B	Benzene (GC-MS)	UG/L	1.62	5	0.5	Dec-05
107	MW-4B	Benzene (GC-MS)	UG/L	1.54	5	0.5	Dec-05
111	MW-8B	Benzene (GC-MS)	UG/L	2.08	5	0.5	Jun-05
111	MW-8B	Benzene (GC-MS)	UG/L	5.38	5	0.5	Dec-05
112	MW-8C	Benzene (GC-MS)	UG/L	6.85	5	0.5	Jun-05
112	MW-8C	Benzene (GC-MS)	UG/L	6.49	5	0.5	Jun-05
112	MW-8C	Benzene (GC-MS)	UG/L	1.77	5	0.5	Dec-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.2	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.48	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.95	5	0.5	Dec-05
118	MW-12B	Benzene (GC-MS)	UG/L	4.93	5	0.5	Jun-05
118	MW-12B	Benzene (GC-MS)	UG/L	2.37	5	0.5	Dec-05
130	MW-19A	Benzene (GC-MS)	UG/L	0.583	5	0.5	Jun-05
137	MW-22B	Benzene (GC-MS)	UG/L	3.82	5	0.5	Jun-05
137	MW-22B	Benzene (GC-MS)	UG/L	2.73	5	0.5	Dec-05
140	MW-24B	Benzene (GC-MS)	UG/L	4.16	5	0.5	Jun-05
140	MW-24B	Benzene (GC-MS)	UG/L	0.646	5	0.5	Dec-05

# PAL Exceedance Report

Sorted by Parameter

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
141	MW-24C	Benzene (GC-MS)	UG/L	8.91	5	0.5	Jun-05
141	MW-24C	Benzene (GC-MS)	UG/L	6.81	5	0.5	Dec-05
142	MW-24D	Benzene (GC-MS)	UG/L	8.94	5	0.5	Jun-05
142	MW-24D	Benzene (GC-MS)	UG/L	9.03	5	0.5	Jun-05
142	MW-24D	Benzene (GC-MS)	UG/L	6.1	5	0.5	Dec-05
111	MW-8B	Chloromethane	UG/L	3.71	3	0.3	Dec-05
112	MW-8C	Chloromethane	UG/L	4.32	3	0.3	Jun-05
112	MW-8C	Chloromethane	UG/L	3.95	3	0.3	Jun-05
115	MW-11B	Chloromethane	UG/L	0.353	3	0.3	Jun-05
116	MW-11C	Chloromethane	UG/L	2.75	3	0.3	Jun-05
116	MW-11C	Chloromethane	UG/L	3	3	0.3	Jun-05
116	MW-11C	Chloromethane	UG/L	5.58	3	0.3	Dec-05
118	MW-12B	Chloromethane	UG/L	2.87	3	0.3	Jun-05
118	MW-12B	Chloromethane	UG/L	2.43	3	0.3	Dec-05
130	MW-19A	Chloromethane	UG/L	0.987	3	0.3	Jun-05
137	MW-22B	Chloromethane	UG/L	5.55	3	0.3	Jun-05
137	MW-22B	Chloromethane	UG/L	7.01	3	0.3	Dec-05
138	MW-23	Chloromethane	UG/L	0.4611	3	0.3	Jun-05
140	MW-24B	Chloromethane	UG/L	0.344	3	0.3	Jun-05
141	MW-24C	Chloromethane	UG/L	2.95	3	0.3	Jun-05
141	MW-24C	Chloromethane	UG/L	3.65	3	0.3	Dec-05
142	MW-24D	Chloromethane	UG/L	14.8	3	0.3	Jun-05
142	MW-24D	Chloromethane	UG/L	15.4	3	0.3	Jun-05
142	MW-24D	Chloromethane	UG/L	15.9	3	0.3	Dec-05
104	MW-3R	Fluorene	UG/L	6150	400	80	Jun-05
997	Field Blank	Methylene Chloride	UG/L	6.84	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	5.64	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	4.81	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	5.06	5	0.5	Dec-05
997	Field Blank	Methylene Chloride	UG/L	4.45	5	0.5	Dec-05

# PAL Exceedance Report

Sorted by Parameter

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
104	MW-3R	Naphthalene	UG/L	280	40	8	Jun-05
104	MW-3R	Naphthalene	UG/L	2130	40	8	Jun-05
104	MW-3R	N-Nitrosodiphenylamine(1)	UG/L	4690	7	0.7	Jun-05
115	MW-11B	Vinyl Chloride	UG/L	0.229	0.2	0.02	Jun-05
140	MW-24B	Vinyl Chloride	UG/L	0.267	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.06	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.78	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.16	0.2	0.02	Dec-05

## **Appendix F**

# ES Exceedance Report

Sorted by Well

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
104	MW-3R	Fluorene	UG/L	6150.00	400	80	Jun-05
104	MW-3R	Naphthalene	UG/L	280.00	40	8	Jun-05
104	MW-3R	Naphthalene	UG/L	2130.00	40	8	Jun-05
104	MW-3R	N-Nitrosodiphenylamine(1)	UG/L	4690.00	7	0.7	Jun-05
111	MW-8B	Benzene (GC-MS)	UG/L	5.38	5	0.5	Dec-05
111	MW-8B	Chloromethane	UG/L	3.71	3	0.3	Dec-05
112	MW-8C	Benzene (GC-MS)	UG/L	6.85	5	0.5	Jun-05
112	MW-8C	Benzene (GC-MS)	UG/L	6.49	5	0.5	Jun-05
112	MW-8C	Chloromethane	UG/L	4.32	3	0.3	Jun-05
112	MW-8C	Chloromethane	UG/L	3.95	3	0.3	Jun-05
115	MW-11B	Vinyl Chloride	UG/L	0.23	0.2	0.02	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.20	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.48	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.95	5	0.5	Dec-05
116	MW-11C	Chloromethane	UG/L	3.00	3	0.3	Jun-05
116	MW-11C	Chloromethane	UG/L	5.58	3	0.3	Dec-05
137	MW-22B	Arsenic, Dissolved	UG/L	14.00	10	1	Jun-05
137	MW-22B	Chloromethane	UG/L	5.55	3	0.3	Jun-05
137	MW-22B	Chloromethane	UG/L	7.01	3	0.3	Dec-05
140	MW-24B	Vinyl Chloride	UG/L	0.27	0.2	0.02	Jun-05
141	MW-24C	Benzene (GC-MS)	UG/L	8.91	5	0.5	Jun-05
141	MW-24C	Benzene (GC-MS)	UG/L	6.81	5	0.5	Dec-05
141	MW-24C	Chloromethane	UG/L	3.65	3	0.3	Dec-05



# ES Exceedance Report

Sorted by Well

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
142	MW-24D	Benzene (GC-MS)	UG/L	8.94	5	0.5	Jun-05
142	MW-24D	Benzene (GC-MS)	UG/L	9.03	5	0.5	Jun-05
142	MW-24D	Benzene (GC-MS)	UG/L	6.10	5	0.5	Dec-05
142	MW-24D	Chloromethane	UG/L	14.80	3	0.3	Jun-05
142	MW-24D	Chloromethane	UG/L	15.40	3	0.3	Jun-05
142	MW-24D	Chloromethane	UG/L	15.90	3	0.3	Dec-05
142	MW-24D	Vinyl Chloride	UG/L	6.06	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.78	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.16	0.2	0.02	Dec-05
997	Field Blank	Methylene Chloride	UG/L	6.84	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	5.64	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	5.06	5	0.5	Dec-05

# **Appendix G**

# ES Exceedance Report

Sorted by Parameter

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
137	MW-22B	Arsenic, Dissolved	UG/L	14.00	10	1	Jun-05
111	MW-8B	Benzene (GC-MS)	UG/L	5.38	5	0.5	Dec-05
112	MW-8C	Benzene (GC-MS)	UG/L	6.85	5	0.5	Jun-05
112	MW-8C	Benzene (GC-MS)	UG/L	6.49	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.20	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.48	5	0.5	Jun-05
116	MW-11C	Benzene (GC-MS)	UG/L	5.95	5	0.5	Dec-05
141	MW-24C	Benzene (GC-MS)	UG/L	8.91	5	0.5	Jun-05
141	MW-24C	Benzene (GC-MS)	UG/L	6.81	5	0.5	Dec-05
142	MW-24D	Benzene (GC-MS)	UG/L	8.94	5	0.5	Jun-05
142	MW-24D	Benzene (GC-MS)	UG/L	9.03	5	0.5	Jun-05
142	MW-24D	Benzene (GC-MS)	UG/L	6.10	5	0.5	Dec-05
111	MW-8B	Chloromethane	UG/L	3.71	3	0.3	Dec-05
112	MW-8C	Chloromethane	UG/L	4.32	3	0.3	Jun-05
112	MW-8C	Chloromethane	UG/L	3.95	3	0.3	Jun-05
116	MW-11C	Chloromethane	UG/L	3.00	3	0.3	Jun-05
116	MW-11C	Chloromethane	UG/L	5.58	3	0.3	Dec-05
137	MW-22B	Chloromethane	UG/L	5.55	3	0.3	Jun-05
137	MW-22B	Chloromethane	UG/L	7.01	3	0.3	Dec-05
141	MW-24C	Chloromethane	UG/L	3.65	3	0.3	Dec-05
142	MW-24D	Chloromethane	UG/L	14.80	3	0.3	Jun-05
142	MW-24D	Chloromethane	UG/L	15.40	3	0.3	Jun-05
142	MW-24D	Chloromethane	UG/L	15.90	3	0.3	Dec-05
104	MW-3R	Fluorene	UG/L	6150.00	400	80	Jun-05
997	Field Blank	Methylene Chloride	UG/L	6.84	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	5.64	5	0.5	Jun-05
997	Field Blank	Methylene Chloride	UG/L	5.06	5	0.5	Dec-05

# ES Exceedance Report

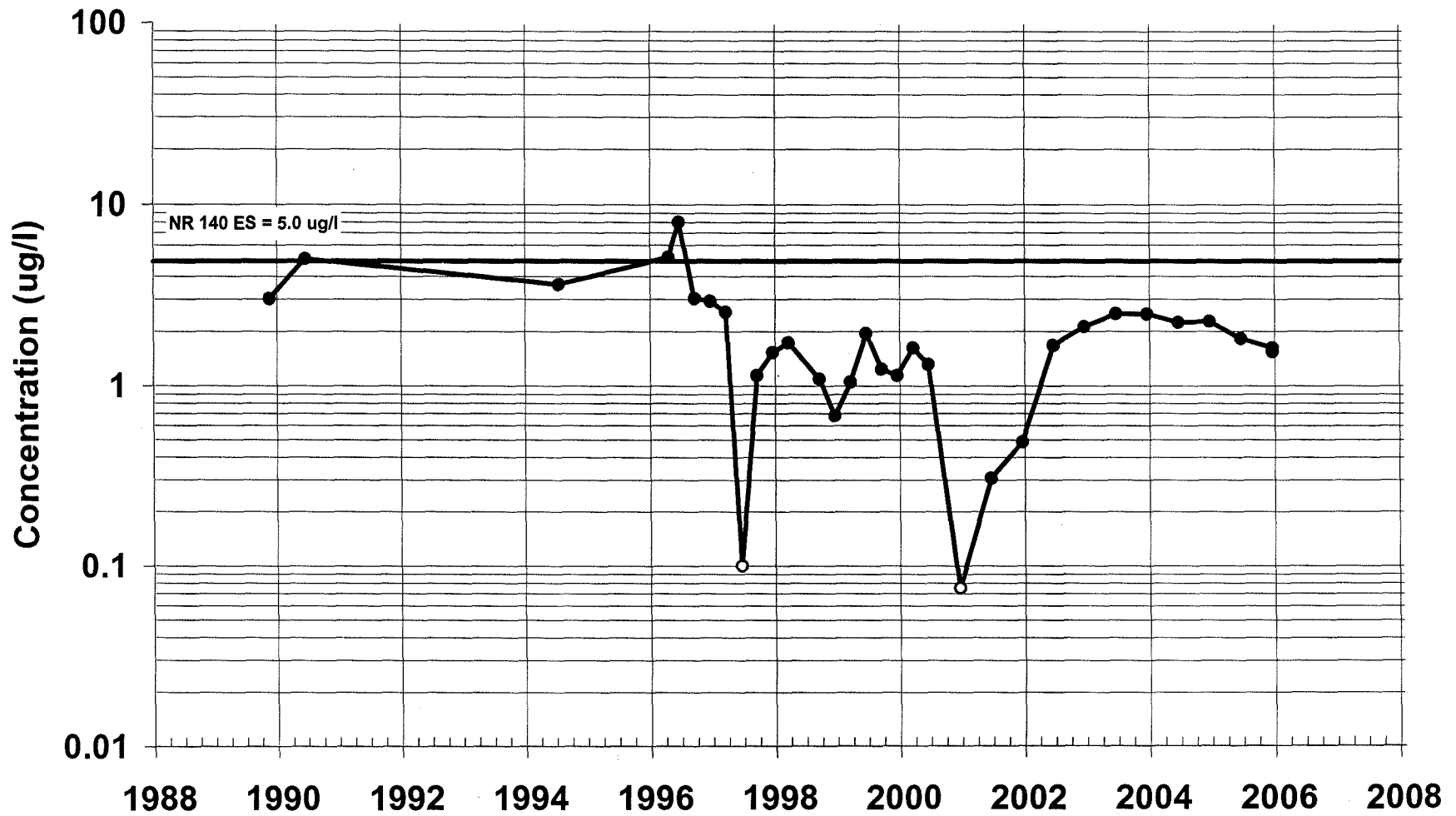
Sorted by Parameter

Well ID	Well Name	Parameter Name	Units	Result	NR140 ES	NR140 PAL	Date
104	MW-3R	Naphthalene	UG/L	280.00	40	8	Jun-05
104	MW-3R	Naphthalene	UG/L	2130.00	40	8	Jun-05
104	MW-3R	N-Nitrosodiphenylamine(1)	UG/L	4690.00	7	0.7	Jun-05
115	MW-11B	Vinyl Chloride	UG/L	0.23	0.2	0.02	Jun-05
140	MW-24B	Vinyl Chloride	UG/L	0.27	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.06	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.78	0.2	0.02	Jun-05
142	MW-24D	Vinyl Chloride	UG/L	6.16	0.2	0.02	Dec-05

# Appendix H

# MW-4B

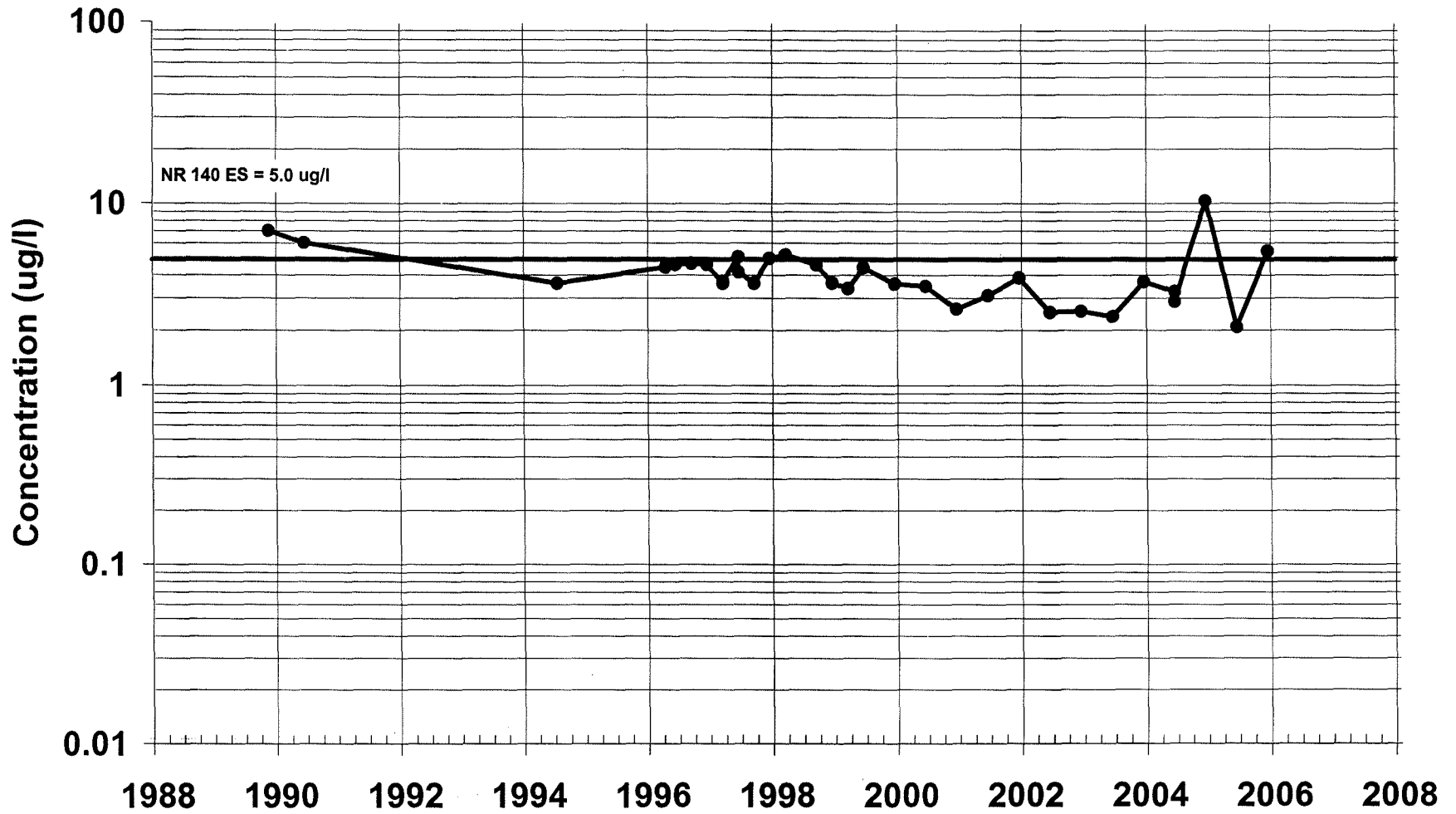
## Benzene Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-8B

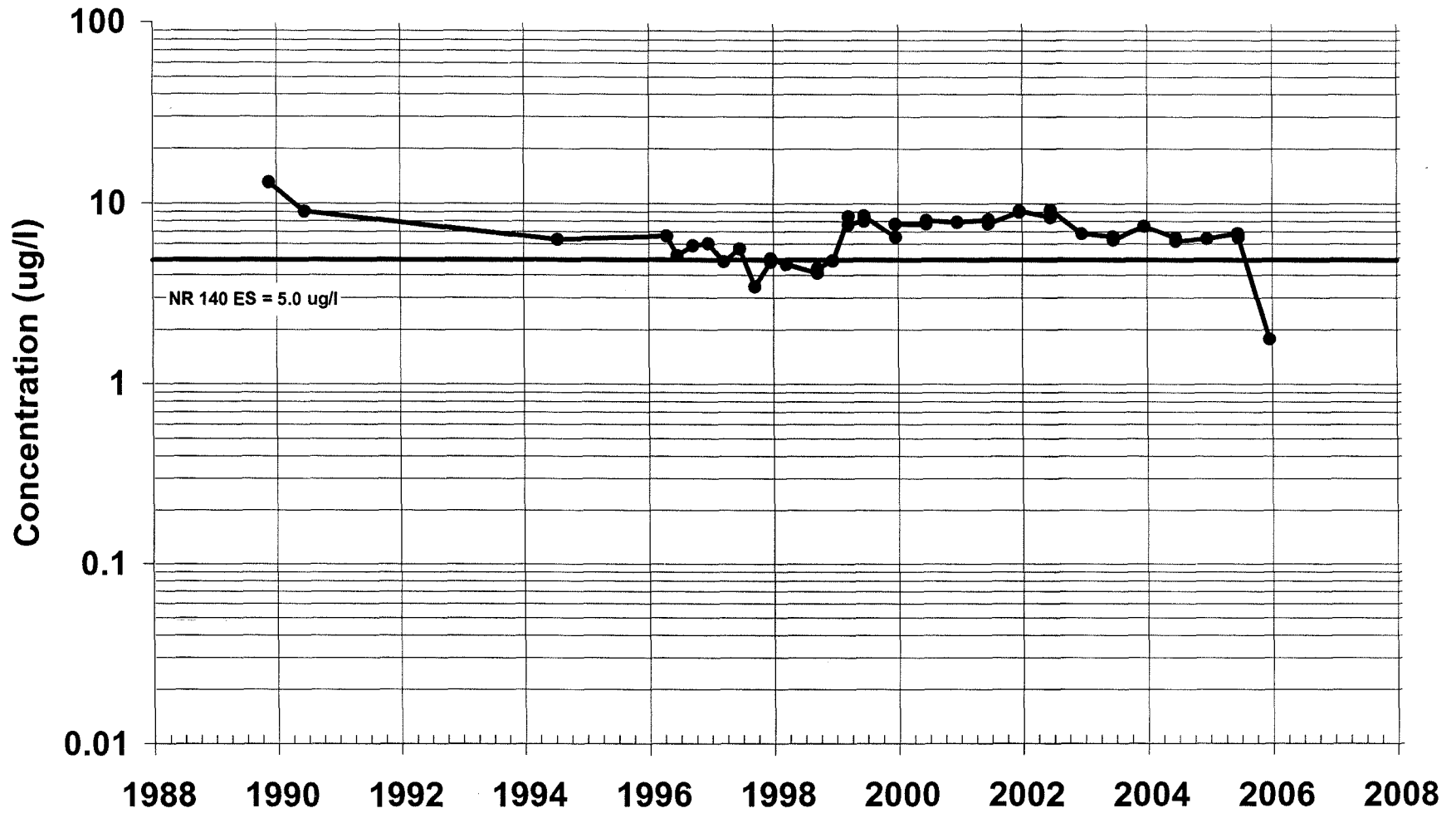
## Benzene Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-8C

## Benzene Concentration

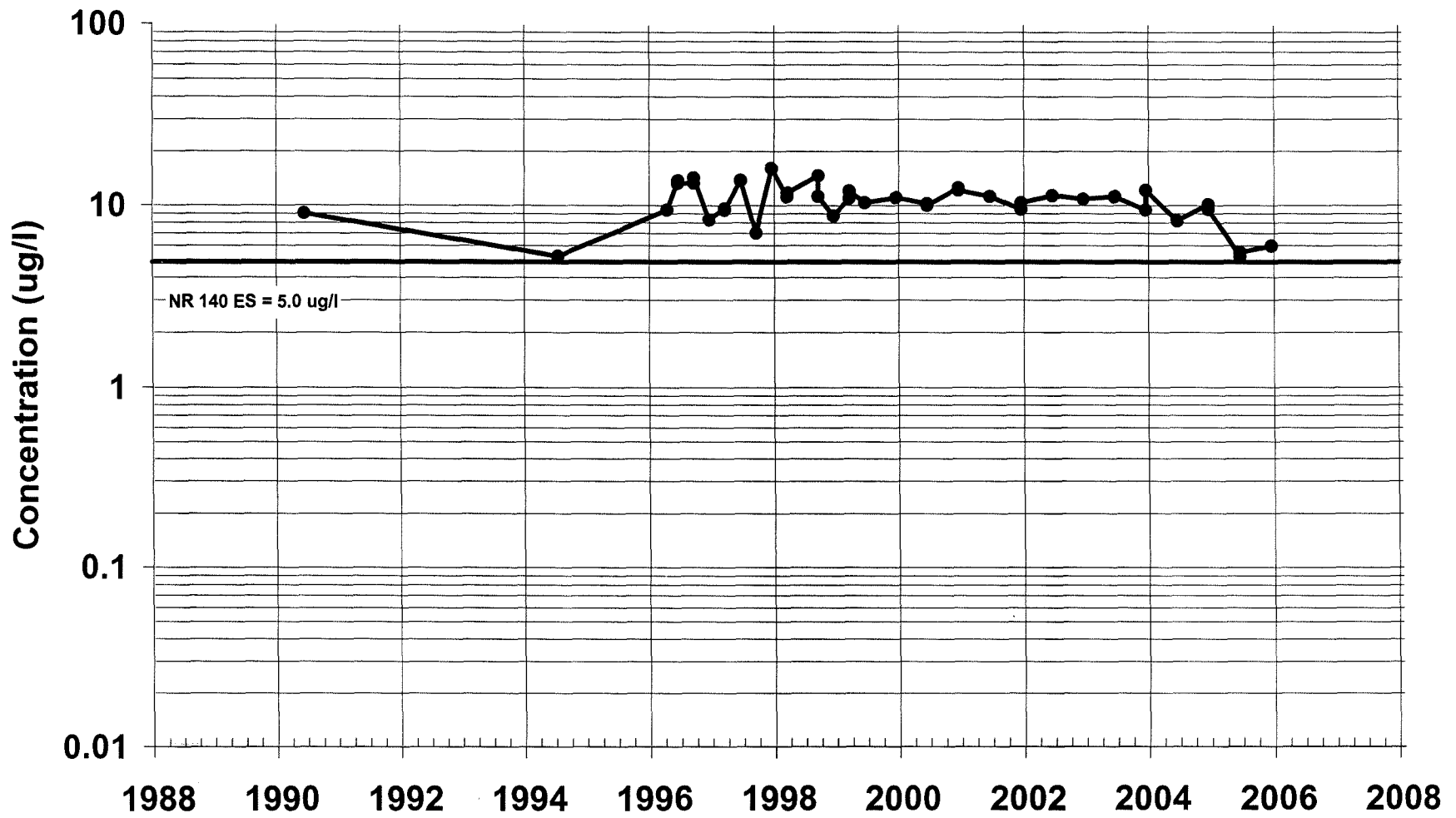


Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.



# MW-11C

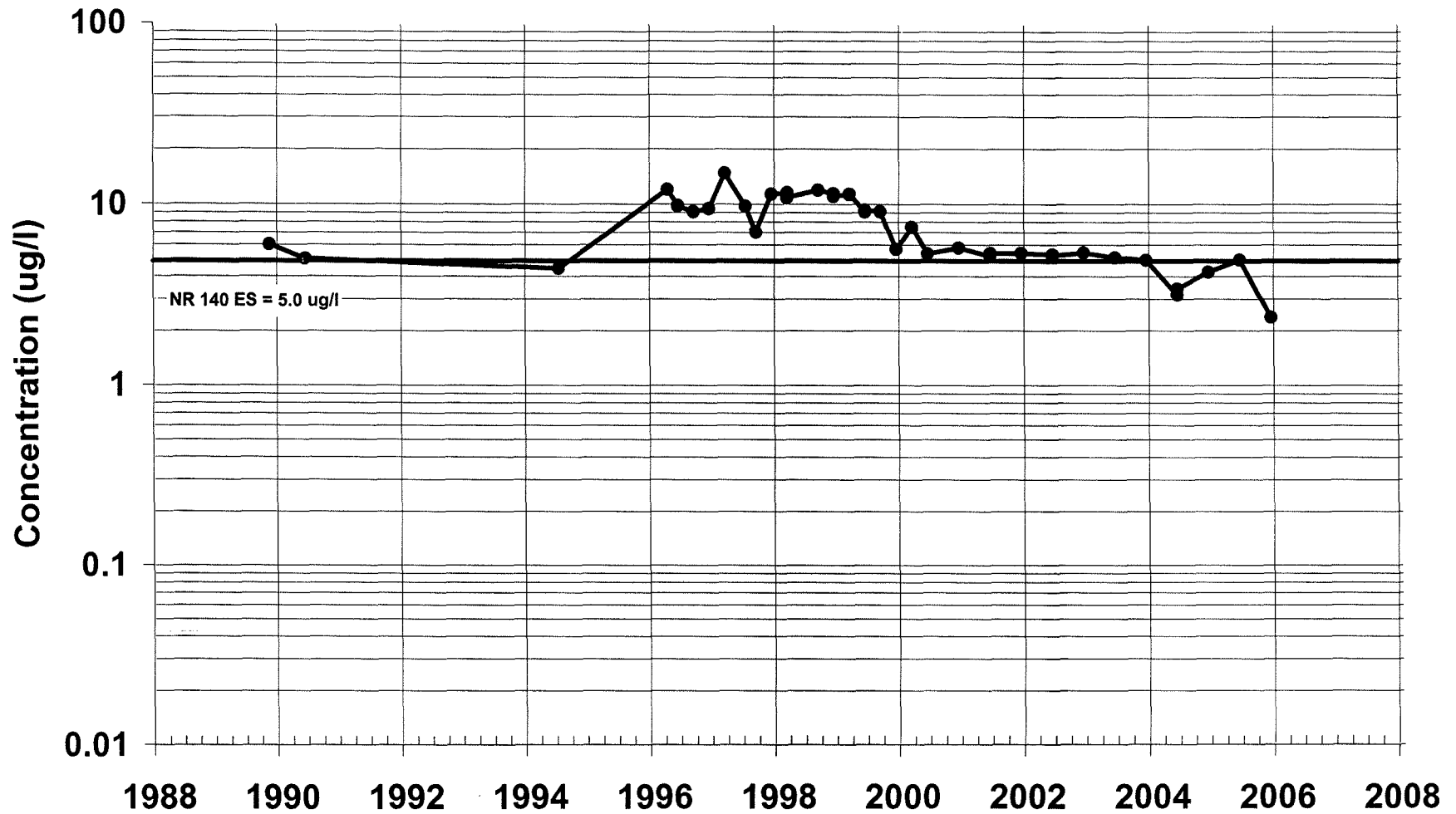
## Benzene Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-12B

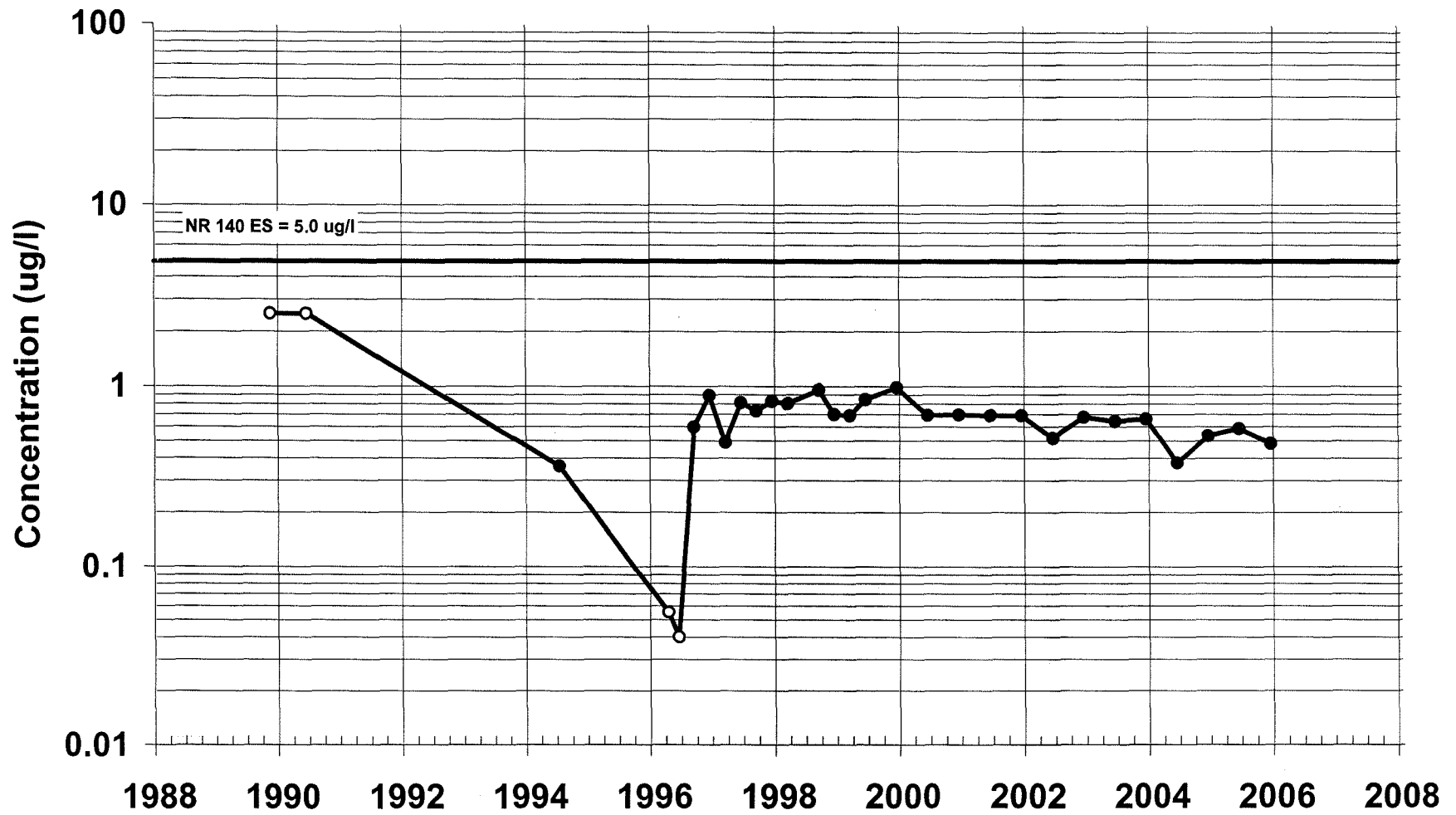
## Benzene Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-19A

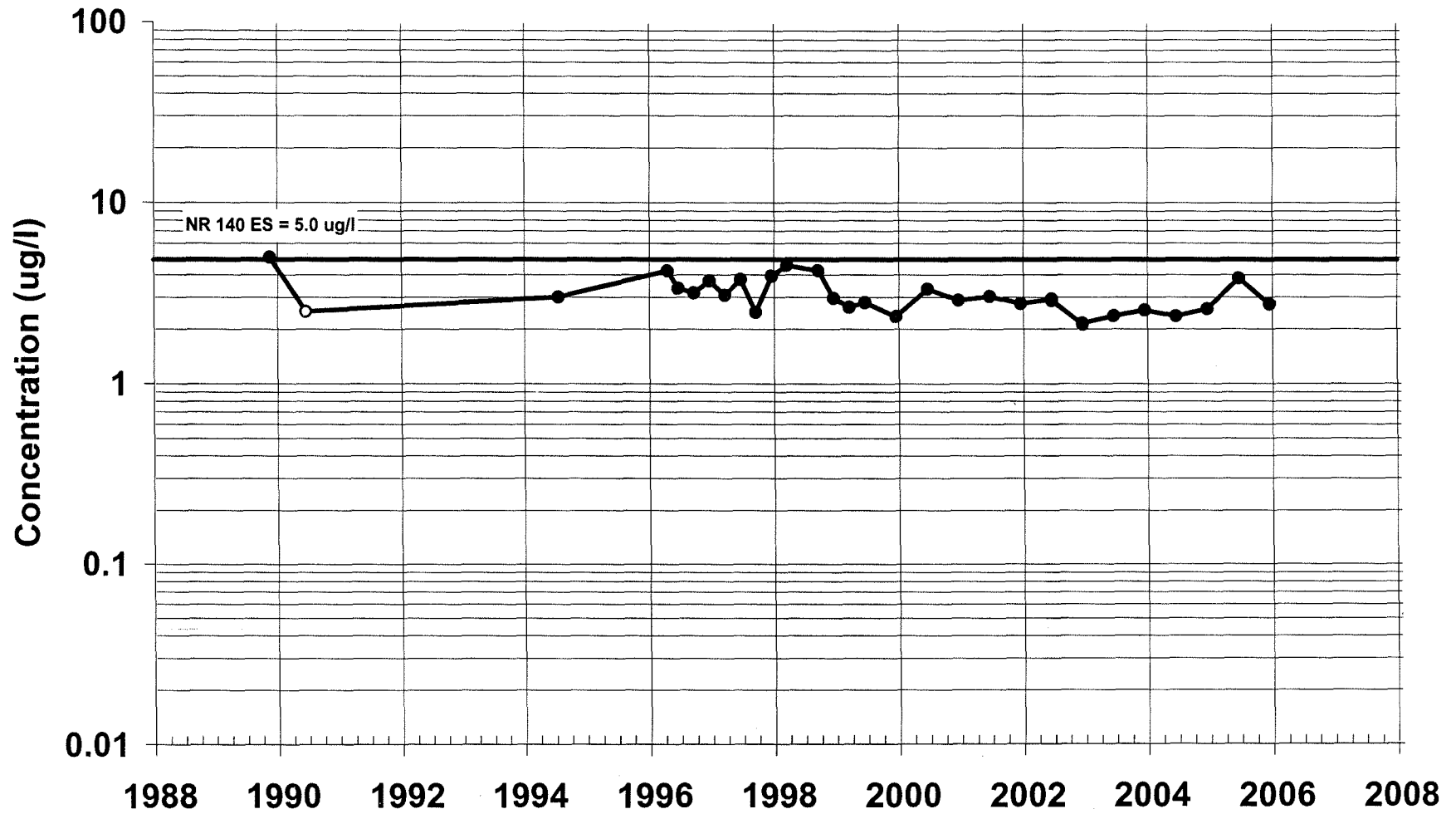
## Benzene Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-22B

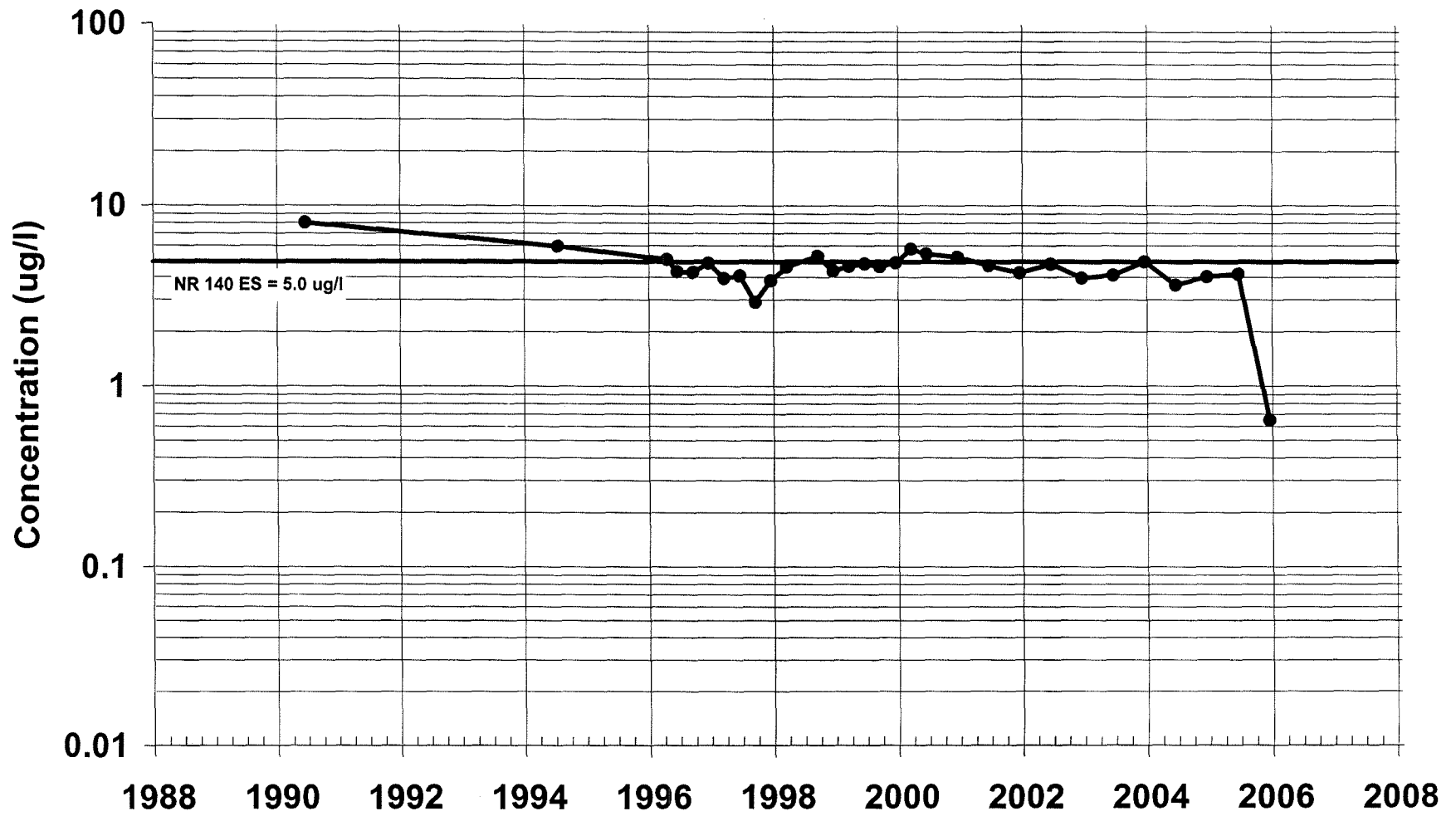
## Benzene Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-24B

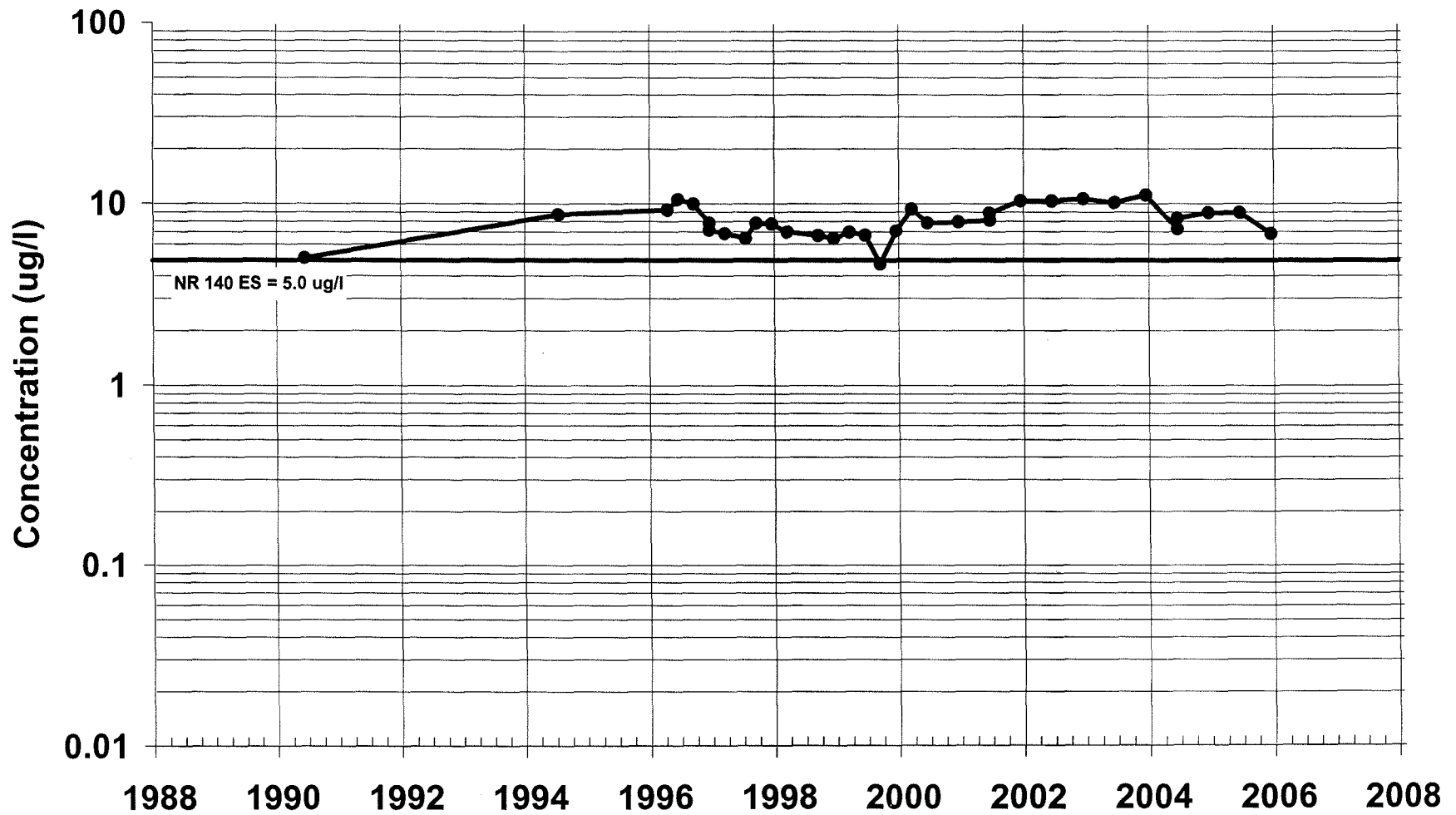
## Benzene Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-24C

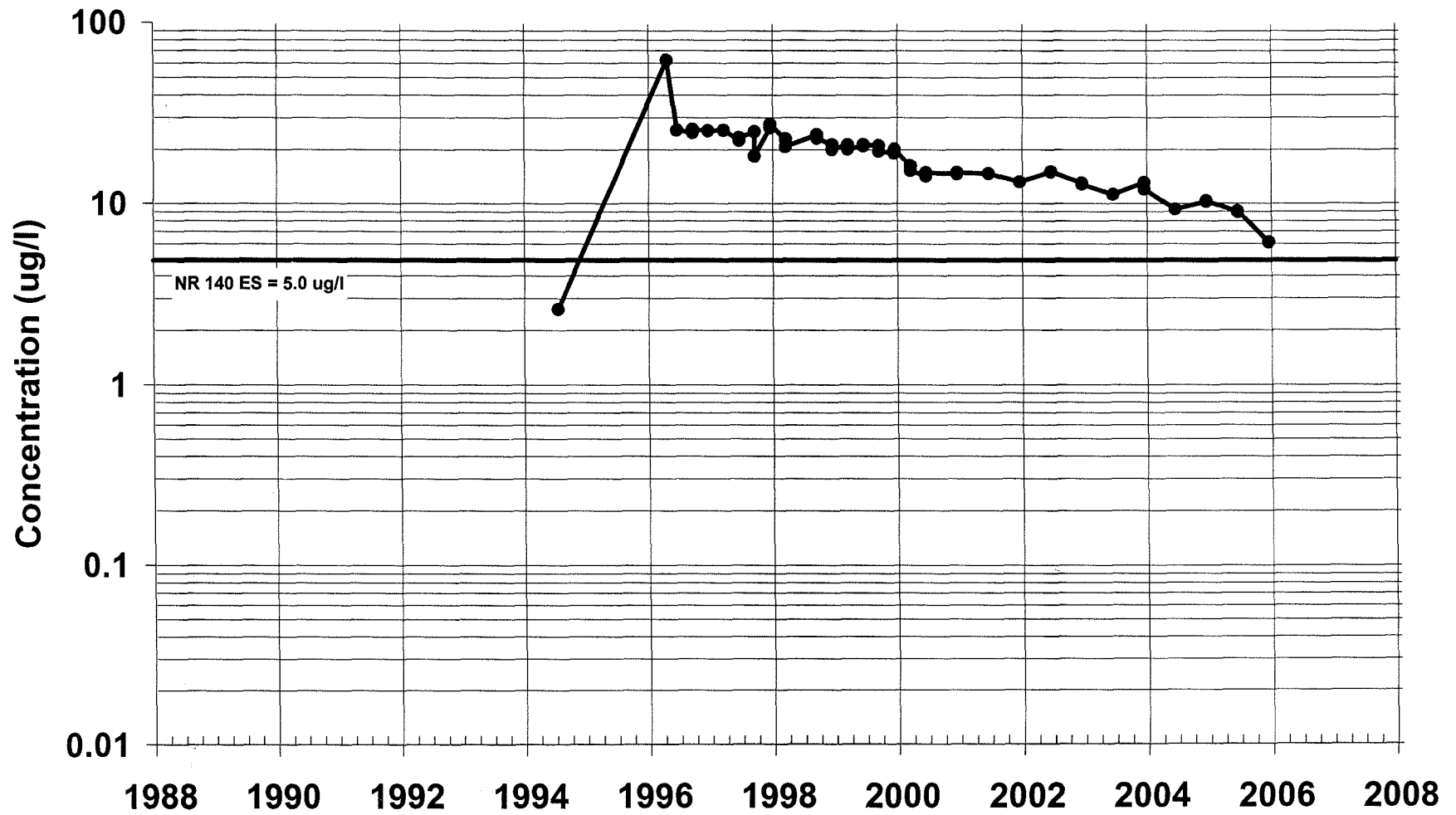
## Benzene Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-24D

## Benzene Concentration



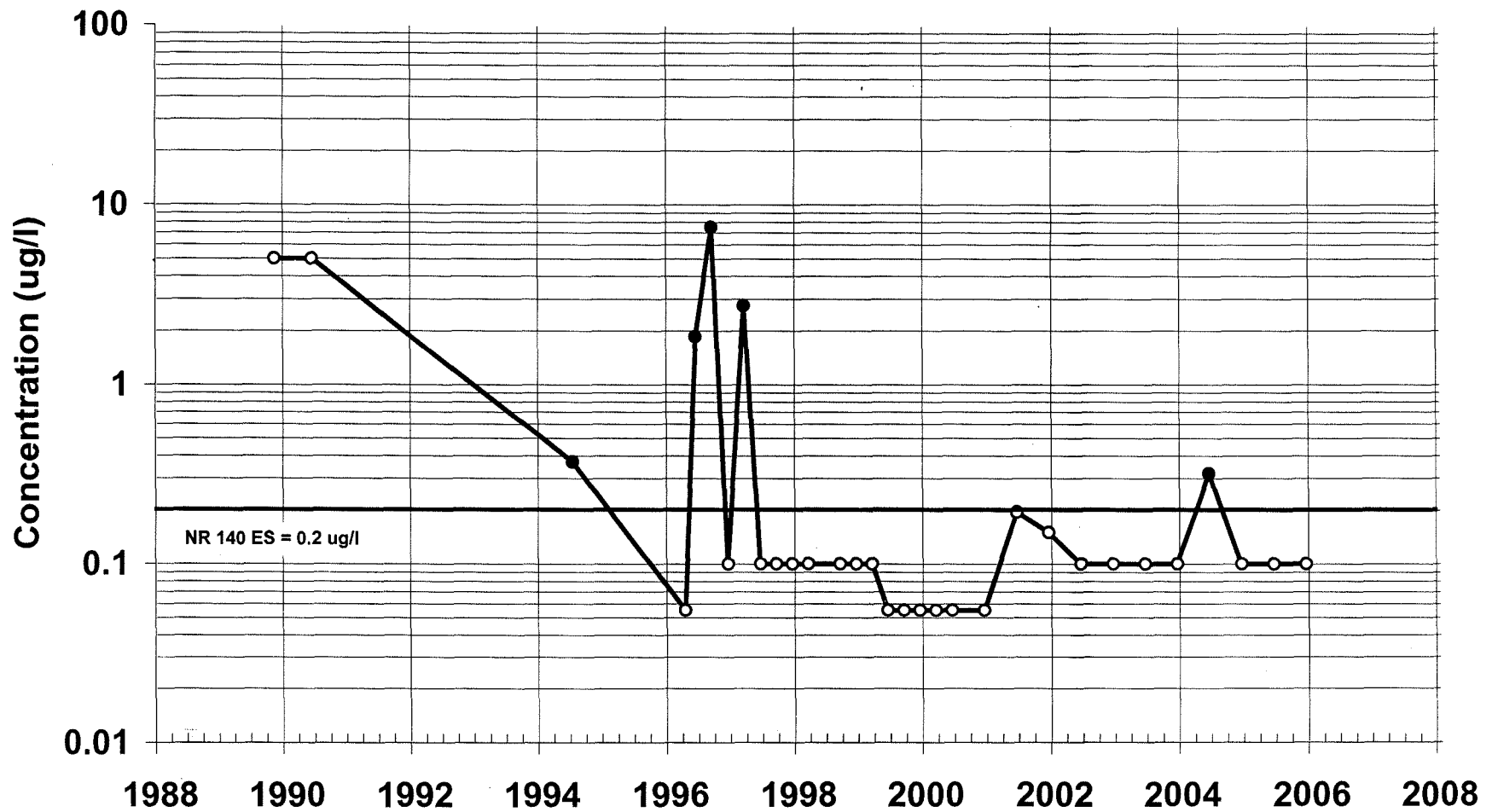
Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# **Appendix I**



# MW-4B

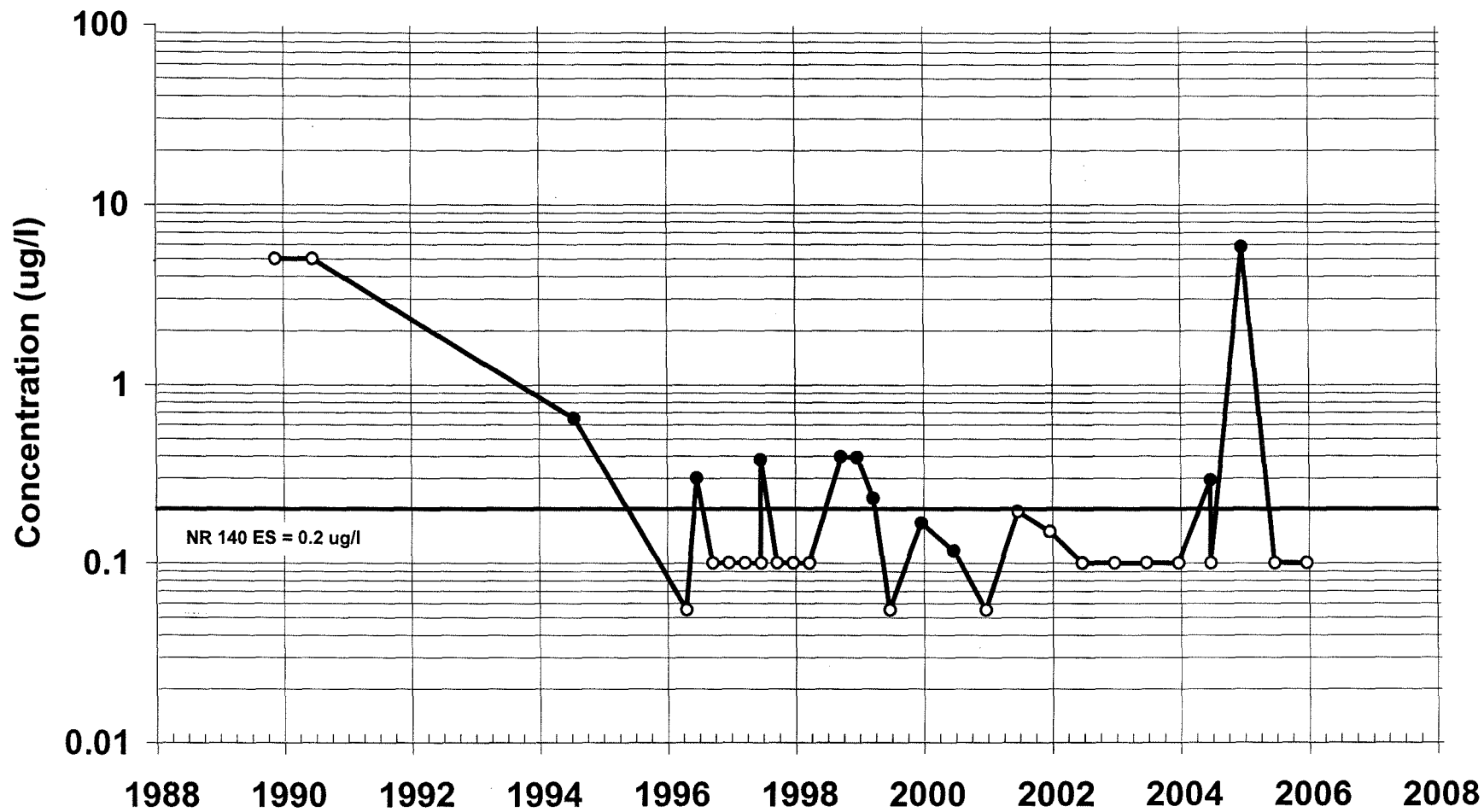
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-8B

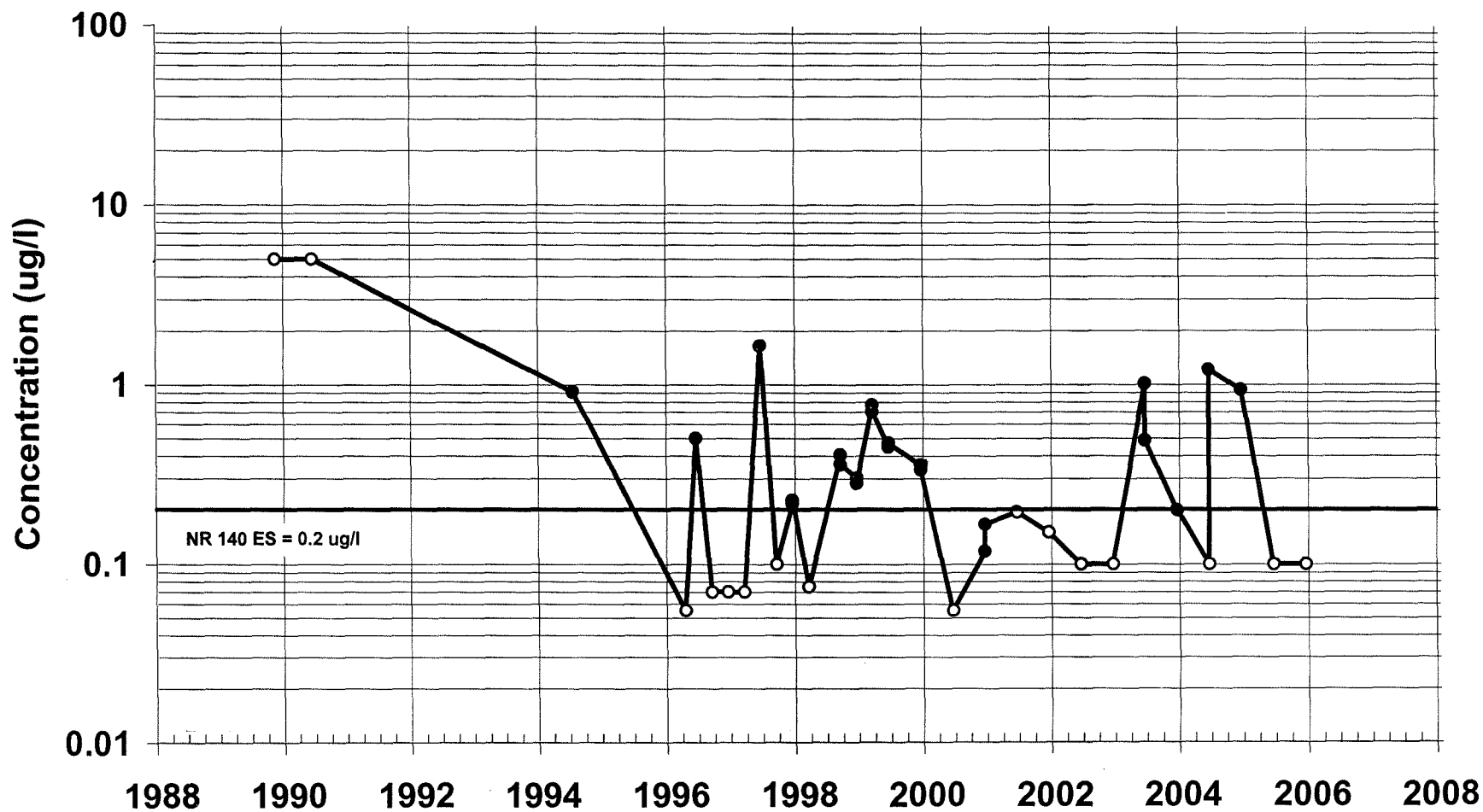
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-8C

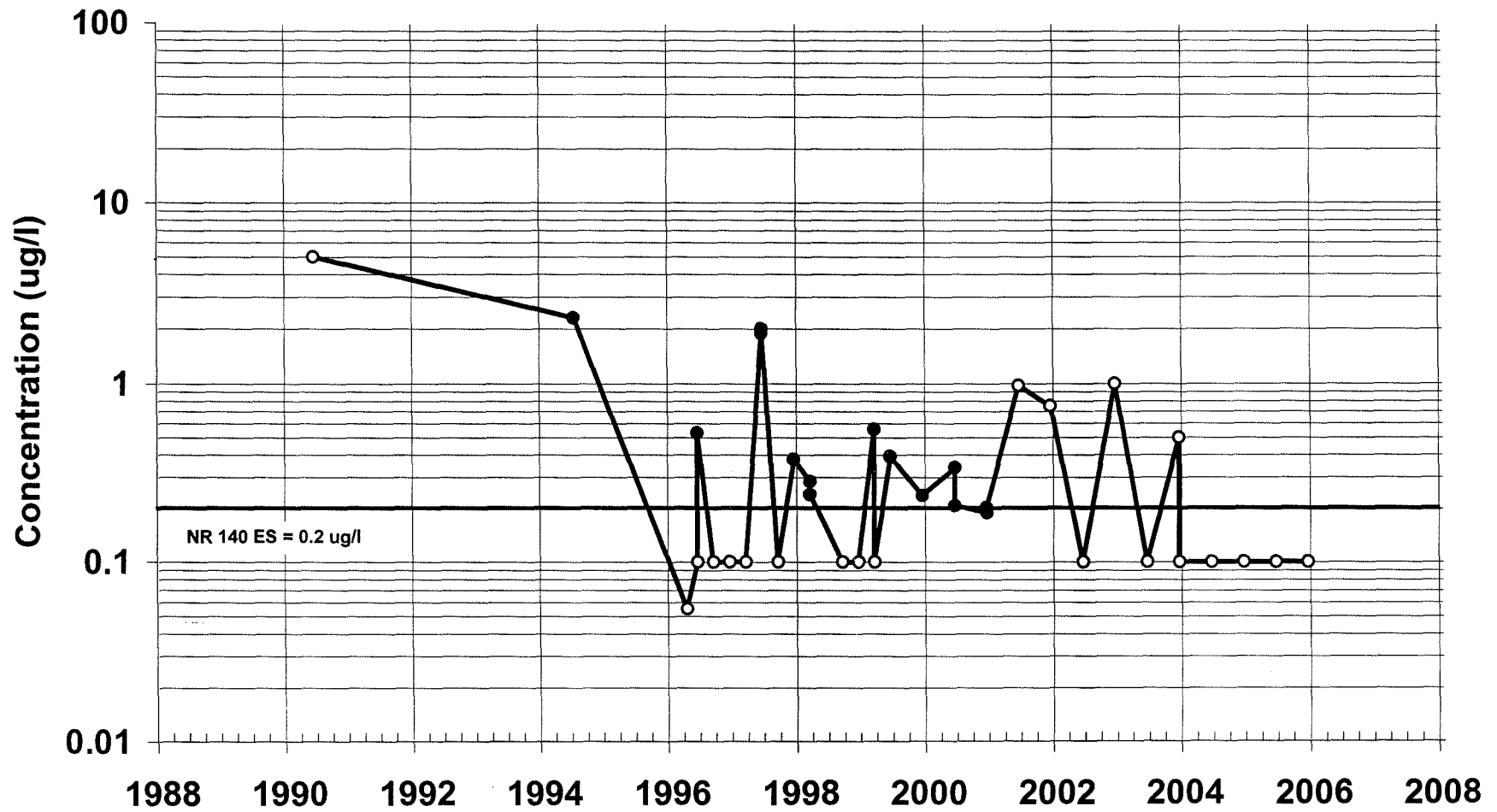
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-11C

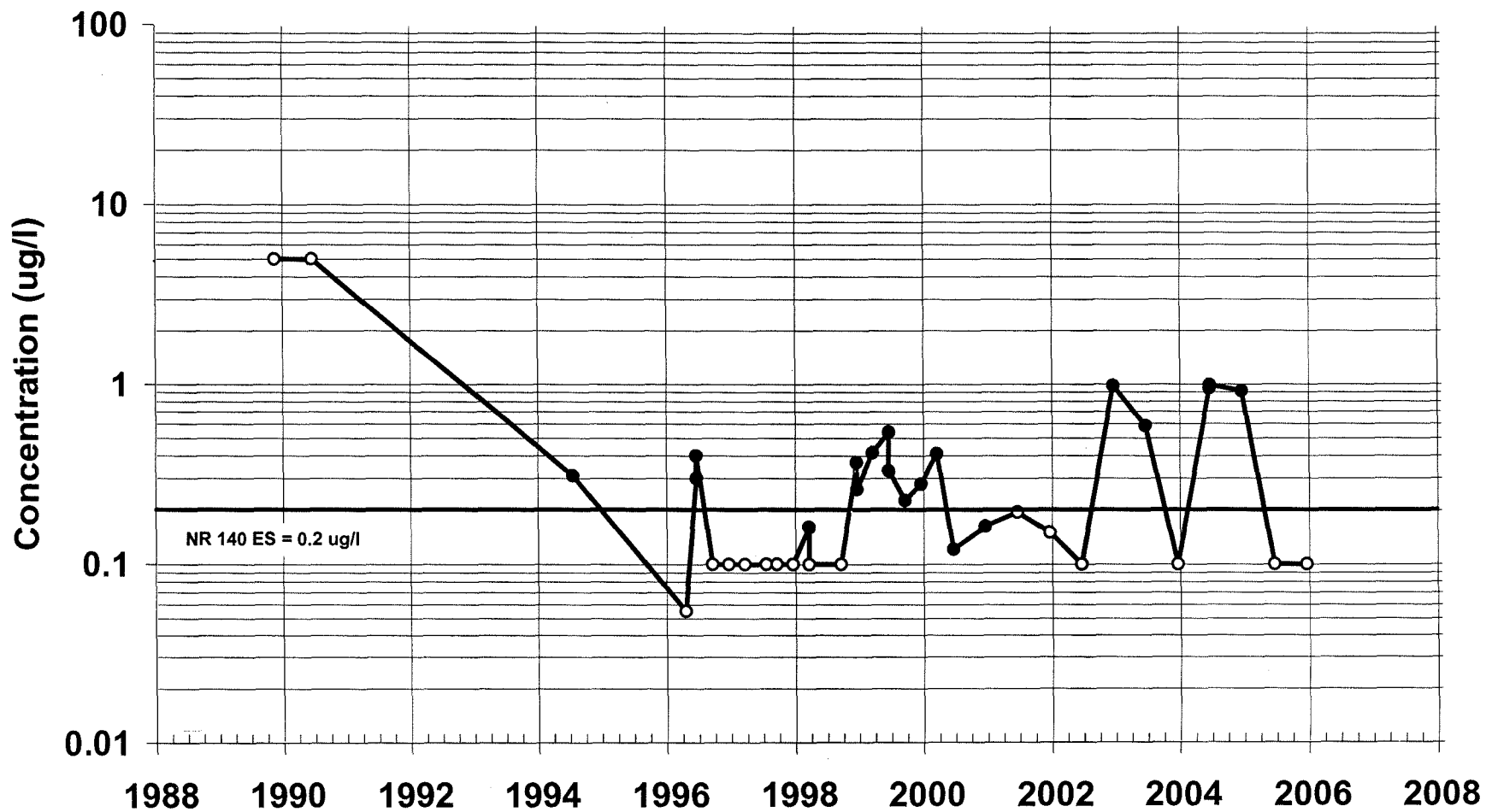
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-12B

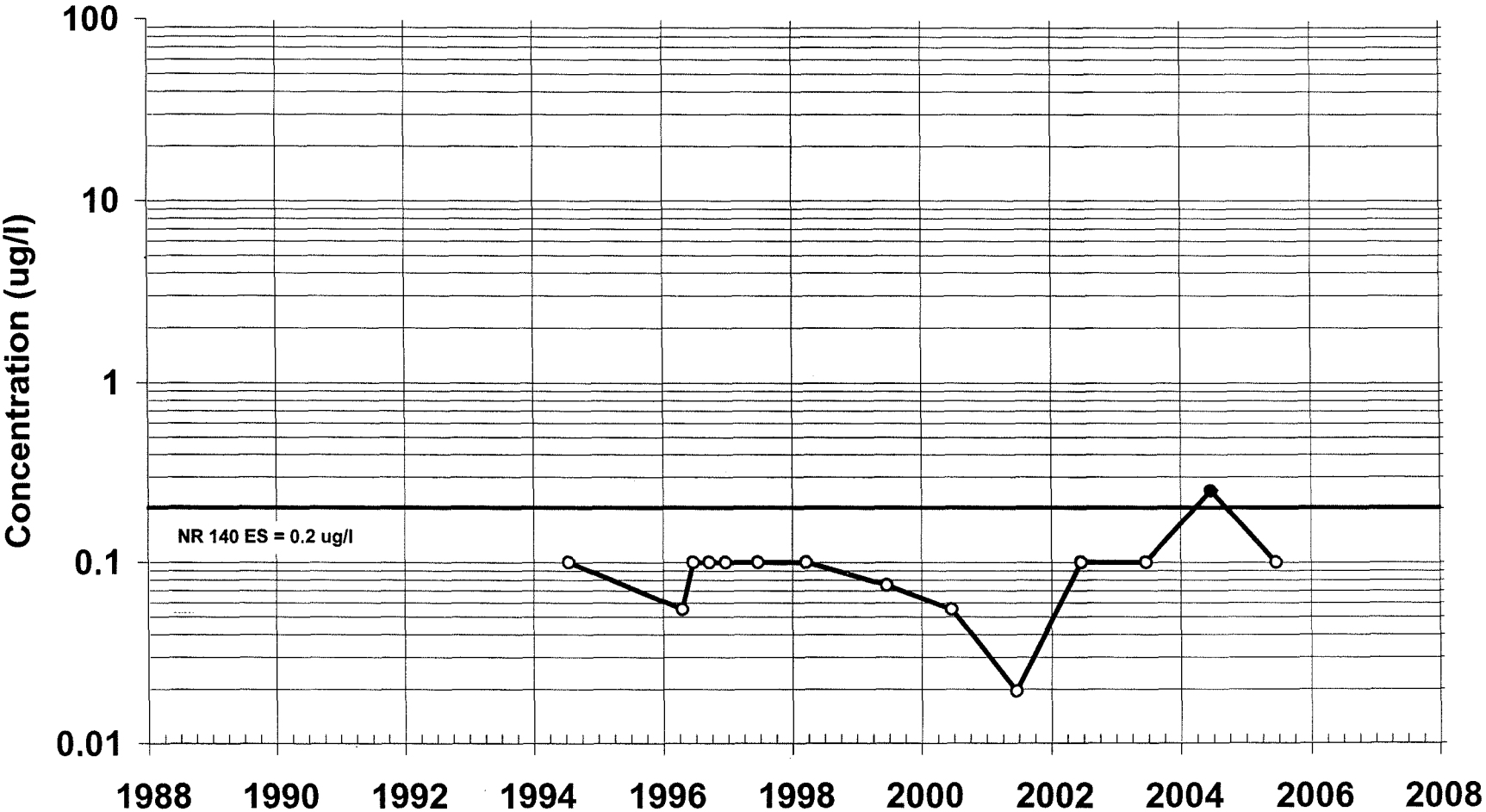
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-16BR

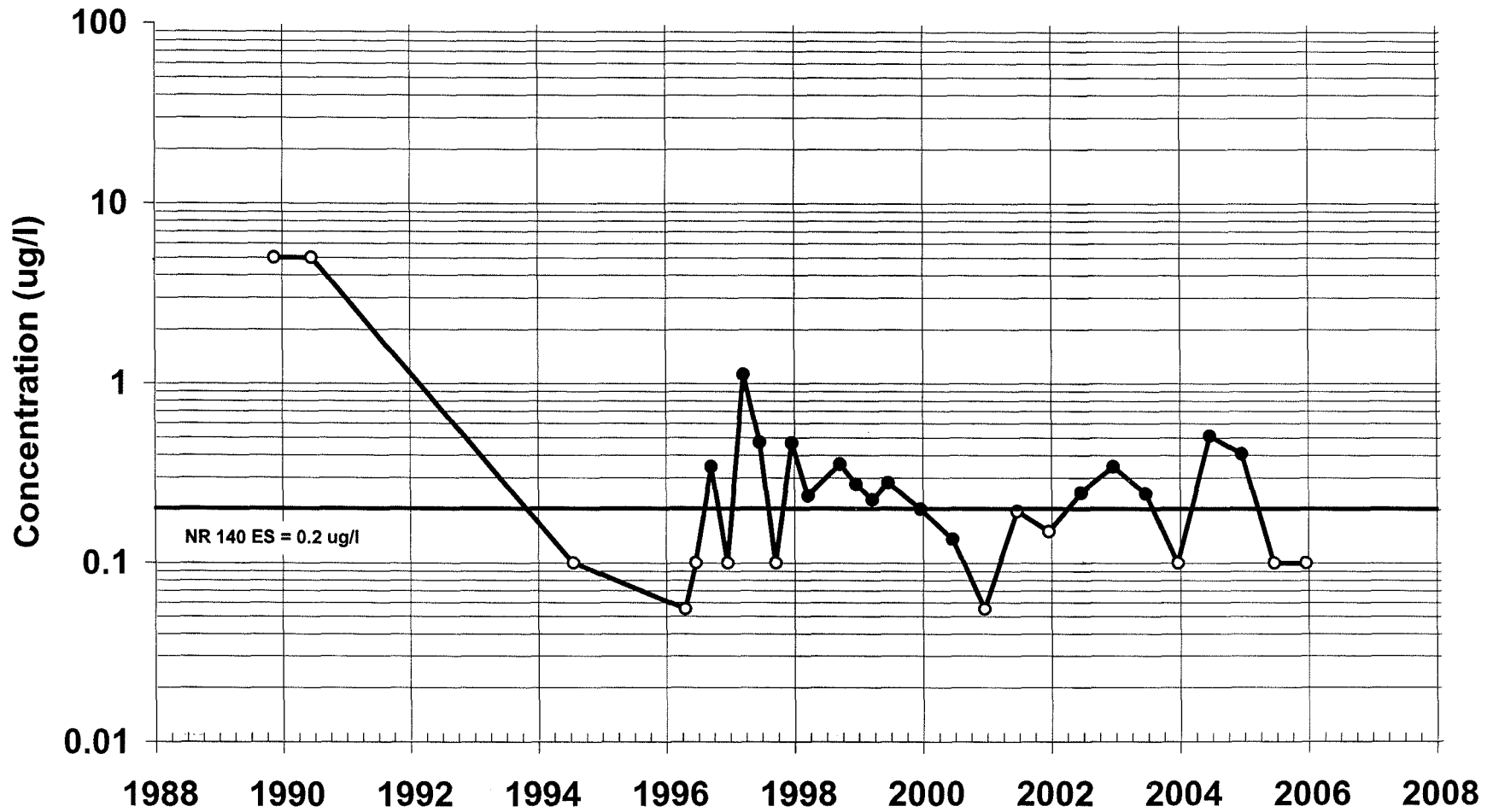
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-19A

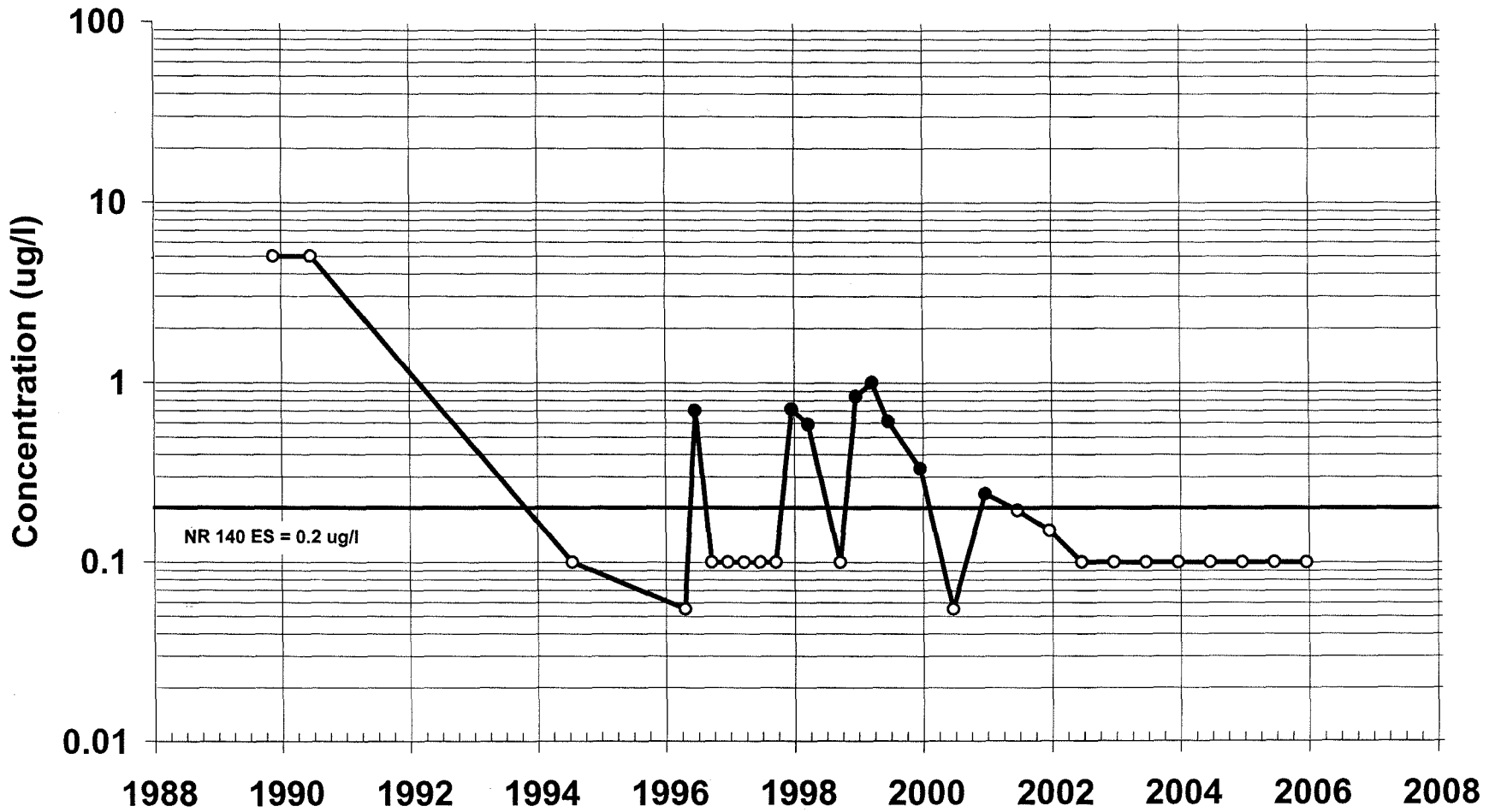
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-22B

## Vinyl Chloride Concentration

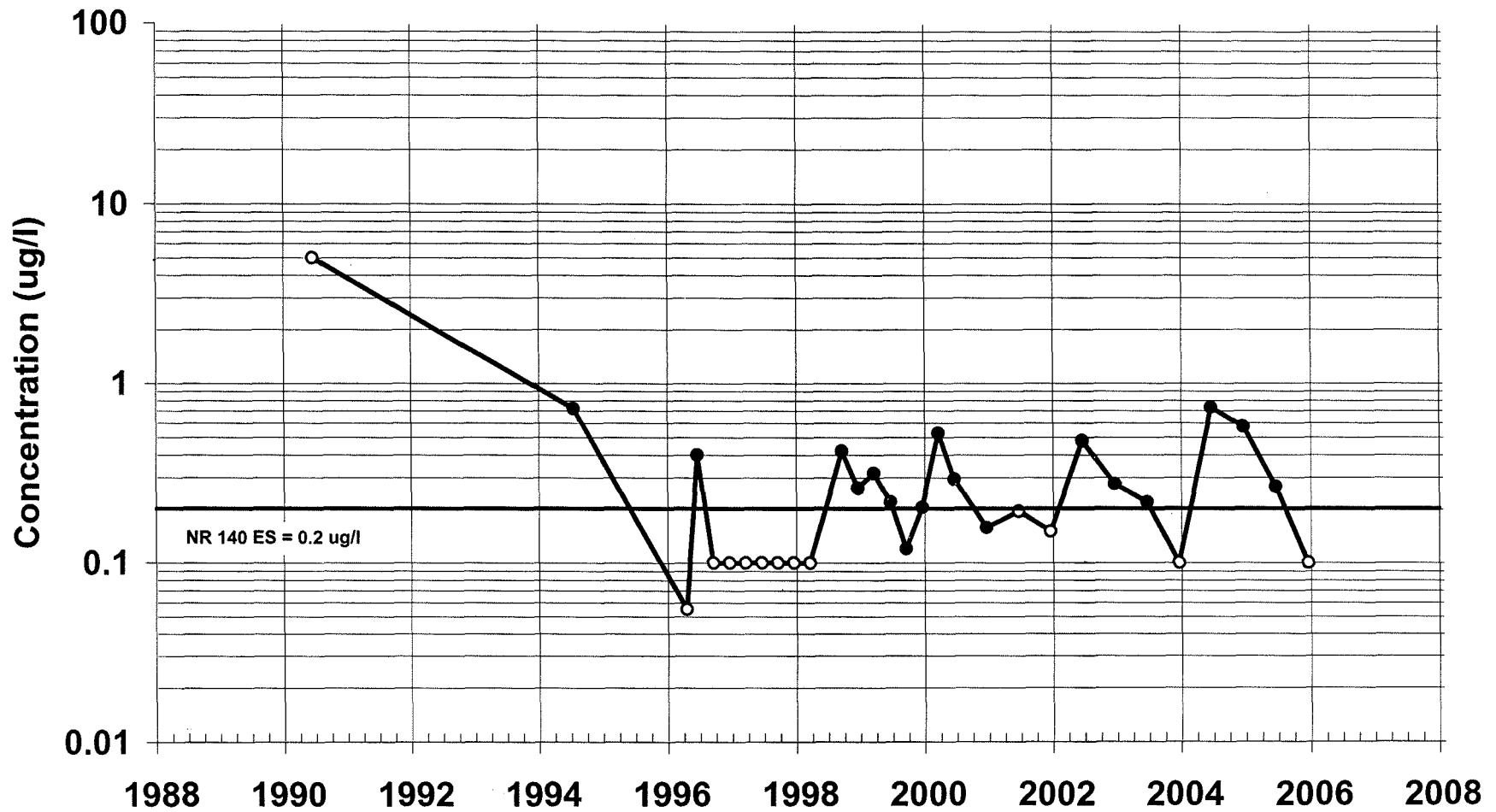


Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.



# MW-24B

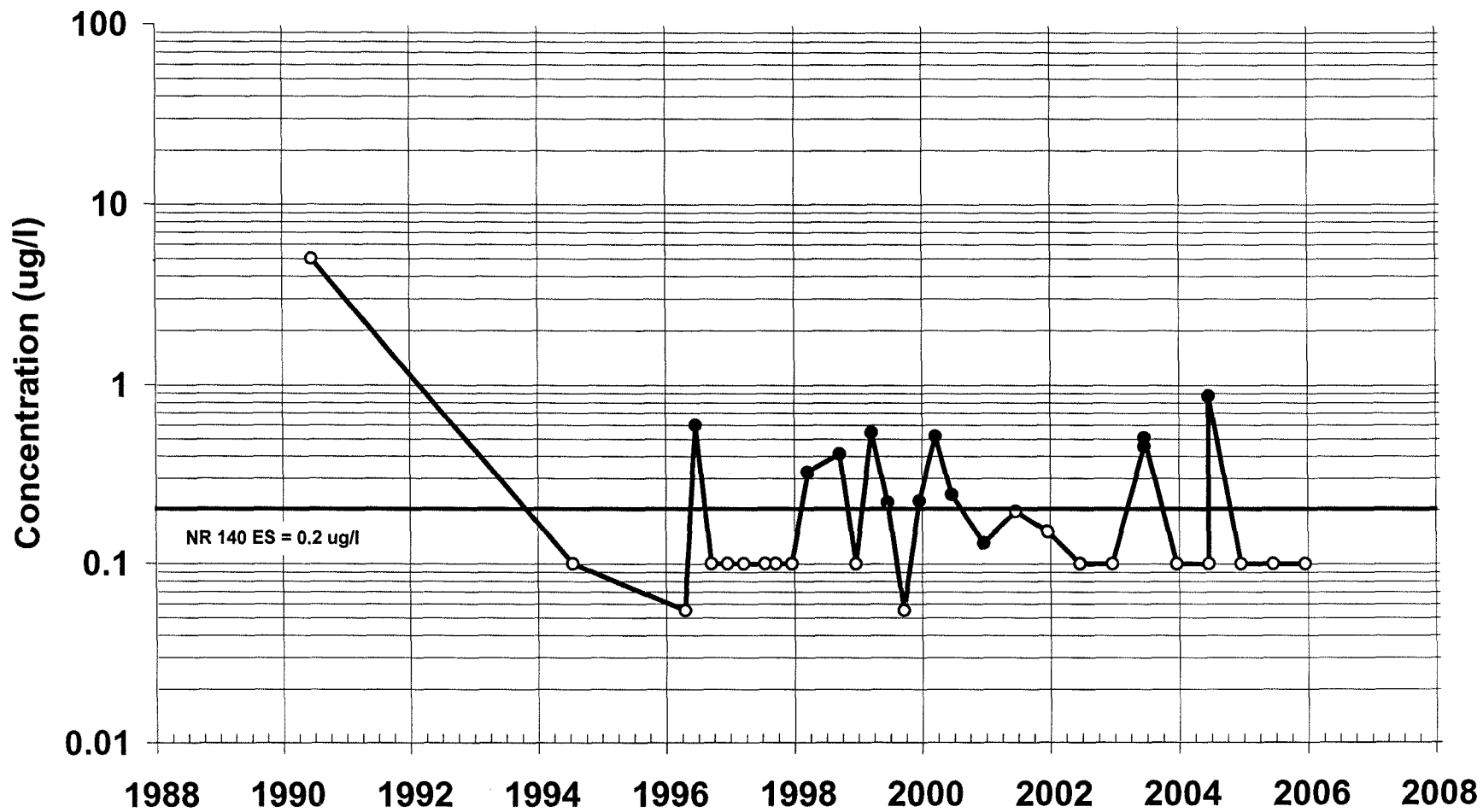
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-24C

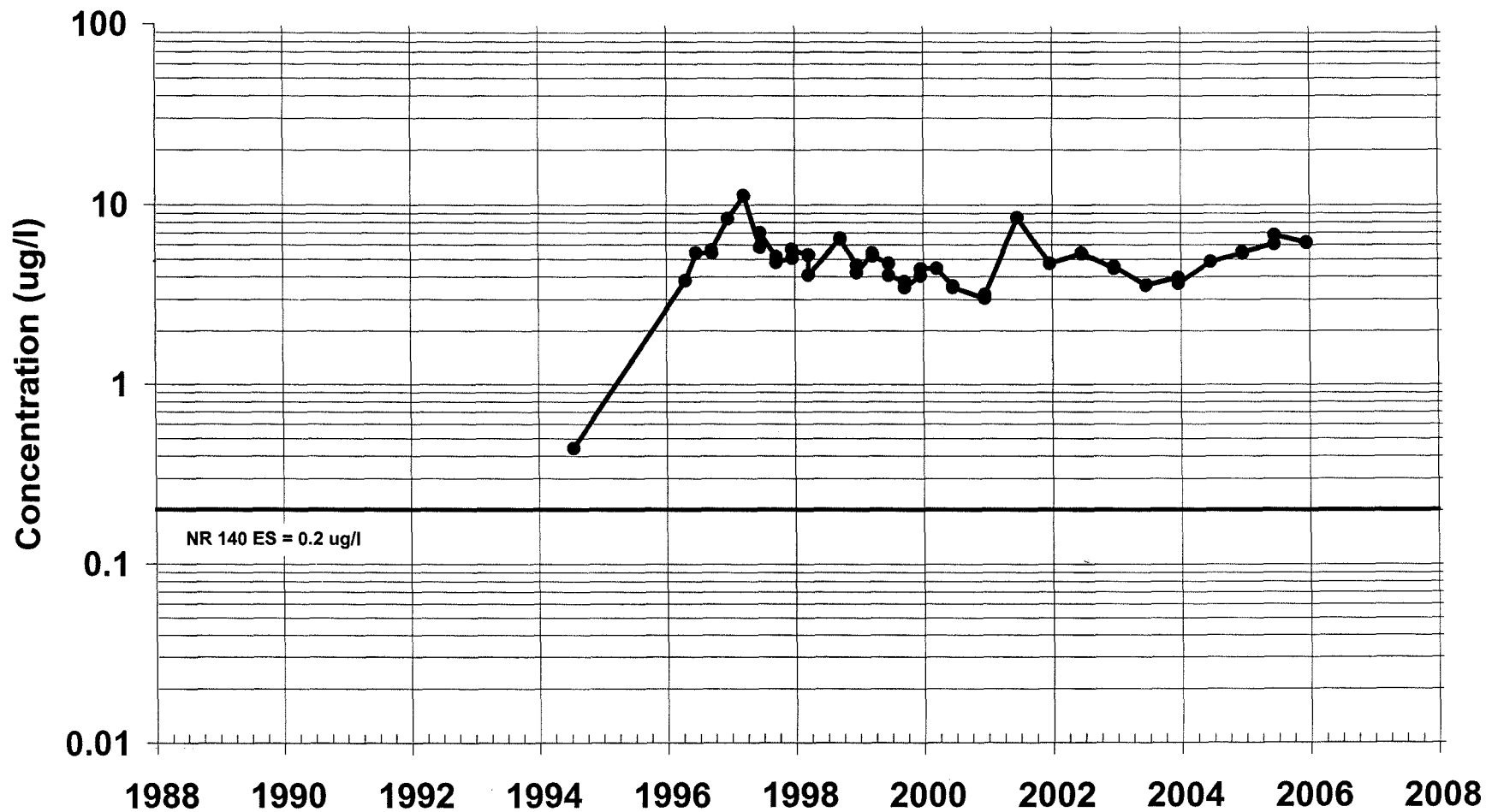
## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

# MW-24D

## Vinyl Chloride Concentration



Open circle indicates that compound was not detected. Non-detected data displayed at one-half reporting limit.

## **Appendix J**

## **QUARTERLY REPORT SUMMARY**

**Period: January - March 2005**

The following O&M activities were completed during the first quarter of 2005:

- Weekly blower house inspections were documented on Form 3.1.
- The landfill gas was monitored at the blower building during the weekly inspections. The methane concentration averaged 23.1 percent and ranged from 16.2 to 29.1 percent.
- Landfill gas monitoring was completed at the gas extraction well locations on January 21, February 24, and March 22.
- The landfill gas was tested for the EPA 8260 VOC parameters. Samples were collected on March 22, 2005 from the blower discharge and six interior extraction well locations. Review of the emissions data indicates that approximately 1.5 pounds of benzene was removed during the first quarter of 2005. Vinyl chloride was not detected in the blower house sample but up to 1.2 pounds of vinyl chloride may have been removed during the quarter based on the reporting limit of 0.75 ppbv.
- Gas probe monitoring was completed on March 11, 2005. Methane was not detected in the gas probes.
- The quarterly inspections of the blower and pilot system checks were recorded on Forms 3.5 and 3.6. Observed problems were limited to the non-operation of the gas alert system horn.
- There were no incidents as defined in the O&M Plan during this quarter.

## **QUARTERLY REPORT SUMMARY**

**Period: April - June 2005**

The following O&M activities were completed during the second quarter of 2005:

- Weekly blower house inspections were documented on Form 3.1.
- The landfill gas was monitored at the blower building during the weekly inspections. The methane concentration averaged 22.7 percent and ranged from 17.7 to 30.6 percent.
- Landfill gas monitoring was completed at the gas extraction well locations on April 14, May 24, and June 30.
- Gas probe monitoring was completed on June 30, 2005. Methane was not detected in the gas probes.
- The annual groundwater sampling event was completed by STS on June 21 through June 23. Results of the quarterly monitoring have been submitted electronically to the WDNR.
- There were no incidents as defined in the O&M Plan during this quarter.

## **QUARTERLY REPORT SUMMARY**

**Period: July - September 2005**

The following O&M activities were completed during the third quarter of 2005:

- Weekly blower house inspections were documented on Form 3.1.
- The landfill gas was monitored at the blower building during the weekly inspections. The methane concentration averaged 22.7 percent and ranged from 18.6 to 27.2 percent.
- Landfill gas monitoring was completed at the gas extraction well locations on July 27, August 29, and September 27.
- Gas probe monitoring was completed on September 30, 2005. Methane was not detected in the gas probes.
- Inspections of the blower and pilot system checks were recorded on Forms 3.5 and 3.6. Observed problems were limited to the non-operation of the gas alert system horn.
- The landfill was mowed during the week of August 8, 2005.
- There were no incidents as defined in the O&M Plan during this quarter.

## **QUARTERLY REPORT SUMMARY**

**Period: October - December 2005**

The following O&M activities were completed during the fourth quarter of 2005:

- Weekly blower house inspections were documented on Form 3.1.
- The landfill gas was monitored at the blower building during the weekly inspections. The methane concentration averaged 28.4 percent and ranged from 20.2 to 38.6 percent.
- Landfill gas monitoring was completed at the gas extraction well on October 28, November 30, and December 28.
- Gas probe monitoring was completed on January 5, 2006. Methane was not detected in the gas probes.
- Inspections of the blower and pilot system checks were recorded on Forms 3.5 and 3.6. Observed problems were limited to the non-operation of the gas alert system horn.
- The semi-annual groundwater sampling event was completed by STS on December 21 and 22, 2005. Results of the groundwater monitoring have been submitted electronically to the WDNR.
- Insulation on the inside of the flare shroud was replaced on November 23, 2005.
- There were no incidents as defined in the O&M Plan during this quarter.



## **Appendix K**

**Groundwater Analytical Data  
Summary of Detects - 2005  
Holtz Krause Landfill**

Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34205	Acenaphthene	2370	1750	UG/L			104	MW-3R	Jun-05
34381	Fluorene	6150	1750	UG/L	400	80	104	MW-3R	Jun-05
34433	N-Nitrosodiphenylamine(1)	4690	1875	UG/L	7	0.7	104	MW-3R	Jun-05
34461	Phenanthrene	9970	1250	UG/L			104	MW-3R	Jun-05
34696	Naphthalene	280	160	UG/L	40	8	104	MW-3R	Jun-05
34696	Naphthalene	2130	1750	UG/L	40	8	104	MW-3R	Jun-05
77222	1,2,4-Trimethylbenzene	227	80	UG/L	480	96	104	MW-3R	Jun-05
77223	Isopropylbenzene	78.3	62	UG/L			104	MW-3R	Jun-05
77224	n-Propylbenzene	127	60	UG/L			104	MW-3R	Jun-05
77342	n-Butylbenzene	182	72	UG/L			104	MW-3R	Jun-05
77350	sec-Butylbenzene	121	80	UG/L			104	MW-3R	Jun-05
77416	2-Methylnaphthalene	4310	3000	UG/L			104	MW-3R	Jun-05
1000	Arsenic, Dissolved	3.3	0.6	UG/L	10	1	107	MW-4B	Jun-05
34030	Benzene (GC-MS)	1.82	0.31	UG/L	5	0.5	107	MW-4B	Jun-05
34030	Benzene (GC-MS)	1.62	0.31	UG/L	5	0.5	107	MW-4B	Dec-05
34030	Benzene (GC-MS)	1.54	0.31	UG/L	5	0.5	107	MW-4B	Dec-05
34301	Chlorobenzene	2.37	0.7	UG/L	100	20	107	MW-4B	Jun-05
34301	Chlorobenzene	1.89	0.7	UG/L	100	20	107	MW-4B	Dec-05
34301	Chlorobenzene	1.9	0.7	UG/L	100	20	107	MW-4B	Dec-05
34696	Naphthalene	2.22	0.8	UG/L	40	8	107	MW-4B	Jun-05
77223	Isopropylbenzene	0.938	0.31	UG/L			107	MW-4B	Jun-05
77223	Isopropylbenzene	0.604	0.31	UG/L			107	MW-4B	Dec-05
77223	Isopropylbenzene	0.606	0.31	UG/L			107	MW-4B	Dec-05
77224	n-Propylbenzene	0.356	0.3	UG/L			107	MW-4B	Jun-05
77342	n-Butylbenzene	0.45	0.36	UG/L			107	MW-4B	Jun-05
77350	sec-Butylbenzene	0.984	0.4	UG/L			107	MW-4B	Jun-05

**Groundwater Analytical Data  
Summary of Detects - 2005  
Holtz Krause Landfill**

Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
1000	Arsenic, Dissolved	7.8	0.6	UG/L	10	1	111	MW-8B	Jun-05
34030	Benzene (GC-MS)	2.08	0.31	UG/L	5	0.5	111	MW-8B	Jun-05
34030	Benzene (GC-MS)	5.38	0.31	UG/L	5	0.5	111	MW-8B	Dec-05
34301	Chlorobenzene	1.65	0.7	UG/L	100	20	111	MW-8B	Jun-05
34301	Chlorobenzene	5.46	0.7	UG/L	100	20	111	MW-8B	Dec-05
34418	Chloromethane	3.71	0.29	UG/L	3	0.3	111	MW-8B	Dec-05
34571	1,4-Dichlorobenzene	0.705	0.6	UG/L	75	15	111	MW-8B	Jun-05
34571	1,4-Dichlorobenzene	1.46	0.6	UG/L	75	15	111	MW-8B	Dec-05
34668	Dichlorodifluoromethane	3.31	0.7	UG/L	1000	200	111	MW-8B	Dec-05
34696	Naphthalene	1.39	0.8	UG/L	40	8	111	MW-8B	Dec-05
77223	Isopropylbenzene	0.744	0.31	UG/L			111	MW-8B	Dec-05
77224	n-Propylbenzene	0.403	0.3	UG/L			111	MW-8B	Dec-05
77342	n-Butylbenzene	0.372	0.36	UG/L			111	MW-8B	Dec-05
85795	m&p-Xylene	0.695	0.62	UG/L	10000	1000	111	MW-8B	Dec-05
1000	Arsenic, Dissolved	3.3	0.6	UG/L	10	1	112	MW-8C	Jun-05
1000	Arsenic, Dissolved	3.2	0.6	UG/L	10	1	112	MW-8C	Jun-05
34030	Benzene (GC-MS)	6.49	0.31	UG/L	5	0.5	112	MW-8C	Jun-05
34030	Benzene (GC-MS)	6.85	0.31	UG/L	5	0.5	112	MW-8C	Jun-05
34030	Benzene (GC-MS)	1.77	0.31	UG/L	5	0.5	112	MW-8C	Dec-05
34301	Chlorobenzene	5.75	0.7	UG/L	100	20	112	MW-8C	Jun-05
34301	Chlorobenzene	6.06	0.7	UG/L	100	20	112	MW-8C	Jun-05
34301	Chlorobenzene	1.99	0.7	UG/L	100	20	112	MW-8C	Dec-05
34418	Chloromethane	4.32	0.29	UG/L	3	0.3	112	MW-8C	Jun-05
34418	Chloromethane	3.95	0.29	UG/L	3	0.3	112	MW-8C	Jun-05
34571	1,4-Dichlorobenzene	1.88	0.6	UG/L	75	15	112	MW-8C	Jun-05
34571	1,4-Dichlorobenzene	1.66	0.6	UG/L	75	15	112	MW-8C	Jun-05
34571	1,4-Dichlorobenzene	0.688	0.6	UG/L	75	15	112	MW-8C	Dec-05
34668	Dichlorodifluoromethane	5.7	0.7	UG/L	1000	200	112	MW-8C	Jun-05
34668	Dichlorodifluoromethane	6.32	0.7	UG/L	1000	200	112	MW-8C	Jun-05
34696	Naphthalene	2.85	0.8	UG/L	40	8	112	MW-8C	Jun-05

**Groundwater Analytical Data  
Summary of Detects - 2005  
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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34696	Naphthalene	2.66	0.8	UG/L	40	8	112	MW-8C	Jun-05
76994	Methane	3440	100	UG/L			112	MW-8C	Jun-05
76994	Methane	8840	100	UG/L			112	MW-8C	Dec-05
77223	Isopropylbenzene	1.12	0.31	UG/L			112	MW-8C	Jun-05
77223	Isopropylbenzene	1.1	0.31	UG/L			112	MW-8C	Jun-05
77342	n-Butylbenzene	0.564	0.36	UG/L			112	MW-8C	Jun-05
77342	n-Butylbenzene	0.55	0.36	UG/L			112	MW-8C	Jun-05
77350	sec-Butylbenzene	0.78	0.4	UG/L			112	MW-8C	Jun-05
77350	sec-Butylbenzene	0.66	0.4	UG/L			112	MW-8C	Jun-05
78113	Ethylbenzene	0.754	0.5	UG/L	700	140	112	MW-8C	Jun-05
81552	Acetone	8.11	5	UG/L	1000	200	112	MW-8C	Jun-05
81552	Acetone	7.24	5	UG/L	1000	200	112	MW-8C	Jun-05
85795	m&p-Xylene	0.956	0.62	UG/L	10000	1000	112	MW-8C	Jun-05
85795	m&p-Xylene	0.862	0.62	UG/L	10000	1000	112	MW-8C	Jun-05
34418	Chloromethane	0.353	0.29	UG/L	3	0.3	115	MW-11B	Jun-05
34668	Dichlorodifluoromethane	1.15	0.7	UG/L	1000	200	115	MW-11B	Jun-05
39175	Vinyl Chloride	0.229	0.2	UG/L	0.2	0.02	115	MW-11B	Jun-05
34030	Benzene (GC-MS)	5.2	0.31	UG/L	5	0.5	116	MW-11C	Jun-05
34030	Benzene (GC-MS)	5.48	0.31	UG/L	5	0.5	116	MW-11C	Jun-05
34030	Benzene (GC-MS)	5.95	0.31	UG/L	5	0.5	116	MW-11C	Dec-05
34301	Chlorobenzene	5.35	0.7	UG/L	100	20	116	MW-11C	Jun-05
34301	Chlorobenzene	5.13	0.7	UG/L	100	20	116	MW-11C	Jun-05
34301	Chlorobenzene	6.37	0.7	UG/L	100	20	116	MW-11C	Dec-05
34418	Chloromethane	3	0.29	UG/L	3	0.3	116	MW-11C	Jun-05
34418	Chloromethane	2.75	0.29	UG/L	3	0.3	116	MW-11C	Jun-05
34418	Chloromethane	5.58	0.29	UG/L	3	0.3	116	MW-11C	Dec-05
34571	1,4-Dichlorobenzene	1.08	0.6	UG/L	75	15	116	MW-11C	Jun-05
34571	1,4-Dichlorobenzene	1.49	0.6	UG/L	75	15	116	MW-11C	Jun-05
34571	1,4-Dichlorobenzene	1.89	0.6	UG/L	75	15	116	MW-11C	Dec-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34668	Dichlorodifluoromethane	4.7	0.7	UG/L	1000	200	116	MW-11C	Jun-05
34668	Dichlorodifluoromethane	5.15	0.7	UG/L	1000	200	116	MW-11C	Jun-05
34668	Dichlorodifluoromethane	7.04	0.7	UG/L	1000	200	116	MW-11C	Dec-05
34696	Naphthalene	0.894	0.8	UG/L	40	8	116	MW-11C	Jun-05
34696	Naphthalene	1.15	0.8	UG/L	40	8	116	MW-11C	Dec-05
76994	Methane	849	10	UG/L			116	MW-11C	Jun-05
76994	Methane	817	10	UG/L			116	MW-11C	Jun-05
76994	Methane	3060	50	UG/L			116	MW-11C	Dec-05
77222	1,2,4-Trimethylbenzene	2.1	0.4	UG/L	480	96	116	MW-11C	Jun-05
77222	1,2,4-Trimethylbenzene	2.13	0.4	UG/L	480	96	116	MW-11C	Jun-05
77222	1,2,4-Trimethylbenzene	1.79	0.4	UG/L	480	96	116	MW-11C	Dec-05
77223	Isopropylbenzene	0.719	0.31	UG/L			116	MW-11C	Jun-05
77223	Isopropylbenzene	0.623	0.31	UG/L			116	MW-11C	Jun-05
77223	Isopropylbenzene	0.791	0.31	UG/L			116	MW-11C	Dec-05
77224	n-Propylbenzene	0.303	0.3	UG/L			116	MW-11C	Dec-05
77226	1,3,5-Trimethylbenzene	0.312	0.31	UG/L	480	96	116	MW-11C	Jun-05
77226	1,3,5-Trimethylbenzene	0.356	0.31	UG/L	480	96	116	MW-11C	Jun-05
77226	1,3,5-Trimethylbenzene	0.354	0.31	UG/L	480	96	116	MW-11C	Dec-05
77342	n-Butylbenzene	0.774	0.36	UG/L			116	MW-11C	Jun-05
77342	n-Butylbenzene	0.679	0.36	UG/L			116	MW-11C	Jun-05
77342	n-Butylbenzene	0.873	0.36	UG/L			116	MW-11C	Dec-05
77350	sec-Butylbenzene	1.02	0.4	UG/L			116	MW-11C	Jun-05
77350	sec-Butylbenzene	0.969	0.4	UG/L			116	MW-11C	Jun-05
77350	sec-Butylbenzene	1.27	0.4	UG/L			116	MW-11C	Dec-05
81552	Acetone	5.15	5	UG/L	1000	200	116	MW-11C	Jun-05
81552	Acetone	6.1	5	UG/L	1000	200	116	MW-11C	Jun-05
85795	m&p-Xylene	2.73	0.62	UG/L	10000	1000	116	MW-11C	Jun-05
85795	m&p-Xylene	2.89	0.62	UG/L	10000	1000	116	MW-11C	Jun-05
85795	m&p-Xylene	2.54	0.62	UG/L	10000	1000	116	MW-11C	Dec-05

**Groundwater Analytical Data  
Summary of Detects - 2005  
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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
1000	Arsenic, Dissolved	5.6	0.6	UG/L	10	1	118	MW-12B	Jun-05
34030	Benzene (GC-MS)	4.93	0.31	UG/L	5	0.5	118	MW-12B	Jun-05
34030	Benzene (GC-MS)	2.37	0.31	UG/L	5	0.5	118	MW-12B	Dec-05
34301	Chlorobenzene	5.55	0.7	UG/L	100	20	118	MW-12B	Jun-05
34301	Chlorobenzene	3.56	0.7	UG/L	100	20	118	MW-12B	Dec-05
34418	Chloromethane	2.87	0.29	UG/L	3	0.3	118	MW-12B	Jun-05
34418	Chloromethane	2.43	0.29	UG/L	3	0.3	118	MW-12B	Dec-05
34536	1,2-Dichlorobenzene	0.825	0.6	UG/L	600	60	118	MW-12B	Jun-05
34536	1,2-Dichlorobenzene	0.709	0.6	UG/L	600	60	118	MW-12B	Dec-05
34571	1,4-Dichlorobenzene	1.23	0.6	UG/L	75	15	118	MW-12B	Jun-05
34571	1,4-Dichlorobenzene	0.965	0.6	UG/L	75	15	118	MW-12B	Dec-05
34668	Dichlorodifluoromethane	3.72	0.7	UG/L	1000	200	118	MW-12B	Jun-05
34668	Dichlorodifluoromethane	1.35	0.7	UG/L	1000	200	118	MW-12B	Dec-05
34696	Naphthalene	1.51	0.8	UG/L	40	8	118	MW-12B	Jun-05
76994	Methane	2660	50	UG/L			118	MW-12B	Jun-05
76994	Methane	2640	50	UG/L			118	MW-12B	Dec-05
77342	n-Butylbenzene	0.489	0.36	UG/L			118	MW-12B	Jun-05
77350	sec-Butylbenzene	1.39	0.4	UG/L			118	MW-12B	Jun-05
78133	4-Methyl-2-Pentanone	1.43	1	UG/L	500	50	118	MW-12B	Jun-05
1000	Arsenic, Dissolved	0.8	0.6	UG/L	10	1	124	MW-16AR	Jun-05
34030	Benzene (GC-MS)	0.583	0.31	UG/L	5	0.5	130	MW-19A	Jun-05
34030	Benzene (GC-MS)	0.481	0.31	UG/L	5	0.5	130	MW-19A	Dec-05
34418	Chloromethane	0.987	0.29	UG/L	3	0.3	130	MW-19A	Jun-05
76994	Methane	25	1	UG/L			130	MW-19A	Jun-05
76994	Methane	39	1	UG/L			130	MW-19A	Dec-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
1000	Arsenic, Dissolved	14	3	UG/L	10	1	137	MW-22B	Jun-05
34030	Benzene (GC-MS)	3.82	0.31	UG/L	5	0.5	137	MW-22B	Jun-05
34030	Benzene (GC-MS)	2.73	0.31	UG/L	5	0.5	137	MW-22B	Dec-05
34301	Chlorobenzene	8.85	0.7	UG/L	100	20	137	MW-22B	Jun-05
34301	Chlorobenzene	6.6	0.7	UG/L	100	20	137	MW-22B	Dec-05
34418	Chloromethane	5.55	0.29	UG/L	3	0.3	137	MW-22B	Jun-05
34418	Chloromethane	7.01	0.29	UG/L	3	0.3	137	MW-22B	Dec-05
34571	1,4-Dichlorobenzene	2.05	0.6	UG/L	75	15	137	MW-22B	Jun-05
34571	1,4-Dichlorobenzene	1.49	0.6	UG/L	75	15	137	MW-22B	Dec-05
34668	Dichlorodifluoromethane	8.35	0.7	UG/L	1000	200	137	MW-22B	Jun-05
34668	Dichlorodifluoromethane	6.26	0.7	UG/L	1000	200	137	MW-22B	Dec-05
76994	Methane	963	10	UG/L			137	MW-22B	Jun-05
76994	Methane	1290	10	UG/L			137	MW-22B	Dec-05
77223	Isopropylbenzene	0.754	0.31	UG/L			137	MW-22B	Jun-05
77223	Isopropylbenzene	0.549	0.31	UG/L			137	MW-22B	Dec-05
77342	n-Butylbenzene	1.28	0.36	UG/L			137	MW-22B	Jun-05
77342	n-Butylbenzene	0.673	0.36	UG/L			137	MW-22B	Dec-05
77350	sec-Butylbenzene	1.28	0.4	UG/L			137	MW-22B	Jun-05
34418	Chloromethane	0.4611	0.29	UG/L	3	0.3	138	MW-23	Jun-05
34668	Dichlorodifluoromethane	0.75	0.7	UG/L	1000	200	138	MW-23	Jun-05
76994	Methane	49.3	1	UG/L			138	MW-23	Jun-05
1000	Arsenic, Dissolved	9.7	0.6	UG/L	10	1	140	MW-24B	Jun-05
34030	Benzene (GC-MS)	4.16	0.31	UG/L	5	0.5	140	MW-24B	Jun-05
34030	Benzene (GC-MS)	0.646	0.31	UG/L	5	0.5	140	MW-24B	Dec-05
34301	Chlorobenzene	3.32	0.7	UG/L	100	20	140	MW-24B	Jun-05
34301	Chlorobenzene	0.772	0.7	UG/L	100	20	140	MW-24B	Dec-05
34418	Chloromethane	0.344	0.29	UG/L	3	0.3	140	MW-24B	Jun-05
34571	1,4-Dichlorobenzene	0.962	0.6	UG/L	75	15	140	MW-24B	Jun-05
34668	Dichlorodifluoromethane	1.14	0.7	UG/L	1000	200	140	MW-24B	Jun-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34696	Naphthalene	5.72	0.8	UG/L	40	8	140	MW-24B	Jun-05
34696	Naphthalene	0.873	0.8	UG/L	40	8	140	MW-24B	Dec-05
39175	Vinyl Chloride	0.267	0.2	UG/L	0.2	0.02	140	MW-24B	Jun-05
76994	Methane	4400	100	UG/L			140	MW-24B	Jun-05
76994	Methane	10400	100	UG/L			140	MW-24B	Dec-05
77342	n-Butylbenzene	0.563	0.36	UG/L			140	MW-24B	Jun-05
77350	sec-Butylbenzene	0.618	0.4	UG/L			140	MW-24B	Jun-05
81552	Acetone	5.56	5	UG/L	1000	200	140	MW-24B	Jun-05
1000	Arsenic, Dissolved	5.3	0.6	UG/L	10	1	141	MW-24C	Jun-05
34030	Benzene (GC-MS)	8.91	0.31	UG/L	5	0.5	141	MW-24C	Jun-05
34030	Benzene (GC-MS)	6.81	0.31	UG/L	5	0.5	141	MW-24C	Dec-05
34301	Chlorobenzene	7.64	0.7	UG/L	100	20	141	MW-24C	Jun-05
34301	Chlorobenzene	6.29	0.7	UG/L	100	20	141	MW-24C	Dec-05
34418	Chloromethane	2.95	0.29	UG/L	3	0.3	141	MW-24C	Jun-05
34418	Chloromethane	3.65	0.29	UG/L	3	0.3	141	MW-24C	Dec-05
34536	1,2-Dichlorobenzene	1.14	0.6	UG/L	600	60	141	MW-24C	Jun-05
34536	1,2-Dichlorobenzene	1.04	0.6	UG/L	600	60	141	MW-24C	Dec-05
34571	1,4-Dichlorobenzene	2.19	0.6	UG/L	75	15	141	MW-24C	Jun-05
34571	1,4-Dichlorobenzene	2.28	0.6	UG/L	75	15	141	MW-24C	Dec-05
34668	Dichlorodifluoromethane	4.98	0.7	UG/L	1000	200	141	MW-24C	Jun-05
34668	Dichlorodifluoromethane	3.95	0.7	UG/L	1000	200	141	MW-24C	Dec-05
34696	Naphthalene	6.55	0.8	UG/L	40	8	141	MW-24C	Jun-05
34696	Naphthalene	4.54	0.8	UG/L	40	8	141	MW-24C	Dec-05
76994	Methane	8840	100	UG/L			141	MW-24C	Jun-05
76994	Methane	7750	100	UG/L			141	MW-24C	Dec-05
77222	1,2,4-Trimethylbenzene	5.08	0.4	UG/L	480	96	141	MW-24C	Jun-05
77222	1,2,4-Trimethylbenzene	0.76	0.4	UG/L	480	96	141	MW-24C	Dec-05
77223	Isopropylbenzene	3.61	0.31	UG/L			141	MW-24C	Jun-05
77223	Isopropylbenzene	2.94	0.31	UG/L			141	MW-24C	Dec-05
77224	n-Propylbenzene	2.88	0.3	UG/L			141	MW-24C	Jun-05



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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
77224	n-Propylbenzene	1.99	0.3	UG/L			141	MW-24C	Dec-05
77342	n-Butylbenzene	1.95	0.36	UG/L			141	MW-24C	Jun-05
77342	n-Butylbenzene	1.7	0.36	UG/L			141	MW-24C	Dec-05
77350	sec-Butylbenzene	2.77	0.4	UG/L			141	MW-24C	Jun-05
77350	sec-Butylbenzene	2.21	0.4	UG/L			141	MW-24C	Dec-05
78032	Methyl Tert-Butyl Ether (MTBE)	0.321	0.3	UG/L	60	12	141	MW-24C	Jun-05
78113	Ethylbenzene	0.554	0.5	UG/L	700	140	141	MW-24C	Jun-05
78133	4-Methyl-2-Pentanone	1.51	1	UG/L	500	50	141	MW-24C	Jun-05
81552	Acetone	8.55	5	UG/L	1000	200	141	MW-24C	Jun-05
81552	Acetone	6.09	5	UG/L	1000	200	141	MW-24C	Dec-05
85795	m&p-Xylene	1.5	0.62	UG/L	10000	1000	141	MW-24C	Jun-05
85795	m&p-Xylene	0.758	0.62	UG/L	10000	1000	141	MW-24C	Dec-05
34010	Toluene	0.617	0.3	UG/L	1000	200	142	MW-24D	Dec-05
34030	Benzene (GC-MS)	8.94	0.31	UG/L	5	0.5	142	MW-24D	Jun-05
34030	Benzene (GC-MS)	9.03	0.31	UG/L	5	0.5	142	MW-24D	Jun-05
34030	Benzene (GC-MS)	6.1	0.31	UG/L	5	0.5	142	MW-24D	Dec-05
34301	Chlorobenzene	4.25	0.7	UG/L	100	20	142	MW-24D	Jun-05
34301	Chlorobenzene	4.32	0.7	UG/L	100	20	142	MW-24D	Jun-05
34301	Chlorobenzene	3.69	0.7	UG/L	100	20	142	MW-24D	Dec-05
34418	Chloromethane	14.8	0.29	UG/L	3	0.3	142	MW-24D	Jun-05
34418	Chloromethane	15.4	0.29	UG/L	3	0.3	142	MW-24D	Jun-05
34418	Chloromethane	15.9	0.29	UG/L	3	0.3	142	MW-24D	Dec-05
34536	1,2-Dichlorobenzene	1.62	0.6	UG/L	600	60	142	MW-24D	Jun-05
34536	1,2-Dichlorobenzene	1.78	0.6	UG/L	600	60	142	MW-24D	Jun-05
34536	1,2-Dichlorobenzene	1.58	0.6	UG/L	600	60	142	MW-24D	Dec-05
34571	1,4-Dichlorobenzene	2.42	0.6	UG/L	75	15	142	MW-24D	Jun-05
34571	1,4-Dichlorobenzene	2.33	0.6	UG/L	75	15	142	MW-24D	Jun-05
34571	1,4-Dichlorobenzene	2.2	0.6	UG/L	75	15	142	MW-24D	Dec-05
34668	Dichlorodifluoromethane	24.7	0.7	UG/L	1000	200	142	MW-24D	Jun-05
34668	Dichlorodifluoromethane	27.5	0.7	UG/L	1000	200	142	MW-24D	Jun-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34668	Dichlorodifluoromethane	26.1	0.7	UG/L	1000	200	142	MW-24D	Dec-05
39175	Vinyl Chloride	6.06	0.2	UG/L	0.2	0.02	142	MW-24D	Jun-05
39175	Vinyl Chloride	6.78	0.2	UG/L	0.2	0.02	142	MW-24D	Jun-05
39175	Vinyl Chloride	6.16	0.2	UG/L	0.2	0.02	142	MW-24D	Dec-05
76994	Methane	52.7	1	UG/L			142	MW-24D	Jun-05
76994	Methane	47.4	1	UG/L			142	MW-24D	Jun-05
76994	Methane	56.8	1	UG/L			142	MW-24D	Dec-05
77093	1,2-Dichloroethylene (cis)	0.681	0.4	UG/L	70	7	142	MW-24D	Jun-05
77093	1,2-Dichloroethylene (cis)	0.625	0.4	UG/L	70	7	142	MW-24D	Jun-05
77093	1,2-Dichloroethylene (cis)	0.619	0.4	UG/L	70	7	142	MW-24D	Dec-05
77223	Isopropylbenzene	2.03	0.31	UG/L			142	MW-24D	Jun-05
77223	Isopropylbenzene	2.12	0.31	UG/L			142	MW-24D	Jun-05
77223	Isopropylbenzene	1.25	0.31	UG/L			142	MW-24D	Dec-05
77342	n-Butylbenzene	0.898	0.36	UG/L			142	MW-24D	Jun-05
77342	n-Butylbenzene	0.78	0.36	UG/L			142	MW-24D	Jun-05
77342	n-Butylbenzene	0.585	0.36	UG/L			142	MW-24D	Dec-05
77350	sec-Butylbenzene	1.27	0.4	UG/L			142	MW-24D	Jun-05
77350	sec-Butylbenzene	1.48	0.4	UG/L			142	MW-24D	Jun-05
77350	sec-Butylbenzene	0.988	0.4	UG/L			142	MW-24D	Dec-05
78113	Ethylbenzene	0.569	0.5	UG/L	700	140	142	MW-24D	Jun-05
78113	Ethylbenzene	0.683	0.5	UG/L	700	140	142	MW-24D	Jun-05
78113	Ethylbenzene	0.588	0.5	UG/L	700	140	142	MW-24D	Dec-05
78133	4-Methyl-2-Pentanone	1.62	1	UG/L	500	50	142	MW-24D	Jun-05
78133	4-Methyl-2-Pentanone	1.59	1	UG/L	500	50	142	MW-24D	Jun-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34010	Toluene	0.353	0.3	UG/L	1000	200	997	Field Blank	Dec-05
34010	Toluene	0.343	0.3	UG/L	1000	200	997	Field Blank	Dec-05
34423	Methylene Chloride	5.64	0.3	UG/L	5	0.5	997	Field Blank	Jun-05
34423	Methylene Chloride	6.84	0.3	UG/L	5	0.5	997	Field Blank	Jun-05
34423	Methylene Chloride	4.81	0.3	UG/L	5	0.5	997	Field Blank	Jun-05
34423	Methylene Chloride	5.06	0.3	UG/L	5	0.5	997	Field Blank	Dec-05
34423	Methylene Chloride	4.45	0.3	UG/L	5	0.5	997	Field Blank	Dec-05
81552	Acetone	50.2	5	UG/L	1000	200	997	Field Blank	Dec-05
81552	Acetone	55.9	5	UG/L	1000	200	997	Field Blank	Dec-05
81595	2-Butanone	3.44	2	UG/L	460	90	997	Field Blank	Jun-05
81595	2-Butanone	16.3	2	UG/L	460	90	997	Field Blank	Dec-05
81595	2-Butanone	16.7	2	UG/L	460	90	997	Field Blank	Dec-05

# **Appendix L**

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
1000	Arsenic, Dissolved	3.3	0.6	UG/L	10	1	107	MW-4B	Jun-05
1000	Arsenic, Dissolved	7.8	0.6	UG/L	10	1	111	MW-8B	Jun-05
1000	Arsenic, Dissolved	3.3	0.6	UG/L	10	1	112	MW-8C	Jun-05
1000	Arsenic, Dissolved	3.2	0.6	UG/L	10	1	112	MW-8C	Jun-05
1000	Arsenic, Dissolved	5.6	0.6	UG/L	10	1	118	MW-12B	Jun-05
1000	Arsenic, Dissolved	0.8	0.6	UG/L	10	1	124	MW-16AR	Jun-05
1000	Arsenic, Dissolved	14	3	UG/L	10	1	137	MW-22B	Jun-05
1000	Arsenic, Dissolved	9.7	0.6	UG/L	10	1	140	MW-24B	Jun-05
1000	Arsenic, Dissolved	5.3	0.6	UG/L	10	1	141	MW-24C	Jun-05
34010	Toluene	0.617	0.3	UG/L	1000	200	142	MW-24D	Dec-05
34010	Toluene	0.353	0.3	UG/L	1000	200	997	Field Blank	Dec-05
34010	Toluene	0.343	0.3	UG/L	1000	200	997	Field Blank	Dec-05
34030	Benzene (GC-MS)	1.62	0.31	UG/L	5	0.5	107	MW-4B	Dec-05
34030	Benzene (GC-MS)	1.54	0.31	UG/L	5	0.5	107	MW-4B	Dec-05
34030	Benzene (GC-MS)	1.82	0.31	UG/L	5	0.5	107	MW-4B	Jun-05
34030	Benzene (GC-MS)	2.08	0.31	UG/L	5	0.5	111	MW-8B	Jun-05
34030	Benzene (GC-MS)	5.38	0.31	UG/L	5	0.5	111	MW-8B	Dec-05
34030	Benzene (GC-MS)	1.77	0.31	UG/L	5	0.5	112	MW-8C	Dec-05
34030	Benzene (GC-MS)	6.49	0.31	UG/L	5	0.5	112	MW-8C	Jun-05
34030	Benzene (GC-MS)	6.85	0.31	UG/L	5	0.5	112	MW-8C	Jun-05
34030	Benzene (GC-MS)	5.95	0.31	UG/L	5	0.5	116	MW-11C	Dec-05
34030	Benzene (GC-MS)	5.2	0.31	UG/L	5	0.5	116	MW-11C	Jun-05
34030	Benzene (GC-MS)	5.48	0.31	UG/L	5	0.5	116	MW-11C	Jun-05
34030	Benzene (GC-MS)	4.93	0.31	UG/L	5	0.5	118	MW-12B	Jun-05
34030	Benzene (GC-MS)	2.37	0.31	UG/L	5	0.5	118	MW-12B	Dec-05
34030	Benzene (GC-MS)	0.481	0.31	UG/L	5	0.5	130	MW-19A	Dec-05
34030	Benzene (GC-MS)	0.583	0.31	UG/L	5	0.5	130	MW-19A	Jun-05
34030	Benzene (GC-MS)	3.82	0.31	UG/L	5	0.5	137	MW-22B	Jun-05
34030	Benzene (GC-MS)	2.73	0.31	UG/L	5	0.5	137	MW-22B	Dec-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34030	Benzene (GC-MS)	4.16	0.31	UG/L	5	0.5	140	MW-24B	Jun-05
34030	Benzene (GC-MS)	0.646	0.31	UG/L	5	0.5	140	MW-24B	Dec-05
34030	Benzene (GC-MS)	6.81	0.31	UG/L	5	0.5	141	MW-24C	Dec-05
34030	Benzene (GC-MS)	8.91	0.31	UG/L	5	0.5	141	MW-24C	Jun-05
34030	Benzene (GC-MS)	8.94	0.31	UG/L	5	0.5	142	MW-24D	Jun-05
34030	Benzene (GC-MS)	9.03	0.31	UG/L	5	0.5	142	MW-24D	Jun-05
34030	Benzene (GC-MS)	6.1	0.31	UG/L	5	0.5	142	MW-24D	Dec-05
34205	Acenaphthene	2370	1750	UG/L			104	MW-3R	Jun-05
34301	Chlorobenzene	2.37	0.7	UG/L	100	20	107	MW-4B	Jun-05
34301	Chlorobenzene	1.89	0.7	UG/L	100	20	107	MW-4B	Dec-05
34301	Chlorobenzene	1.9	0.7	UG/L	100	20	107	MW-4B	Dec-05
34301	Chlorobenzene	5.46	0.7	UG/L	100	20	111	MW-8B	Dec-05
34301	Chlorobenzene	1.65	0.7	UG/L	100	20	111	MW-8B	Jun-05
34301	Chlorobenzene	5.75	0.7	UG/L	100	20	112	MW-8C	Jun-05
34301	Chlorobenzene	6.06	0.7	UG/L	100	20	112	MW-8C	Jun-05
34301	Chlorobenzene	1.99	0.7	UG/L	100	20	112	MW-8C	Dec-05
34301	Chlorobenzene	5.35	0.7	UG/L	100	20	116	MW-11C	Jun-05
34301	Chlorobenzene	6.37	0.7	UG/L	100	20	116	MW-11C	Dec-05
34301	Chlorobenzene	5.13	0.7	UG/L	100	20	116	MW-11C	Jun-05
34301	Chlorobenzene	5.55	0.7	UG/L	100	20	118	MW-12B	Jun-05
34301	Chlorobenzene	3.56	0.7	UG/L	100	20	118	MW-12B	Dec-05
34301	Chlorobenzene	6.6	0.7	UG/L	100	20	137	MW-22B	Dec-05
34301	Chlorobenzene	8.85	0.7	UG/L	100	20	137	MW-22B	Jun-05
34301	Chlorobenzene	0.772	0.7	UG/L	100	20	140	MW-24B	Dec-05
34301	Chlorobenzene	3.32	0.7	UG/L	100	20	140	MW-24B	Jun-05
34301	Chlorobenzene	6.29	0.7	UG/L	100	20	141	MW-24C	Dec-05
34301	Chlorobenzene	7.64	0.7	UG/L	100	20	141	MW-24C	Jun-05
34301	Chlorobenzene	3.69	0.7	UG/L	100	20	142	MW-24D	Dec-05
34301	Chlorobenzene	4.25	0.7	UG/L	100	20	142	MW-24D	Jun-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34301	Chlorobenzene	4.32	0.7	UG/L	100	20	142	MW-24D	Jun-05
34381	Fluorene	6150	1750	UG/L	400	80	104	MW-3R	Jun-05
34418	Chloromethane	3.71	0.29	UG/L	3	0.3	111	MW-8B	Dec-05
34418	Chloromethane	4.32	0.29	UG/L	3	0.3	112	MW-8C	Jun-05
34418	Chloromethane	3.95	0.29	UG/L	3	0.3	112	MW-8C	Jun-05
34418	Chloromethane	0.353	0.29	UG/L	3	0.3	115	MW-11B	Jun-05
34418	Chloromethane	3	0.29	UG/L	3	0.3	116	MW-11C	Jun-05
34418	Chloromethane	2.75	0.29	UG/L	3	0.3	116	MW-11C	Jun-05
34418	Chloromethane	5.58	0.29	UG/L	3	0.3	116	MW-11C	Dec-05
34418	Chloromethane	2.43	0.29	UG/L	3	0.3	118	MW-12B	Dec-05
34418	Chloromethane	2.87	0.29	UG/L	3	0.3	118	MW-12B	Jun-05
34418	Chloromethane	0.987	0.29	UG/L	3	0.3	130	MW-19A	Jun-05
34418	Chloromethane	5.55	0.29	UG/L	3	0.3	137	MW-22B	Jun-05
34418	Chloromethane	7.01	0.29	UG/L	3	0.3	137	MW-22B	Dec-05
34418	Chloromethane	0.4611	0.29	UG/L	3	0.3	138	MW-23	Jun-05
34418	Chloromethane	0.344	0.29	UG/L	3	0.3	140	MW-24B	Jun-05
34418	Chloromethane	3.65	0.29	UG/L	3	0.3	141	MW-24C	Dec-05
34418	Chloromethane	2.95	0.29	UG/L	3	0.3	141	MW-24C	Jun-05
34418	Chloromethane	14.8	0.29	UG/L	3	0.3	142	MW-24D	Jun-05
34418	Chloromethane	15.9	0.29	UG/L	3	0.3	142	MW-24D	Dec-05
34418	Chloromethane	15.4	0.29	UG/L	3	0.3	142	MW-24D	Jun-05
34423	Methylene Chloride	4.81	0.3	UG/L	5	0.5	997	Field Blank	Jun-05
34423	Methylene Chloride	4.45	0.3	UG/L	5	0.5	997	Field Blank	Dec-05
34423	Methylene Chloride	5.06	0.3	UG/L	5	0.5	997	Field Blank	Dec-05
34423	Methylene Chloride	5.64	0.3	UG/L	5	0.5	997	Field Blank	Jun-05
34423	Methylene Chloride	6.84	0.3	UG/L	5	0.5	997	Field Blank	Jun-05
34433	N-Nitrosodiphenylamine(1)	4690	1875	UG/L	7	0.7	104	MW-3R	Jun-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34461	Phenanthrene	9970	1250	UG/L			104	MW-3R	Jun-05
34536	1,2-Dichlorobenzene	0.709	0.6	UG/L	600	60	118	MW-12B	Dec-05
34536	1,2-Dichlorobenzene	0.825	0.6	UG/L	600	60	118	MW-12B	Jun-05
34536	1,2-Dichlorobenzene	1.04	0.6	UG/L	600	60	141	MW-24C	Dec-05
34536	1,2-Dichlorobenzene	1.14	0.6	UG/L	600	60	141	MW-24C	Jun-05
34536	1,2-Dichlorobenzene	1.58	0.6	UG/L	600	60	142	MW-24D	Dec-05
34536	1,2-Dichlorobenzene	1.62	0.6	UG/L	600	60	142	MW-24D	Jun-05
34536	1,2-Dichlorobenzene	1.78	0.6	UG/L	600	60	142	MW-24D	Jun-05
34571	1,4-Dichlorobenzene	1.46	0.6	UG/L	75	15	111	MW-8B	Dec-05
34571	1,4-Dichlorobenzene	0.705	0.6	UG/L	75	15	111	MW-8B	Jun-05
34571	1,4-Dichlorobenzene	1.88	0.6	UG/L	75	15	112	MW-8C	Jun-05
34571	1,4-Dichlorobenzene	1.66	0.6	UG/L	75	15	112	MW-8C	Jun-05
34571	1,4-Dichlorobenzene	0.688	0.6	UG/L	75	15	112	MW-8C	Dec-05
34571	1,4-Dichlorobenzene	1.08	0.6	UG/L	75	15	116	MW-11C	Jun-05
34571	1,4-Dichlorobenzene	1.49	0.6	UG/L	75	15	116	MW-11C	Jun-05
34571	1,4-Dichlorobenzene	1.89	0.6	UG/L	75	15	116	MW-11C	Dec-05
34571	1,4-Dichlorobenzene	1.23	0.6	UG/L	75	15	118	MW-12B	Jun-05
34571	1,4-Dichlorobenzene	0.965	0.6	UG/L	75	15	118	MW-12B	Dec-05
34571	1,4-Dichlorobenzene	1.49	0.6	UG/L	75	15	137	MW-22B	Dec-05
34571	1,4-Dichlorobenzene	2.05	0.6	UG/L	75	15	137	MW-22B	Jun-05
34571	1,4-Dichlorobenzene	0.962	0.6	UG/L	75	15	140	MW-24B	Jun-05
34571	1,4-Dichlorobenzene	2.28	0.6	UG/L	75	15	141	MW-24C	Dec-05
34571	1,4-Dichlorobenzene	2.19	0.6	UG/L	75	15	141	MW-24C	Jun-05
34571	1,4-Dichlorobenzene	2.42	0.6	UG/L	75	15	142	MW-24D	Jun-05
34571	1,4-Dichlorobenzene	2.33	0.6	UG/L	75	15	142	MW-24D	Jun-05
34571	1,4-Dichlorobenzene	2.2	0.6	UG/L	75	15	142	MW-24D	Dec-05
34668	Dichlorodifluoromethane	3.31	0.7	UG/L	1000	200	111	MW-8B	Dec-05
34668	Dichlorodifluoromethane	5.7	0.7	UG/L	1000	200	112	MW-8C	Jun-05



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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
34668	Dichlorodifluoromethane	6.32	0.7	UG/L	1000	200	112	MW-8C	Jun-05
34668	Dichlorodifluoromethane	1.15	0.7	UG/L	1000	200	115	MW-11B	Jun-05
34668	Dichlorodifluoromethane	7.04	0.7	UG/L	1000	200	116	MW-11C	Dec-05
34668	Dichlorodifluoromethane	4.7	0.7	UG/L	1000	200	116	MW-11C	Jun-05
34668	Dichlorodifluoromethane	5.15	0.7	UG/L	1000	200	116	MW-11C	Jun-05
34668	Dichlorodifluoromethane	3.72	0.7	UG/L	1000	200	118	MW-12B	Jun-05
34668	Dichlorodifluoromethane	1.35	0.7	UG/L	1000	200	118	MW-12B	Dec-05
34668	Dichlorodifluoromethane	8.35	0.7	UG/L	1000	200	137	MW-22B	Jun-05
34668	Dichlorodifluoromethane	6.26	0.7	UG/L	1000	200	137	MW-22B	Dec-05
34668	Dichlorodifluoromethane	0.75	0.7	UG/L	1000	200	138	MW-23	Jun-05
34668	Dichlorodifluoromethane	1.14	0.7	UG/L	1000	200	140	MW-24B	Jun-05
34668	Dichlorodifluoromethane	4.98	0.7	UG/L	1000	200	141	MW-24C	Jun-05
34668	Dichlorodifluoromethane	3.95	0.7	UG/L	1000	200	141	MW-24C	Dec-05
34668	Dichlorodifluoromethane	26.1	0.7	UG/L	1000	200	142	MW-24D	Dec-05
34668	Dichlorodifluoromethane	24.7	0.7	UG/L	1000	200	142	MW-24D	Jun-05
34668	Dichlorodifluoromethane	27.5	0.7	UG/L	1000	200	142	MW-24D	Jun-05
34696	Naphthalene	280	160	UG/L	40	8	104	MW-3R	Jun-05
34696	Naphthalene	2130	1750	UG/L	40	8	104	MW-3R	Jun-05
34696	Naphthalene	2.22	0.8	UG/L	40	8	107	MW-4B	Jun-05
34696	Naphthalene	1.39	0.8	UG/L	40	8	111	MW-8B	Dec-05
34696	Naphthalene	2.85	0.8	UG/L	40	8	112	MW-8C	Jun-05
34696	Naphthalene	2.66	0.8	UG/L	40	8	112	MW-8C	Jun-05
34696	Naphthalene	1.15	0.8	UG/L	40	8	116	MW-11C	Dec-05
34696	Naphthalene	0.894	0.8	UG/L	40	8	116	MW-11C	Jun-05
34696	Naphthalene	1.51	0.8	UG/L	40	8	118	MW-12B	Jun-05
34696	Naphthalene	5.72	0.8	UG/L	40	8	140	MW-24B	Jun-05
34696	Naphthalene	0.873	0.8	UG/L	40	8	140	MW-24B	Dec-05
34696	Naphthalene	4.54	0.8	UG/L	40	8	141	MW-24C	Dec-05
34696	Naphthalene	6.55	0.8	UG/L	40	8	141	MW-24C	Jun-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
39175	Vinyl Chloride	0.229	0.2	UG/L	0.2	0.02	115	MW-11B	Jun-05
39175	Vinyl Chloride	0.267	0.2	UG/L	0.2	0.02	140	MW-24B	Jun-05
39175	Vinyl Chloride	6.16	0.2	UG/L	0.2	0.02	142	MW-24D	Dec-05
39175	Vinyl Chloride	6.06	0.2	UG/L	0.2	0.02	142	MW-24D	Jun-05
39175	Vinyl Chloride	6.78	0.2	UG/L	0.2	0.02	142	MW-24D	Jun-05
76994	Methane	8840	100	UG/L			112	MW-8C	Dec-05
76994	Methane	3440	100	UG/L			112	MW-8C	Jun-05
76994	Methane	849	10	UG/L			116	MW-11C	Jun-05
76994	Methane	3060	50	UG/L			116	MW-11C	Dec-05
76994	Methane	817	10	UG/L			116	MW-11C	Jun-05
76994	Methane	2640	50	UG/L			118	MW-12B	Dec-05
76994	Methane	2660	50	UG/L			118	MW-12B	Jun-05
76994	Methane	39	1	UG/L			130	MW-19A	Dec-05
76994	Methane	25	1	UG/L			130	MW-19A	Jun-05
76994	Methane	963	10	UG/L			137	MW-22B	Jun-05
76994	Methane	1290	10	UG/L			137	MW-22B	Dec-05
76994	Methane	49.3	1	UG/L			138	MW-23	Jun-05
76994	Methane	10400	100	UG/L			140	MW-24B	Dec-05
76994	Methane	4400	100	UG/L			140	MW-24B	Jun-05
76994	Methane	7750	100	UG/L			141	MW-24C	Dec-05
76994	Methane	8840	100	UG/L			141	MW-24C	Jun-05
76994	Methane	52.7	1	UG/L			142	MW-24D	Jun-05
76994	Methane	56.8	1	UG/L			142	MW-24D	Dec-05
76994	Methane	47.4	1	UG/L			142	MW-24D	Jun-05
77093	1,2-Dichloroethylene (cis)	0.681	0.4	UG/L	70	7	142	MW-24D	Jun-05
77093	1,2-Dichloroethylene (cis)	0.625	0.4	UG/L	70	7	142	MW-24D	Jun-05
77093	1,2-Dichloroethylene (cis)	0.619	0.4	UG/L	70	7	142	MW-24D	Dec-05
77222	1,2,4-Trimethylbenzene	227	80	UG/L	480	96	104	MW-3R	Jun-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
77222	1,2,4-Trimethylbenzene	2.1	0.4	UG/L	480	96	116	MW-11C	Jun-05
77222	1,2,4-Trimethylbenzene	1.79	0.4	UG/L	480	96	116	MW-11C	Dec-05
77222	1,2,4-Trimethylbenzene	2.13	0.4	UG/L	480	96	116	MW-11C	Jun-05
77222	1,2,4-Trimethylbenzene	0.76	0.4	UG/L	480	96	141	MW-24C	Dec-05
77222	1,2,4-Trimethylbenzene	5.08	0.4	UG/L	480	96	141	MW-24C	Jun-05
77223	Isopropylbenzene	78.3	62	UG/L			104	MW-3R	Jun-05
77223	Isopropylbenzene	0.604	0.31	UG/L			107	MW-4B	Dec-05
77223	Isopropylbenzene	0.606	0.31	UG/L			107	MW-4B	Dec-05
77223	Isopropylbenzene	0.938	0.31	UG/L			107	MW-4B	Jun-05
77223	Isopropylbenzene	0.744	0.31	UG/L			111	MW-8B	Dec-05
77223	Isopropylbenzene	1.12	0.31	UG/L			112	MW-8C	Jun-05
77223	Isopropylbenzene	1.1	0.31	UG/L			112	MW-8C	Jun-05
77223	Isopropylbenzene	0.719	0.31	UG/L			116	MW-11C	Jun-05
77223	Isopropylbenzene	0.791	0.31	UG/L			116	MW-11C	Dec-05
77223	Isopropylbenzene	0.623	0.31	UG/L			116	MW-11C	Jun-05
77223	Isopropylbenzene	0.549	0.31	UG/L			137	MW-22B	Dec-05
77223	Isopropylbenzene	0.754	0.31	UG/L			137	MW-22B	Jun-05
77223	Isopropylbenzene	2.94	0.31	UG/L			141	MW-24C	Dec-05
77223	Isopropylbenzene	3.61	0.31	UG/L			141	MW-24C	Jun-05
77223	Isopropylbenzene	2.03	0.31	UG/L			142	MW-24D	Jun-05
77223	Isopropylbenzene	2.12	0.31	UG/L			142	MW-24D	Jun-05
77223	Isopropylbenzene	1.25	0.31	UG/L			142	MW-24D	Dec-05
77224	n-Propylbenzene	127	60	UG/L			104	MW-3R	Jun-05
77224	n-Propylbenzene	0.356	0.3	UG/L			107	MW-4B	Jun-05
77224	n-Propylbenzene	0.403	0.3	UG/L			111	MW-8B	Dec-05
77224	n-Propylbenzene	0.303	0.3	UG/L			116	MW-11C	Dec-05
77224	n-Propylbenzene	1.99	0.3	UG/L			141	MW-24C	Dec-05
77224	n-Propylbenzene	2.88	0.3	UG/L			141	MW-24C	Jun-05

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Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
77226	1,3,5-Trimethylbenzene	0.354	0.31	UG/L	480	96	116	MW-11C	Dec-05
77226	1,3,5-Trimethylbenzene	0.312	0.31	UG/L	480	96	116	MW-11C	Jun-05
77226	1,3,5-Trimethylbenzene	0.356	0.31	UG/L	480	96	116	MW-11C	Jun-05
77342	n-Butylbenzene	182	72	UG/L			104	MW-3R	Jun-05
77342	n-Butylbenzene	0.45	0.36	UG/L			107	MW-4B	Jun-05
77342	n-Butylbenzene	0.372	0.36	UG/L			111	MW-8B	Dec-05
77342	n-Butylbenzene	0.564	0.36	UG/L			112	MW-8C	Jun-05
77342	n-Butylbenzene	0.55	0.36	UG/L			112	MW-8C	Jun-05
77342	n-Butylbenzene	0.873	0.36	UG/L			116	MW-11C	Dec-05
77342	n-Butylbenzene	0.774	0.36	UG/L			116	MW-11C	Jun-05
77342	n-Butylbenzene	0.679	0.36	UG/L			116	MW-11C	Jun-05
77342	n-Butylbenzene	0.489	0.36	UG/L			118	MW-12B	Jun-05
77342	n-Butylbenzene	0.673	0.36	UG/L			137	MW-22B	Dec-05
77342	n-Butylbenzene	1.28	0.36	UG/L			137	MW-22B	Jun-05
77342	n-Butylbenzene	0.563	0.36	UG/L			140	MW-24B	Jun-05
77342	n-Butylbenzene	1.7	0.36	UG/L			141	MW-24C	Dec-05
77342	n-Butylbenzene	1.95	0.36	UG/L			141	MW-24C	Jun-05
77342	n-Butylbenzene	0.898	0.36	UG/L			142	MW-24D	Jun-05
77342	n-Butylbenzene	0.78	0.36	UG/L			142	MW-24D	Jun-05
77342	n-Butylbenzene	0.585	0.36	UG/L			142	MW-24D	Dec-05
77350	sec-Butylbenzene	121	80	UG/L			104	MW-3R	Jun-05
77350	sec-Butylbenzene	0.984	0.4	UG/L			107	MW-4B	Jun-05
77350	sec-Butylbenzene	0.78	0.4	UG/L			112	MW-8C	Jun-05
77350	sec-Butylbenzene	0.66	0.4	UG/L			112	MW-8C	Jun-05
77350	sec-Butylbenzene	1.02	0.4	UG/L			116	MW-11C	Jun-05
77350	sec-Butylbenzene	1.27	0.4	UG/L			116	MW-11C	Dec-05
77350	sec-Butylbenzene	0.969	0.4	UG/L			116	MW-11C	Jun-05
77350	sec-Butylbenzene	1.39	0.4	UG/L			118	MW-12B	Jun-05
77350	sec-Butylbenzene	1.28	0.4	UG/L			137	MW-22B	Jun-05

**Groundwater Analytical Data  
Summary of Detects - 2005  
Holtz Krause Landfill**

Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
77350	sec-Butylbenzene	0.618	0.4	UG/L			140	MW-24B	Jun-05
77350	sec-Butylbenzene	2.21	0.4	UG/L			141	MW-24C	Dec-05
77350	sec-Butylbenzene	2.77	0.4	UG/L			141	MW-24C	Jun-05
77350	sec-Butylbenzene	1.27	0.4	UG/L			142	MW-24D	Jun-05
77350	sec-Butylbenzene	1.48	0.4	UG/L			142	MW-24D	Jun-05
77350	sec-Butylbenzene	0.988	0.4	UG/L			142	MW-24D	Dec-05
77416	2-Methylnaphthalene	4310	3000	UG/L			104	MW-3R	Jun-05
78032	Methyl Tert-Butyl Ether (MTBE)	0.321	0.3	UG/L	60	12	141	MW-24C	Jun-05
78113	Ethylbenzene	0.754	0.5	UG/L	700	140	112	MW-8C	Jun-05
78113	Ethylbenzene	0.554	0.5	UG/L	700	140	141	MW-24C	Jun-05
78113	Ethylbenzene	0.569	0.5	UG/L	700	140	142	MW-24D	Jun-05
78113	Ethylbenzene	0.683	0.5	UG/L	700	140	142	MW-24D	Jun-05
78113	Ethylbenzene	0.588	0.5	UG/L	700	140	142	MW-24D	Dec-05
78133	4-Methyl-2-Pentanone	1.43	1	UG/L	500	50	118	MW-12B	Jun-05
78133	4-Methyl-2-Pentanone	1.51	1	UG/L	500	50	141	MW-24C	Jun-05
78133	4-Methyl-2-Pentanone	1.62	1	UG/L	500	50	142	MW-24D	Jun-05
78133	4-Methyl-2-Pentanone	1.59	1	UG/L	500	50	142	MW-24D	Jun-05
81552	Acetone	8.11	5	UG/L	1000	200	112	MW-8C	Jun-05
81552	Acetone	7.24	5	UG/L	1000	200	112	MW-8C	Jun-05
81552	Acetone	5.15	5	UG/L	1000	200	116	MW-11C	Jun-05
81552	Acetone	6.1	5	UG/L	1000	200	116	MW-11C	Jun-05
81552	Acetone	5.56	5	UG/L	1000	200	140	MW-24B	Jun-05
81552	Acetone	6.09	5	UG/L	1000	200	141	MW-24C	Dec-05
81552	Acetone	8.55	5	UG/L	1000	200	141	MW-24C	Jun-05
81552	Acetone	50.2	5	UG/L	1000	200	997	Field Blank	Dec-05
81552	Acetone	55.9	5	UG/L	1000	200	997	Field Blank	Dec-05

**Groundwater Analytical Data  
Summary of Detects - 2005  
Holtz Krause Landfill**

Parameter Code	Parameter	Result	LOD	Units	NR 140 ES	NR 140 PAL	DNR Well ID	Well	Sample Date
81595	2-Butanone	16.3	2	UG/L	460	90	997	Field Blank	Dec-05
81595	2-Butanone	16.7	2	UG/L	460	90	997	Field Blank	Dec-05
81595	2-Butanone	3.44	2	UG/L	460	90	997	Field Blank	Jun-05
85795	m&p-Xylene	0.695	0.62	UG/L	10000	1000	111	MW-8B	Dec-05
85795	m&p-Xylene	0.956	0.62	UG/L	10000	1000	112	MW-8C	Jun-05
85795	m&p-Xylene	0.862	0.62	UG/L	10000	1000	112	MW-8C	Jun-05
85795	m&p-Xylene	2.73	0.62	UG/L	10000	1000	116	MW-11C	Jun-05
85795	m&p-Xylene	2.89	0.62	UG/L	10000	1000	116	MW-11C	Jun-05
85795	m&p-Xylene	2.54	0.62	UG/L	10000	1000	116	MW-11C	Dec-05
85795	m&p-Xylene	0.758	0.62	UG/L	10000	1000	141	MW-24C	Dec-05
85795	m&p-Xylene	1.5	0.62	UG/L	10000	1000	141	MW-24C	Jun-05

## **Appendix M**

## Monitoring Requirements Holtz Krause Landfill

Point Name	DNR ID#	Field pH 00400	Temp C 00010	Sp. Cond. 00094	Methane Dissolved 76994	DO 00299	ORP 00090	As. diss. 01000	Cd diss. 01025	Fe. diss. 01046	VOC's	Naphthalene	SVOC's	GW elev. 00842
MW-1	100	A	A	A		A	A				A			A
MW-3R	104	A	A	A		A	A				A		A	A
MW-4R	106	SA	SA	SA		SA	SA				SA			SA
MW-4B	107	SA	SA	SA		SA	SA	A			SA			SA
MW-5	108	A	A	A		A	A				A			A
MW-8A	110	A	A	A		A	A				A			A
MW-8B	111	SA	SA	SA		SA	SA	A			SA	SA		SA
MW-8C	112	SA	SA	SA	SA	SA	SA	A	A		SA	SA		SA
MW-11A	114	A	A	A		A	A				A			A
MW-11B	115	SA	SA	SA		SA	SA				SA			SA
MW-11C	116	SA	SA	SA	SA	SA	SA				SA			SA
MW-11D	144	A	A	A		A	A		A		A			A
MW-12A	117	A	A	A		A	A				A			A
MW-12B	118	SA	SA	SA	SA	SA	SA	A			SA	SA		SA
MW-16AR	124	A	A	A		A	A	A			A			A
MW-16BR	125	A	A	A		A	A				A			A
MW-19A	130	SA	SA	SA		SA	SA				SA			SA



## Monitoring Requirements Holtz Krause Landfill

Point Name	DNR ID#	Field pH 00400	Temp C 00010	Sp. Cond. 00094	Methane Dissolved 76994	DO 00299	ORP 00090	As. diss. 01000	Cd diss. 01025	Fe. diss. 01046	VOC's	Naphthalene	SVOC's	GW elev. 00842
MW-19B	131	A	A	A		A	A				A			A
MW-20R	143	A	A	A		A	A				A			A
MW-21A	133	A	A	A		A	A	A			A			A
MW-21B	134	A	A	A		A	A				A			A
MW-21C	135	A	A	A		A	A				A			A
MW-22A	136	A	A	A		A	A				A			A
MW-22B	137	SA	SA	SA	SA	SA	SA				SA			SA
MW-23	138	SA	SA	SA	SA	SA	SA				SA			SA
MW-24A	139	A	A	A		A	A				A			A
MW-24B	140	SA	SA	SA	SA	SA	SA	A			SA			SA
MW-24C	141	SA	SA	SA	SA	SA	SA	A			SA			SA
MW-24D	142	SA	SA	SA	SA	SA	SA				SA			SA
MW-25D	145	SA	SA	SA		SA	SA				SA			SA
Blower	400										A (March)			
6 Gas Extraction Wells											A (March)			
Condensate	301/ 303										A (March)			

# Appendix N



Blower Building  
Looking North  
4/3/06



Southwest corner of landfill  
Looking east  
4/3/06



East side of landfill  
Looking north  
4/3/06



Water ponded on landfill cap  
Looking northeast (EW-3 in background)  
4/3/06



Differential settlement to east of EW-13  
Looking south  
4/3/06



Tear in turf caused by differential settlement  
East of EW-13  
4/3/06



Northwest corner of landfill  
Looking south  
4/3/06



Northeast corner of landfill  
Looking south  
4/3/06