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March 15, 2000

Mr. James H. Craft
New York State
Department of Environmental Conservation
6274 East Avon-Lima Road
Avon, NY 14414

Re: Arch Rochester RI/FS Quarterly Report No. 23
Arch Chemicals (Site #628018a) 100 McKee Rd., Rochester, NY

Dear Mr. Craft:

The attached report constitutes the twenty-third quarterly report on the progress of the Arch-Rochester RI/FS which covers the period from July 1, 1999 to December 31, 1999. This report includes the results of the third quarter Barge Canal and Quarry Sampling conducted in September 1999.

If you have any questions regarding this submittal, please call me at (423) 780-2175.

Sincerely,

Gayle M. Bahn

Gayle M. Bahn
Manager, Environmental Issues

Cc: Mary Jane Peachy, NYDEC
R.J. Stadalius, Arch Chemicals, Inc.
T.R. Eschner, Harding Lawson Associates

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

Appendix I	Well Trend Data
Appendix II	PW11 Well Construction Log
Appendix III	Third Quarter 1999 – Erie Barge Canal Water and Quarry Sampling Results

EXECUTIVE SUMMARY

This monitoring report presents the results of an on-going groundwater and surface water monitoring program being conducted by Arch Chemicals, Inc., at its Rochester, New York, manufacturing facility. Results in this report include surface and groundwater samples collected from November 9, 1999, through December 2, 1999. Also included as an Appendix to this report are the results of surface water sampling from the Barge Canal and the Dolomite Products quarry conducted in September 1999.

During this most recent sampling event, a total of 42 groundwater samples, five canal samples, and three samples associated with the quarry seep and outfall were collected and analyzed by Severn Trent Laboratories in Amherst, New York. In addition, groundwater elevations were measured and used to create piezometric contour maps for each water-bearing zone.

Groundwater analytical results were compared with previous mean concentrations at each well location. For on-site wells, 9 of the 12 wells sampled for chloropyridines had concentrations that were below the mean for previous sample results from their respective locations, and 10 of the 12 wells sampled for volatile organic compounds (VOCs) had concentrations that were below their previous mean concentrations. For off-site wells, 12 of the 15 wells sampled for chloropyridines had concentrations below their previous mean concentrations, and all six wells sampled for VOCs had concentrations that fell below their previous means.

Chloropyridines were not detected in any of the samples collected from the Barge Canal. Samples from the quarry seep and quarry outfall contained chloropyridines at levels consistent with previous sampling events.

Based on a review of the monitoring results, Arch is proposing to make several additions to the monitoring program to better track the concentrations of chloropyridines and VOCs in groundwater. The revised monitoring program is summarized in Table 6 of this report.

Arch is currently in the process of developing improved procedures for maintenance and control of the existing groundwater extraction system at the Rochester plant. In future monitoring reports, Arch expects to be able to include operational data from the system as a routine component of the report.

1.0 INTRODUCTION

In accordance with the Order of Consent (Order) executed between Olin Corporation and New York State Department of Environmental Conservation (NYSDEC), effective August 23, 1993 and transferred to Arch Chemicals, Inc. (Arch) on February 15, 1999, this report has been prepared to present the results of the quarterly groundwater and surface water monitoring program.

A total of 42 groundwater samples were collected from offsite wells and onsite wells and piezometers for analysis of selected chloropyridines and volatile organic compounds (VOCs) from November 9, 1999 through December 2, 1999 and those results are presented in the following report. In addition, results from the November 1999 sampling of the Erie Barge Canal (Canal) and the Dolomite Products Company Quarry (quarry) are presented.

In December 1999, the core hole for shallow bedrock well PW11 was enlarged and retrofitted with a 4-inch diameter stainless steel screen and casing. Portions of the well had collapsed following the initial installation in August 1999.

2.0 SAMPLE COLLECTION AND ANALYSIS

2.1 GROUNDWATER

Groundwater samples were collected from off-site wells and on-site wells and piezometers for analysis of selected chloropyridines (2-Chloropyridine, 2,6-dichloropyridine, 3-chloropyridine, 4-chloropyridine, pyridine, and p-fluoroaniline) and target compound list (TCL) volatile organic compounds (VOCs) from November 9, 1999 through December 2, 1999. This sampling event constitutes the second semi-annual groundwater-sampling event for 1999. Samples were collected by Severn Trent Laboratories (STL) and transported to their laboratory in Amherst, New York for analysis. The off-site and on-site locations of these sampling points are shown in Figures 1 and 2, respectively. Table 1 lists the wells that were sampled and the requested analyses for the second sampling event of 1999. As part of the November sampling event, twelve additional overburden wells, located along the southern and eastern property boundaries were sampled to further assess the distribution of chloropyridines and VOCs in groundwater in support of the Feasibility Study.

Groundwater was collected with the low flow/low stress purging technique using submersible or peristaltic pumps. Because of significant suspended solids inside wells along the Barge Canal that causes problems for submersible pumps, wells BR-108, BR-112A, BR-112D, BR-113, and BR-113D were sampled with stainless steel bailers after purging the standing water volume a minimum of three times.

Samples from all locations scheduled for collection and analysis were obtained with the exception of the following: 1) New well PW11 had partially collapsed and was inaccessible for sampling; 2) Piezometer B-6 no longer exists. It was destroyed during the Arch warehouse expansion project in 1996.

Groundwater piezometric elevations were measured during October 1999. Piezometric contour maps were constructed for each water-bearing zone (overburden, bedrock, and deep bedrock) and are presented in Figures 3, 4, and 5.

2.2 SURFACE WATER

Surface water and quarry sampling are conducted as part of an on-going quarterly monitoring program for the Arch Rochester site. Eight canal and quarry surface-water samples were collected by and submitted to Severn Trent Laboratories (STL) for selected chloropyridine analysis on November 17, 1999. The locations sampled during this quarter are listed below and are shown on Figures 6 and 7.

Canal Samples	Quarry Samples
SW-1	QS-4 (Quarry Seep)
SW-2	QO-2 (Quarry Outfall)
SW-3	
SW-6	
SW-12	
QO-2S1 (100 ft south of QO-2)	

2.3 ANALYTICAL PROCEDURES

The analytical procedures, data review findings, and validated data for the November 1999 groundwater and surface water-sampling event are discussed in the following paragraphs.

Groundwater samples were analyzed for the Arch suite of selected chloropyridines and TCL VOCs by USEPA SW-846 Methods 8270C and 8260B, respectively. The reporting limits for the chloropyridines and VOCs are 10 micrograms per liter (µg/L) and 5 µg/L, respectively for undiluted samples.

2.4 QUALITY CONTROL

All laboratory analyses results were validated or qualified following USEPA Region II modifications to "Laboratory Data Validation Functional Guidelines for Validating Organic Analyses" (USEPA, 9/1994). The following summarizes the data validation and review findings in accordance with these guidelines.

Groundwater. As part of the November/December 1999 groundwater sampling program, trip blanks, rinsate blanks, four sets of matrix spike (MS)/matrix spike duplicate (MSD) samples, and four field replicate sample pairs were collected as quality control samples. MS/MSD and matrix spike blank (MSB)/matrix spike blank duplicate (MSBD) recoveries were within criteria. Replicate field sampling results were also within precision criteria. A few selected chloropyridine compounds were reported in one of several laboratory method blanks.

In accordance with method protocols, samples affected by the laboratory contamination were re-extracted and re-analyzed. In general, overall data quality appears to be good. Results reported for the chloropyridine analysis are a compilation of results from several

analytical runs to best represent the most usable data for a given compound. Validation findings and qualifying statements are noted below.

- Analytical results for acetone and 2-butanone for all samples were rejected "R" due to low response factors in the initial calibration. It should be noted that instrumentation instability for these compounds is often observed. The frequency of rejected data for these constituents are within the anticipated range.

- Quantitation limits for several VOCs have been qualified as estimated "J" for samples associated with continuing calibration standards in which precision criteria were exceeded. It is important to note that validation criteria for instrument calibration may differ from the analytical protocols for VOCs.

- Samples re-extracted as a result of laboratory blank contamination (B-9, B-10, and B-17) slightly exceeded the holding time. Positive results for pyridine and 2-chloropyridine for these samples were estimated "J".

- Holding times for samples B-8, S-1, S-2, and PW-10 were exceeded for VOC analysis. All results were qualified as estimated "UJ".

In summary, results qualified as estimated (J/UJ) by either the laboratory or during data review are not considered to have a negative impact on data usability. Results qualified during data review as rejected (R), however, are not considered usable (compound may or may not be present).

Surface Water. Quality control results were acceptable for the November 1999 Canal and quarry surface water-monitoring program. Laboratory results did not require any qualifying statements.

3.0 ANALYTICAL RESULTS

3.1 GROUNDWATER

The validated results from the November/December 1999 groundwater-monitoring event are provided in Tables 2 and 3. Table 4 provides a comparison of the November analytical results for selected chloropyridines and VOCs to mean concentrations since 1995 (March 1995 through June 1999). Long term trends for both selected chloropyridines and VOCs are also presented as time-series plots in Appendix I. A summary of the analytical findings is presented below by parameter class.

3.1.1 On-site Groundwater

Selected Chloropyridines. One or more of the selected chloropyridines (2-chloropyridine, 2-6-dichloropyridine, and 3-chloropyridine) were detected above sample quantitation limits in groundwater samples from all the on-site wells. Concentrations of chloropyridines detected ranged from estimated low-level micrograms per liter (µg/L) to several thousands

µg/L. Of the 12 on-site wells sampled in November 1999 and tracked from March 1995 to June 1999, nine show selected chloropyridines that are lower than the mean for the prior monitoring events. The three on-site wells showing selected chloropyridines concentrations that are greater than the mean are as follows:

BR-5A
E-3
PZ-107

Chloropyridines distribution in bedrock groundwater is shown as a set of concentration contours on Figure 8.

Selected VOCs. Concentrations of VOCs range from not detected to thousands of µg/L for several site-related contaminants (carbon tetrachloride, chloroform, methylene chloride, tetrachloroethene, and trichloroethene). Of the 12 wells sampled in November 1999 and tracked from March 1995 to June 1999, 10 show VOCs to be lower than the mean for the prior monitoring events. Only wells BR-3 and E-3 show selected VOCs concentrations that are greater than the mean.

Selected VOCs distribution in bedrock groundwater is shown as a set of concentration contours on Figure 9.

3.1.2 Off-site Groundwater

Selected Chloropyridines. One or more of the selected chloropyridines (2-chloropyridine, 2-6-dichloropyridine, and 3-chloropyridine) were detected above sample quantitation limits in groundwater samples from all the off-site wells. Concentrations of total selected chloropyridines detected ranged from estimated low-level micrograms per liter (µg/L) to approximately 8000 µg/L. Of the 15 off-site wells sampled in November 1999 and tracked from March 1995 to June 1999, 12 show selected chloropyridines that are lower than the mean for the prior monitoring events. The three on-site wells showing selected chloropyridines concentrations that are greater than the mean are as follows:

BR-105
BR-106
BR-114

Chloropyridines distribution in bedrock groundwater is shown as a set of concentration contours on Figure 8.

Selected VOCs. Concentrations of total selected VOCs range from not detected to 17 µg/L for several site-related contaminants (carbon tetrachloride, chloroform, methylene chloride, tetrachloroethene, and trichloroethene). Of the 6 wells sampled in November 1999 and tracked from March 1995 to June 1999, none show an increase over the mean for the prior monitoring events.

Selected VOCs distribution in bedrock groundwater is shown as a set of concentration contours on Figure 9.

3.2 SURFACE WATER

The results from the November 1999 canal and quarry-monitoring event are presented in Table 5.

3.2.1 Quarry

Samples collected from the Dolomite products quarry seep (QS-4) and discharge outfall (QO-2) that were observed to contain one or more of the selected chloropyridines are summarized below; all results are expressed in µg/L.

Sample ID	2,6-DCPYR	2-CPYR
QO-2	9 J	44
QS-4	100 J	860

Notes: J = The positive result reported for this analyte is a quantitative estimate (below sample quantitation limit, but above method detection limit).

2-CPYR = 2-chloropyridine
2,6-DCPYR = 2,6-dichloropyridine

These results are consistent with previous monitoring events.

3.2.2 Barge Canal

Selected chloropyridines were not detected in any of the surface water samples (QO-2S1, SW-2, SW-3, SW-6, and SW-12) from the Erie Barge Canal.

4.0 OTHER ISSUES

4.1 WELL REPAIR - WELL PW11

At the time of the November groundwater sampling event, it was discovered that a newly installed recovery well (PW11) was clogged at the bottom of the casing. This well was installed with a six-inch diameter steel casing that extends approximately 2 feet into bedrock (18.5 feet below ground surface [bgs]). The well was completed as a 3.8-inch diameter open-core hole that extended from 18.5 to 50 feetbgs.

PW11 was repaired and retrofitted in December 1999. The core-hole was reamed to a diameter of 5 7/8 inches and fitted with a 30-foot long 4-inch diameter stainless steel wire-wound screen. The new well construction details for PW11 are in Appendix II. PW11 will be sampled during the next round of groundwater sampling, scheduled for May 2000.

4.2 OPERATION AND MAINTENANCE OF GROUNDWATER EXTRACTION SYSTEM

Arch is currently in the process of developing improved procedures for maintenance and control of the existing groundwater extraction system at the Rochester plant. These

procedures will be designed to increase the reliability of system operation, and thus improve the performance of the groundwater capture system.

In future monitoring reports, Arch expects to be able to include operational data from the system as a routine component of the report.

5.0 FUTURE MONITORING EVENT

The first quarter monitoring event will occur in February 2000 and will include surface water and seep sampling in the Erie Canal and at the Dolomite Products quarry. The 2nd quarter monitoring event will consist of surface water, seep, and groundwater sampling and is scheduled for May 2000. Based on a review of the groundwater results, Arch is proposing several additions to the monitoring plan, as follows:

- three overburden wells (B-7, B-9, and S-4) located along the south and southeast property boundary are being added to the semi-annual groundwater monitoring network to provide better definition of the distribution ofVOCs and chloropyridines;

- wells MW-103, BR-103, MW-104, BR-111, BR-111D, PZ-101, PZ-102, PZ-103, PZ-104, PZ-105, and BR-9 are being added to the 4th Quarter sampling list and will now be sampled semi-annually; and

- analysis for VOCs is being added for wells PZ-101, PZ-102, PZ-103, PZ-104, BR-108, BR-111, BR-111D, BR-112A, and BR-112D, which previously were analyzed for chloropyridines only. Analysis for VOCs is also being added for 4th Quarter samples from the quarry seep (QS-4) and the quarry outfall (QO-2), so that VOCs will now be analyzed semi-annually at these two locations.

The only deletion from the monitoring plan is the removal of well B-6 from the list, as this well no longer exists.

Table 6 shows the revised monitoring program for the Arch Rochester site.

TABLE 1
NOVEMBER 1999 SAMPLING AND ANALYTICAL PROGRAM

ARCH CHEMICALS, INC
ROCHESTER, NEW YORK

			ANALYSIS	PYRIDINES[1]	VOCs[2]
MEDIA	SITE	WELL / POINT	DATE		
Groundwater	Aid To Hospitals	BR-106	11/10/99	X	X
		BR-108	11/10/99	X	
		MW-106	11/10/99	X	X
		MW-108	11/10/99	X	X
	American Recycle Manuf. (58 Mckee Road)	B-14*	11/16/99	X	X
		B-15*	11/16/99	X	X
		B-16*	11/16/99	X	X
	Erie Canal	BR-112A	11/10/99	X	
		BR-112D	11/10/99	X	
		BR-113	11/10/99	X	
		BR-113D	11/10/99	X	
		BR-124D	11/10/99	X	X
	Jackson Welding	BR-114	11/9/99	X	X
		MW-114	11/9/99	X	X
	Lexington Machining	NESS-E	11/9/99	X	X
		NESS-W	11/9/99	X	X
	Arch - On-Site	B-10*	11/11/99	X	X
		B-11*	11/11/99		X
			12/2/99	X	
		B-17	11/11/99	X	X
		B-7*	11/15/99		X
			12/2/99	X	
		B-8*	12/2/99	X	X
		B-9*	11/11/99	X	X
		BR-102	11/10/99	X	X
		BR-3	11/11/99	X	X
		BR-5A	11/11/99	X	X
		BR-6A	11/16/99	X	X
		BR-7A	11/16/99	X	X
		BR-8	11/10/99	X	X
		E-1	11/12/99		X
			11/19/99	X	
		E-2*	11/15/99		X
			12/2/99	X	
		E-3	11/11/99	X	X
		PW10	11/12/99	X	X
		PW12	11/11/99	X	X
		PZ-106	11/9/99	X	X
		PZ-107	11/9/99	X	X
		S-1*	11/15/99	X	
			12/2/99		X
		S-2*	11/15/99	X	
			12/2/99		X
		S-3	11/12/99	X	X
		S-4*	11/12/99	X	X
	RG & E Right Of Way	BR-104	11/9/99	X	X
		BR-105	11/9/99	X	X
		BR-105D	11/9/99	X	X

TABLE 1
NOVEMBER 1999 SAMPLING AND ANALYTICAL PROGRAM

ARCH CHEMICALS, INC
ROCHESTER, NEW YORK

			ANALYSIS	PYRIDINES[1]	VOCs[2]
MEDIA	SITE	WELL / POINT	DATE		
Surface Water and Seep	Erie Canal and Quarry	QS-4	11/17/99	X	
		QO-2	11/17/99	X	
		QO-2S1	11/17/99	X	
		SW-1	11/17/99	X	
		SW-12	11/17/99	X	
		SW-2	11/17/99	X	
		SW-3	11/17/99	X	
		SW-6	11/17/99	X	
Totals				51	38

Note:

* - Not part of planned quarterly monitoring program. Sampled to further assess chloropyridines and VOCs distribution along southern and eastern property boundaries.

1) Pyridines analysis by USEPA SW-846 Method 8270C.

2) VOCs analysis by USEPA SW-846 Method 8260B.

TABLE 2
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	B-10	B-11	B-14	B-15	B-16	B-17	B-7	B-8
SAMPLE DATE:	11/11/99	12/2/99	11/16/99	11/16/99	11/16/99	11/11/99	12/2/99	12/2/99
SAMPLE TYPE:	FS	FS	FS	FS	FS	FS	FS	FS
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270C (µg/L)								
Pyridine	9 U	100 U	9 U	9 U	9 U	**39000**	9 U	47 U
2-Chloropyridine	**2800 J**	**280**	**1800**	**63**	**4600**	**310000 J**	**4600**	**54**
3-Chloropyridine	**66**	100 U	**1 J**	9 U	**79**	**4700 J**	**86**	47 U
4-Chloropyridine	9 U	100 U	9 U	9 U	9 U	5000 U	9 U	47 U
2,6-Dichloropyridine	**540**	**87 J**	**120**	**25**	**650**	**8700**	**1400**	**26 J**
p-Fluoroaniline	**8 J**	100 U	**11**	9 U	**12**	5000 U	**47**	47 U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value.
FS = Field Sample.

TABLE 2
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	B-9	BR-102	BR-104	BR-105	BR-105D	BR-106	BR-108	BR-112A
SAMPLE DATE:	11/11/99	11/10/99	11/9/99	11/9/99	11/9/99	11/10/99	11/10/99	11/10/99
SAMPLE TYPE:	FS	FS	FS	FS	FS	FS	FS	FS
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270C (µg/L)								
Pyridine	9 U	100 U	9 U	160 U	200 U	500 U	9 U	10 U
2-Chloropyridine	**2300 J**	**420**	**4 J**	**6600**	**1600**	**7200**	**5 J**	10 U
3-Chloropyridine	**31**	100 U	9 U	**100 J**	**25 J**	**62 J**	9 U	10 U
4-Chloropyridine	9 U	100 U	9 U	160 U	200 U	500 U	9 U	10 U
2,6-Dichloropyridine	**450**	**84 J**	**13**	**460**	**47 J**	**870**	**2 J**	10 U
p-Fluoroaniline	**8 J**	**13 J**	9 U	**39 J**	200 U	**84 J**	9 U	10 U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value.
FS = Field Sample.

TABLE 2
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	BR-112D	BR-113	BR-113D	BR-114	BR-124D	BR-3	BR-5A	BR-6A
SAMPLE DATE:	11/10/99	11/10/99	11/10/99	11/9/99	11/10/99	11/11/99	11/11/99	11/16/99
SAMPLE TYPE:	FS	FS	FS	FS	FS	FS	FS	FS
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270C (µg/L)								
Pyridine	9 U	9 U	9 U	**4 J**	9 U	**10000**	10 U	**2600**
2-Chloropyridine	**9**	9 U	**45**	**140**	9 U	**82000 J**	**140 J**	**19000**
3-Chloropyridine	9 U	9 U	9 U	**40**	9 U	**6600 J**	10 U	**410 J**
4-Chloropyridine	9 U	9 U	9 U	9 U	9 U	10000 U	10 U	**2500** U
2,6-Dichloropyridine	9 U	9 U	**3 J**	**54**	9 U	**9300 J**	**69**	**1800 J**
p-Fluoroaniline	9 U	9 U	9 U	9 U	9 U	10000 U	10 U	2500 U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value.
FS = Field Sample.

TABLE 2
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	BR-7A	BR-8	E-1	E-2	E-3	MW-106	MW-108	MW-114
SAMPLE DATE:	11/16/99	11/10/99	11/19/99	12/2/99	11/11/99	11/10/99	11/10/99	11/9/99
SAMPLE TYPE:	FS	FS	FS	FS	FS	FS	FS	FS
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270C (µg/L)								
Pyridine	**120 J**	100 U	200 U	10 U	9 U	800 U	10 U	10 U
2-Chloropyridine	**17000**	**600**	**1000**	**2 J**	**40 J**	**5500**	10 U	10 U
3-Chloropyridine	**210 J**	100 U	**91 J**	10 U	**2 J**	800 U	10 U	10 U
4-Chloropyridine	500 U	100 U	200 U	10 U	9 U	800 U	10 U	10 U
2,6-Dichloropyridine	**2900**	**150**	**240**	**3 J**	**26**	**820**	10 U	10 U
p-Fluoroaniline	**130 J**	**38 J**	200 U	10 U	9 U	800 U	10 U	10 U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value.
FS = Field Sample.

TABLE 2
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	NESS-E	NESS-W	PW10	PW12	PZ-106	PZ-107	S-1	S-2
SAMPLE DATE:	11/9/99	11/9/99	11/12/99	11/11/99	11/9/99	11/9/99	11/15/99	11/15/99
SAMPLE TYPE:	FS	FS	FS	FS	FS	FS	FS	FS
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270C (µg/L)								
Pyridine	160 U	50 U	**16000 J**	**360 J**	**1600**	**6 J**	500 U	5000 U
2-Chloropyridine	**560**	**470**	**120000 J**	**2000 J**	**5800**	**1500**	**430 J**	5000 UJ
3-Chloropyridine	160 U	50 U	**5600**	**77 J**	**100 J**	**110**	500 U	5000 U
4-Chloropyridine	160 U	50 U	9 U	200 U	640 U	50 U	500 U	5000 U
2,6-Dichloropyridine	**50 J**	**56**	**7900 J**	**380 J**	**1100**	**400**	500 U	5000 U
p-Fluoroaniline	160 U	**5 J**	**240 J**	**500**	640 U	**8 J**	500 U	5000 U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value.
FS = Field Sample.

TABLE 2
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	S-3		S-4	
SAMPLE DATE:	11/12/99		11/12/99	
SAMPLE TYPE:	FS		FS	
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270C (µg/L)				
Pyridine	200	U	50	U
2-Chloropyridine	**90**	**J**	**15**	**J**
3-Chloropyridine	**85**	**J**	50	U
4-Chloropyridine	200	U	50	U
2,6-Dichloropyridine	**460**		**25**	**J**
p-Fluoroaniline	200	U	50	U

Notes:
U = Compound not detected; value
represents sample quantitation limit.
J = Estimated value.
FS = Field Sample.

TABLE 3
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	B-10	B-11	B-14	B-15	B-16
SAMPLE DATE:	11/11/99	11/11/99	11/16/99	11/16/99	11/16/99
VOLATILE ORGANIC COMPOUNDS					
BY SW-846 Method 8260/5ML (µg/L)					
1,1,1-Trichloroethane	5 UJ	5 UJ	5 U	5 U	5
1,1,2,2-Tetrachloroethane	5 UJ	5 U	5 U	5 U	5
1,1,2-Trichloroethane	5 UJ	5 UJ	5 U	5 U	5
1,1-Dichloroethane	5 U	5 U	5 U	5 U	5
1,1-Dichloroethene	5 U	5 U	5 U	5 U	5
1,2-Dichloroethane	5 U	5 U	5 U	5 U	5
1,2-Dichloroethene (total)	**5.4**	**1.7 J**	5 U	5 U	**8.8**
1,2-Dichloropropane	5 U	5 U	5 U	5 U	5
2-Butanone	R	R	R	R	
2-Hexanone	10 U	10 U	10 U	10 U	10
4-Methyl-2-pentanone	10 U	10 U	10 U	10 U	10
Acetone	R	R	R	R	
Benzene	**2.5 J**	**2.2 J**	5 U	5 UJ	**4.8**
Bromodichloromethane	5 UJ	5 UJ	5 U	5 U	5
Bromoform	**15**	**25**	5 U	5 U	5
Bromomethane	10 UJ	10 UJ	10 UJ	10 U	10
Carbon disulfide	**22**	**38**	5 U	5 U	5
Carbon tetrachloride	**110**	**140**	5 U	5 U	5
Chlorobenzene	**12**	**5.2**	5 U	**1.1 J**	**7.4**
Chloroethane	10 U	10 U	10 U	10 U	10
Chloroform	**240**	**400**	5 U	5 U	5
Chloromethane	10 UJ	10 U	10 U	10 U	10
cis-1,3-Dichloropropene	5 UJ	5 UJ	5 U	5 U	5
Dibromochloromethane	5 U	**1.1 J**	5 U	5 U	5
Ethylbenzene	5 U	5 U	5 U	5 U	5
Methylene chloride	**13**	**26**	5 U	5 U	5
Styrene	5 U	5 U	5 U	5 U	5
Tetrachloroethene	**6.5**	**3.6 J**	5 U	5 U	5
Toluene	**24**	**22**	5 U	5 U	5
Total Xylenes	**2 J**	15 U	15 U	15 U	15
trans-1,3-Dichloropropene	5 UJ	5 UJ	5 UJ	5 UJ	5
Trichloroethene	**2 J**	5 U	5 U	5 U	**3**
Vinyl acetate	10 U	10 U	10 U	10 U	10
Vinyl chloride	**2.6 J**	**2.1 J**	5 U	5 U	**7.8**

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NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:		B-17		B-7		B-8		B-9	
SAMPLE DATE:		11/11/99		11/15/99		12/2/99		11/11/99	
VOLATILE ORGANIC COMPOUNDS									
BY SW-846 Method 8260/5ML (µg/L)									
1,1,1-Trichloroethane	U	250	UJ	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	UJ	250	UJ	5	U	5	U	5	UJ
1,1,2-Trichloroethane	UJ	250	UJ	5	U	5	U	5	UJ
1,1-Dichloroethane	U	250	U	5	U	5	U	5	U
1,1-Dichloroethene	U	250	U	5	U	5	U	5	U
1,2-Dichloroethane	U	250	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		250	U	5	U	5	U	5	U
1,2-Dichloropropane	U	250	U	5	U	5	U	5	U
2-Butanone	R		R		R		R		R
2-Hexanone	U	500	U	10	U	10	U	10	U
4-Methyl-2-pentanone	U	500	U	10	U	10	U	10	U
Acetone	R		R		R		R		R
Benzene	J	**75**	J	**7.9**		5	U	**1.2**	J
Bromodichloromethane	U	250	UJ	5	U	5	U	5	UJ
Bromoform	U	**120**	J	5	U	5	U	5	U
Bromomethane	UJ	500	U	10	U	10	U	10	UJ
Carbon disulfide	U	**4900**		5	U	5	U	5	U
Carbon tetrachloride	U	**9400**		5	U	5	U	5	U
Chlorobenzene		**220**	J	**24**		5	U	**5.6**	
Chloroethane	U	500	U	10	U	10	U	10	U
Chloroform	U	**76000**		5	U	5	U	5	U
Chloromethane	U	500	U	10	U	10	U	10	U
cis-1,3-Dichloropropene	U	250	UJ	5	U	5	U	5	UJ
Dibromochloromethane	U	250	U	5	U	5	U		R
Ethylbenzene	U	250	U	5	U	5	U	5	U
Methylene chloride	U	**8200**		5	U	5	U	5	U
Styrene	U	250	U	5	U	5	U	5	U
Tetrachloroethene	U	**2200**		5	U	5	U	5	U
Toluene	U	**890**		5	U	5	U	**1.4**	J
Total Xylenes	U	750	U	15	U	15	U	15	U
trans-1,3-Dichloropropene	UJ	250	UJ	5	U	5	U	5	UJ
Trichloroethene	J	250	U	5	U	5	U	5	UJ
Vinyl acetate	U	500	U	10	U	10	U	10	U
Vinyl chloride		250	U	5	U	5	U	**2.1**	J

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	BR-102	BR-104	BR-105	BR-105D	BR-106
SAMPLE DATE:	11/10/99	11/9/99	11/9/99	11/9/99	11/10/99
VOLATILE ORGANIC COMPOUNDS BY SW-846 Method 8260/5ML (µg/L)					
1,1,1-Trichloroethane	5 U	5 U	5 U	5 U	5
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5
1,1,2-Trichloroethane	5 U	5 U	5 U	5 U	5
1,1-Dichloroethane	5 U	5 U	5 U	**5.4**	5
1,1-Dichloroethene	5 U	5 U	5 U	5 U	5
1,2-Dichloroethane	5 U	5 U	5 U	5 U	5
1,2-Dichloroethene (total)	**5.4**	5 U	**4.7 J**	**10**	**2.6**
1,2-Dichloropropane	5 U	5 U	5 U	5 U	5
2-Butanone	R	R	R	R	
2-Hexanone	10 U	10 U	10 U	10 U	10
4-Methyl-2-pentanone	10 U	10 U	10 U	10 U	10
Acetone	R	R	R	R	
Benzene	**22**	5 U	**12**	**7.8**	**63**
Bromodichloromethane	5 U	5 U	5 U	5 U	5
Bromoform	5 U	5 U	5 U	5 U	5
Bromomethane	10 UJ	10 UJ	10 UJ	10 UJ	10
Carbon disulfide	5 U	5 U	5 U	5 U	**7.3**
Carbon tetrachloride	5 U	5 U	5 U	5 U	5
Chlorobenzene	**47**	5 U	**22**	5 U	**230**
Chloroethane	10 U	10 U	10 U	10 U	10
Chloroform	**3 J**	5 U	5 U	**17**	**3.8**
Chloromethane	10 U	10 U	10 U	10 U	10
cis-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5
Dibromochloromethane	5 U	5 U	5 U	5 U	5
Ethylbenzene	5 U	5 U	5 U	5 U	**2.6**
Methylene chloride	5 U	5 U	5 U	5 U	5
Styrene	5 U	**5** U	5 U	5 U	5
Tetrachloroethene	5 U	5 U	5 U	5 U	**1.6**
Toluene	**2.6 J**	5 U	**8.6**	5 U	**41**
Total Xylenes	15 U	15 U	**3.1 J**	**1.5 J**	**4.5**
trans-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5
Trichloroethene	**3 J**	5 U	5 U	5 U	5
Vinyl acetate	10 U	10 U	10 U	10 U	10
Vinyl chloride	**4.2 J**	5 U	**2.4 J**	**9.8**	**3.3**

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:		BR-114		BR-124D		BR-3		BR-5A	
SAMPLE DATE:		11/9/99		11/10/99		11/11/99		11/11/99	
VOLATILE ORGANIC COMPOUNDS									
BY SW-846 Method 8260/5ML (µg/L)									
1,1,1-Trichloroethane	U	5	U	5	U	5000	UJ	5	UJ
1,1,2,2-Tetrachloroethane	U	5	U	5	U	5000	UJ	5	UJ
1,1,2-Trichloroethane	U	5	U	5	U	5000	UJ	5	UJ
1,1-Dichloroethane	U	5	U	5	U	5000	U	5	U
1,1-Dichloroethene	U	5	U	5	U	5000	U	5	U
1,2-Dichloroethane	U	5	U	5	U	5000	U	5	U
1,2-Dichloroethene (total)	J	5	U	5	U	5000	U	**1.2**	J
1,2-Dichloropropane	U	5	U	5	U	5000	U	5	U
2-Butanone	R		R		R		R		R
2-Hexanone	U	10	U	10	U	10000	U	10	U
4-Methyl-2-pentanone	U	10	U	10	U	10000	U	10	U
Acetone	R		R		R		R		R
Benzene		**13**		5	U	5000	U	5	U
Bromodichloromethane	U	5	U	5	U	5000	UJ	5	UJ
Bromoform	U	5	U	5	U	**13000**		5	U
Bromomethane	UJ	10	UJ	10	UJ	10000	UJ	10	UJ
Carbon disulfide		5	U	5	U	**54000**		5	U
Carbon tetrachloride	U	5	U	5	U	**170000**		5	U
Chlorobenzene		5	U	5	U	5000	U	**8.2**	
Chloroethane	U	10	U	10	U	10000	U	10	U
Chloroform	J	5	U	5	U	**310000**		**1.6**	J
Chloromethane	U	10	U	10	U	10000	U	10	U
cis-1,3-Dichloropropene	U	5	U	5	U	5000	UJ	5	UJ
Dibromochloromethane	U	5	U	5	U	5000	UJ	5	UJ
Ethylbenzene	J	**1.2**	J	5	U	5000	U	5	U
Methylene chloride	U	5	U	5	U	**120000**		5	U
Styrene	U	5	U	5	U	5000	U	5	U
Tetrachloroethene	J	5	U	5	U	**2700**	J	5	U
Toluene		5	U	5	U	**7200**		**1.6**	J
Total Xylenes	J	**7.8**	J	15	U	15000	U	15	U
trans-1,3-Dichloropropene	U	5	U	5	U	5000	UJ	5	UJ
Trichloroethene	U	5	U	5	U	5000	U	**5.2**	
Vinyl acetate	U	10	U	10	U	10000	U	10	U
Vinyl chloride	J	5	U	5	U	5000	U	5	U

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	BR-6A	BR-7A	BR-8	E-1	E-2
SAMPLE DATE:	11/16/99	11/16/99	11/10/99	11/12/99	11/15/99
VOLATILE ORGANIC COMPOUNDS					
BY SW-846 Method 8260/5ML (µg/L)					
1,1,1-Trichloroethane	5 U	20 U	5 U	5 U	5
1,1,2,2-Tetrachloroethane	5 U	20 UJ	5 U	5 U	5
1,1,2-Trichloroethane	5 U	20 U	5 U	5 U	5
1,1-Dichloroethane	5 U	20 U	5 U	5 U	5
1,1-Dichloroethene	5 U	20 U	5 U	5 U	5
1,2-Dichloroethane	5 U	20 U	5 U	5 U	5
1,2-Dichloroethene (total)	**24**	20 U	5 U	5 U	5
1,2-Dichloropropane	5 U	20 U	5 U	5 U	5
2-Butanone	R	R	R	R	
2-Hexanone	10 U	40 U	10 U	10 U	10
4-Methyl-2-pentanone	10 U	40 U	10 U	10 U	10
Acetone	R	R	R	R	
Benzene	**14**	**27**	**4.9 J**	5 U	5
Bromodichloromethane	5 U	20 U	5 U	5 U	5
Bromoform	**57**	20 U	5 U	5 U	5
Bromomethane	10 UJ	40 U	10 UJ	10 UJ	10
Carbon disulfide	**640**	20 U	5 U	5 U	5
Carbon tetrachloride	**620**	**21**	5 U	5 U	5
Chlorobenzene	**60**	**480**	**190**	**7.2**	5
Chloroethane	10 U	40 UJ	10 U	10 U	10
Chloroform	**3500**	**310**	5 U	**33**	5
Chloromethane	10 U	40 U	10 U	10 U	10
cis-1,3-Dichloropropene	5 U	20 U	5 U	5 U	5
Dibromochloromethane	**4 J**	20 U	5 U	5 U	5
Ethylbenzene	**1.8 J**	20 U	5 U	**11**	5
Methylene chloride	**480**	**200**	5 U	5 U	5
Styrene	5 U	20 U	5 U	5 U	5
Tetrachloroethene	**180**	**9.8 J**	5 U	**7.5**	**1.3**
Toluene	**110**	**40**	5 U	**3.9 J**	5
Total Xylenes	**6.2 J**	60 U	15 U	**31**	15
trans-1,3-Dichloropropene	5 UJ	20 U	5 U	5 U	5
Trichloroethene	**23**	20 U	5 U	**5.9**	5
Vinyl acetate	10 U	40 U	10 U	10 U	10
Vinyl chloride	**8**	20 U	5 U	**5**	5

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:		E-3		MW-106		MW-108		MW-114	
SAMPLE DATE:		11/11/99		11/10/99		11/10/99		11/9/99	
VOLATILE ORGANIC COMPOUNDS									
BY SW-846 Method 8260/5ML (µg/L)									
1,1,1-Trichloroethane	U	5	UJ	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	U	5	UJ	5	U	5	U	5	U
1,1,2-Trichloroethane	U	5	UJ	5	U	5	U	5	U
1,1-Dichloroethane	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane	U	5	U	5	U	5	U	5	U
2-Butanone	R		R		R		R		R
2-Hexanone	U	10	U	10	U	10	U	10	U
4-Methyl-2-pentanone	U	10	U	10	U	10	U	10	U
Acetone	R		R		R		R		R
Benzene	U	5	U	**68**		5	U	5	U
Bromodichloromethane	U	5	U	5	U	5	U	5	U
Bromoform	U	**36**		5	U	5	U	5	U
Bromomethane	U	10	UJ	10	UJ	10	UJ	10	UJ
Carbon disulfide	U	**150**		**4.3**	**J**	5	U	5	U
Carbon tetrachloride	U	**270**		5	U	5	U	5	U
Chlorobenzene	U	**3.5**	**J**	**270**		5	U	5	U
Chloroethane	U	10	U	10	U	10	U	10	U
Chloroform	U	**530**		5	U	5	U	**1.8**	**J**
Chloromethane	U	10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene	U	5	UJ	5	U	5	U	5	U
Dibromochloromethane	U	**1.7**	**J**	5	U	5	U	5	U
Ethylbenzene	U	5	U	5	U	5	U	5	U
Methylene chloride	U	**91**		5	U	5	U	5	U
Styrene	U	5	U	5	U	5	U	5	U
Tetrachloroethene	**J**	**6.9**		5	U	5	U	1.6	J
Toluene	U	**26**		**7.1**		5	U	5	U
Total Xylenes	U	15	U	**1.4**	**J**	15	U	15	U
trans-1,3-Dichloropropene	U	5	UJ	5	U	5	U	5	U
Trichloroethene	U	5	U	5	U	5	U	3	J
Vinyl acetate	U	10	U	10	U	10	U	10	U
Vinyl chloride	U	5	U	5	U	5	U	5	U

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	NESS-E	NESS-W	PW10	PW12	PZ-106
SAMPLE DATE:	11/9/99	11/9/99	11/12/99	11/11/99	11/9/99
VOLATILE ORGANIC COMPOUNDS					
BY SW-846 Method 8260/5ML (µg/L)					
1,1,1-Trichloroethane	5 U	5 U	500 U	500 UJ	**4.6**
1,1,2,2-Tetrachloroethane	5 U	5 U	500 U	500 UJ	5
1,1,2-Trichloroethane	5 U	5 U	500 U	500 UJ	5
1,1-Dichloroethane	5 U	5 U	500 U	500 U	5
1,1-Dichloroethene	5 U	5 U	500 U	500 U	5
1,2-Dichloroethane	5 U	5 U	500 U	**270 J**	5
1,2-Dichloroethene (total)	5 U	**120**	500 U	500 U	**69**
1,2-Dichloropropane	5 U	5 U	500 U	500 U	5
2-Butanone	R	R	R	R	
2-Hexanone	10 U	10 U	1000 U	1000 U	10
4-Methyl-2-pentanone	10 U	10 U	1000 U	1000 U	10
Acetone	R	R	R	R	**280**
Benzene	5 U	**19**	**160 J**	**300 J**	27
Bromodichloromethane	5 U	5 U	500 U	500 UJ	26
Bromoform	5 U	5 U	500 U	500 U	**1600**
Bromomethane	10 UJ	10 UJ	1000 UJ	1000 UJ	10
Carbon disulfide	5 U	5 U	**4900**	500 U	**30000**
Carbon tetrachloride	5 U	5 U	**13000**	500 U	**62000**
Chlorobenzene	5 U	**8**	**600**	**5400**	**7.7**
Chloroethane	10 U	10 U	1000 U	1000 U	10
Chloroform	5 U	5 U	**49000**	**320 J**	**98000**
Chloromethane	10 U	10 U	1000 U	1000 U	**7**
cis-1,3-Dichloropropene	5 U	5 U	500 U	500 UJ	5
Dibromochloromethane	5 U	5 U	500 U	500 UJ	**270**
Ethylbenzene	5 U	5 U	500 U	**370 J**	5
Methylene chloride	5 U	5 U	**13000**	**500**	**6000**
Styrene	5 U	5 U	500 U	500 U	5
Tetrachloroethene	5 U	5 U	**3800**	500 U	**1600**
Toluene	5 U	5 U	**1400**	**12000**	**320**
Total Xylenes	15 U	15 U	1500 U	**2100**	15
trans-1,3-Dichloropropene	5 U	5 U	500 U	500 UJ	5
Trichloroethene	5 U	5 U	500 U	500 U	**18**
Vinyl acetate	10 U	10 U	1000 U	1000 U	10
Vinyl chloride	5 U	**44**	500 U	500 U	**49**

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ROCHESTER, NEW YORK

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VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:		PZ-107		S-1		S-2		S-3	
SAMPLE DATE:		11/9/99		12/2/99		12/2/99		11/12/99	
VOLATILE ORGANIC COMPOUNDS									
BY SW-846 Method 8260/5ML (µg/L)									
1,1,1-Trichloroethane	J	5	U	5	UJ	5	UJ	5	U
1,1,2,2-Tetrachloroethane	U	5	U	5	UJ	5	UJ	5	U
1,1,2-Trichloroethane	U	5	U	5	UJ	5	UJ	5	U
1,1-Dichloroethane	U	5	U	5	UJ	5	UJ	5	U
1,1-Dichloroethene	U	5	U	5	UJ	5	UJ	5	U
1,2-Dichloroethane	U	5	U	5	UJ	5	UJ	5	U
1,2-Dichloroethene (total)		**18**		5	UJ	5	UJ	5	U
1,2-Dichloropropane	U	5	U	5	UJ	5	UJ	5	U
2-Butanone	R		R		R		R		R
2-Hexanone	U	10	U	10	UJ	10	UJ	10	U
4-Methyl-2-pentanone	U	10	U	10	UJ	10	UJ	10	U
Acetone	J		R		R		R		R
Benzene		**2.2**	**J**	5	UJ	5	UJ	5	U
Bromodichloromethane		5	U	5	UJ	5	UJ	5	U
Bromoform	J	**1.4**	**J**	5	UJ	5	UJ	5	U
Bromomethane	UJ	10	UJ	10	UJ	10	UJ	10	UJ
Carbon disulfide		**6.3**		5	UJ	5	UJ	5	U
Carbon tetrachloride		**99**		5	UJ	5	UJ	**8.2**	
Chlorobenzene		**1.7**	**J**	5	UJ	5	UJ	**2.2**	**J**
Chloroethane	U	10	U	10	UJ	10	UJ	10	U
Chloroform		**45**		5	UJ	5	UJ	**26**	
Chloromethane	J	10	U	10	UJ	10	UJ	10	U
cis-1,3-Dichloropropene	U	5	U	5	UJ	5	UJ	5	U
Dibromochloromethane	J	5	U	5	UJ	5	UJ	5	U
Ethylbenzene	U	5	U	5	UJ	5	UJ	5	U
Methylene chloride		**1.7**	**J**	5	UJ	5	UJ	5	U
Styrene	U	5	U	5	UJ	5	UJ	5	U
Tetrachloroethene	J	**5.2**		5	UJ	5	UJ	**4.7**	**J**
Toluene	J	**9.1**		5	UJ	5	UJ	5	U
Total Xylenes	U	15	U	15	UJ	15	UJ	15	U
trans-1,3-Dichloropropene	U	5	U	5	UJ	5	UJ	5	U
Trichloroethene		**9.8**		5	UJ	5	UJ	5	U
Vinyl acetate	U	10	U	10	UJ	10	UJ	10	U
Vinyl chloride		**6.9**		5	UJ	5	UJ	5	U

Notes:

U = Compound not detected; value represents sample quantitation limit.

J = Estimated value.

FS = Field Sample.

TABLE 3
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

R = The result for this analyte is unreliable.
Additional data is needed to confirm or disprove
the presence of this analyte in the sample.

TABLE 3
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	S-4
SAMPLE DATE:	11/12/99
VOLATILE ORGANIC COMPOUNDS	
BY SW-846 Method 8260/5ML (µg/L)	
1,1,1-Trichloroethane	5 U
1,1,2,2-Tetrachloroethane	5 U
1,1,2-Trichloroethane	5 U
1,1-Dichloroethane	5 U
1,1-Dichloroethene	5 U
1,2-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
1,2-Dichloropropane	5 U
2-Butanone	R
2-Hexanone	10 U
4-Methyl-2-pentanone	10 U
Acetone	R
Benzene	5 U
Bromodichloromethane	5 U
Bromoform	5 U
Bromomethane	10 UJ
Carbon disulfide	5 U
Carbon tetrachloride	1.2 J
Chlorobenzene	5 U
Chloroethane	10 U
Chloroform	5 U
Chloromethane	10 U
cis-1,3-Dichloropropene	5 U
Dibromochloromethane	5 U
Ethylbenzene	5 U
Methylene chloride	5 U
Styrene	5 U
Tetrachloroethene	5 U
Toluene	5 U
Total Xylenes	15 U
trans-1,3-Dichloropropene	5 U
Trichloroethene	5 U
Vinyl acetate	10 U
Vinyl chloride	5 U

Notes:

U = Compound not detected; value represents sample quantitation limit.

J = Estimated value.

FS = Field Sample.

TABLE 3
NOVEMBER 1999 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

R = The result for this analyte is unreliable.
Additional data is needed to confirm or disprove
the presence of this analyte in the sample.

TABLE 4
COMPARISON OF NOVEMBER 1999 CHLOROPYRIDINES AND VOLATILE ORGANICS CONCENTRATIONS IN GROUNDWATER TO PREVIOUS RESULTS (ug/L)

ARCH ROCHESTER
SEMI-ANNUAL GROUNDWATER MONITORING REPORT - FALL 1999

WELL		SELECTED CHLOROPYRIDINES						SELECTED VOCs					
	AREA	# OF EVENTS	PRIOR MAXIMUM	MEAN	NOV-99 RESULT	< MEAN	> MEAN	# OF EVENTS	PRIOR MAXIMUM	MEAN	NOV-99 RESULT	< MEAN	> MEAN
B-17	ARCH	6	1,800,000	430,000	320,000	X		6	210,000	130,000	96,000	X	
BR-102	ARCH	7	1,600	800	500	X		7	1,400	760	6	X	
BR-103	OFF-SITE	8	410	81	NA			6	ND	ND	NA		
BR-104	OFF-SITE	8	880	150	17	X		7	1	0.2	ND		
BR-105	OFF-SITE	8	13,000	5,400	7,200		X	6	6	2	ND	X	
BR-105D	OFF-SITE	8	10,000	3,860	1,700	X		6	230	60	17	X	
BR-106	OFF-SITE	7	9,200	6,100	8,100		X	4	71	26	5	X	
BR-108	OFF-SITE	7	1,700	250	7	X		5	ND	ND	NA		
BR-114	OFF-SITE	6	450	120	230		X	2	ND	ND	ND		
BR-124D	OFF-SITE	5	65	13	ND	X		4	ND	ND	ND		
BR-3	ARCH	5	150,000	110,000	98,000	X		3	680,000	280,000	600,000		X
BR-5A	ARCH	8	310	170	210		X	8	6,100	1,000	7	X	
BR-6A	ARCH	4	93,000	55,000	21,000	X		4	26,000	16,000	4,800	X	
BR-7A	ARCH	6	280,000	56,000	20,000	X		6	2,800	800	540	X	
BR-8	ARCH	6	5,600	2,400	750	X		6	4	1	ND	X	
BR-9	ARCH	3	690	621	NA			3	150	120	NA		
E-1	ARCH	6	6,400	1,800	1,300	X		6	5,300	1,500	46	X	
E-3	ARCH	8	200	47	68		X	8	57	7	900		X
MW-114	OFF-SITE	7	18	4	NA			3	10	8	NA		
NESS-E	OFF-SITE	10	2,600	1,500	610	X		8	750	180	ND	X	
NESS-W	OFF-SITE	9	2,000	983	526	X		7	84	16	ND	X	
PW10	ARCH	1	NA	NA	133,500			1	NA	NA	78,800		

TABLE 4
COMPARISON OF NOVEMBER 1999 CHLOROPYRIDINES AND VOLATILE ORGANICS CONCENTRATIONS IN GROUNDWATER TO PREVIOUS RESULTS (ug/L)

ARCH ROCHESTER
SEMI-ANNUAL GROUNDWATER MONITORING REPORT - FALL 1999

WELL		SELECTED CHLOROPYRIDINES						SELECTED VOCs					
	AREA	# OF EVENTS	PRIOR MAXIMUM	MEAN	NOV-99 RESULT	< MEAN	> MEAN	# OF EVENTS	PRIOR MAXIMUM	MEAN	NOV-99 RESULT	< MEAN	> MEAN
PW12	ARCH	6	10,000	6,000	2,500	X		6	41,000	22,000	820	X	
BR-112A	OFF-SITE	7	47	7	ND	X		2	ND	ND	NA		
BR-112D	OFF-SITE	7	310	90	9	X		2	4	3	NA		
BR-113	OFF-SITE	7	8	3	ND	X		2	ND	ND	NA		
BR-113D	OFF-SITE	7	490	190	48	X		2	3	3	NA		
MW-106	OFF-SITE	7	103,000	42,000	6,300	X		5	89	25	ND	X	
MW-108	OFF-SITE	3	28	13	ND	X		3	ND	ND	ND		
PZ-106	ARCH	2	11,000	11,000	7,000	X		2	760,000	460,000	170,000	X	
PZ-107	ARCH	2	1,600	1,500	2,000		X	2	2,100	1,100	160	X	
S-3	ARCH	NA	NA	NA	640			NA	NA	NA	39		

Note:

1) Number of samples, mean, and maximum data reflect 4 1/2-year sampling period beginning in March 1995 and ending in June 1999.
2) Chloropyridines represented by: 2-Chloropyridine, 2,6-Dichloropyridine, and 3-Chloropyridine.
3) Selected VOCs represented by Carbon Tetrachloride, Chloroform, Methylene Chloride, Tetrachloroethene, and Trichloroethene.
4) X = Comparison of November 1999 concentration to 4 1/2 year mean.
5) NA = Not analyzed
   ND = Not detected

TABLE 5
NOVEMBER 1999 CANAL/QUARRY MONITORING RESULTS

ARCH CHEMICAL, INC.
ROCHESTER, NEW YORK

LOCATION:	QO-2	QO-2S1	QS-4	SW-1	SW-2	SW-3	SW-6	SW-12
SAMPLE DATE:	11/17/99	11/17/99	11/17/99	11/17/99	11/17/99	11/17/99	11/17/99	11/17/99
SAMPLE TYPE:	FS	FS	FS	FS	FS	FS	FS	FS
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270C (µg/L)								
Pyridine	10 U	10 UJ	160 U	9 UJ	10 U	10 U	10 U	10 UJ
2-Chloropyridine	**44**	10 U	**860**	9 U	10 U	10 U	10 U	10 U
3-Chloropyridine	10 UJ	10 UJ	160 UJ	9 UJ	10 U	10 U	10 U	10 UJ
4-Chloropyridine	10 U	10 U	160 U	9 U	10 U	10 U	10 U	10 U
2,6-Dichloropyridine	**9 J**	10 U	**100 J**	9 U	10 U	10 U	10 U	10 U
p-Fluoroaniline	10 U	10 U	160 U	9 U	10 U	10 U	10 U	10 U

Notes:

U = Compound not detected; value represents sample quantitation limit.

J = Estimated value.

FS = Field Sample.

TABLE 6
QUARTERLY SAMPLING SCHEDULE
ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

ARCH ROCHESTER MONITORING PROGRAM					Q1		Q2		Q3		Q4		TOTAL	
	Well	*zone*	*area*	*Data Objective:*	*Pyridines*	*VOC's*	*Pyridines*	*VOC's*	*Pyridines*	*VOC's*	*Pyridines*	*VOC's*	*Pyridines*	*VOC's*
OFF-SITE MONITORING	MW-103	OB	KODAK EAST	overburden plume monitoring			1	1			1	1	2	2
	BR-103	BR	KODAK EAST	shallow bedrock plume monitoring			1	1			1	1	2	2
	MW-104	OB	BUFFALO RD	overburden plume monitoring			1	1			1	1	2	2
	BR-104	BR	BUFFALO RD	shallow bedrock plume monitoring			1	1			1	1	2	2
	BR-105	BR	AID-HOSP	shallow bedrock plume monitoring			1	1			1	1	2	2
	BR-105D	BR deep	AID-HOSP	deep bedrock plume monitoring			1	1			1	1	2	2
	MW-106	OB	AID-HOSP	overburden plume monitoring			1	1			1	1	2	2
	BR-106	BR	AID-HOSP	shallow bedrock plume monitoring			1	1			1	1	2	2
	MW-108	OB	AID-HOSP	overburden plume monitoring			1	1			1	1	2	2
	BR-108	BR	AID-HOSP	shallow bedrock plume monitoring			1	1			1	1	2	2
	BR-111	BR	NYSDOT	shallow bedrock plume monitoring			1	1			1	1	2	2
	BR-111D	BR deep	NYSDOT	deep bedrock plume monitoring			1	1			1	1	2	2
	BR-112A	BR	NYSDOT	shallow bedrock plume monitoring			1	1			1	1	2	2
	BR-112D	BR deep	NYSDOT	deep bedrock plume monitoring			1	1			1	1	2	2
	BR-113	BR	NYSDOT	shallow bedrock plume monitoring			1				1		2	0
	BR-113D	BR deep	NYSDOT	deep bedrock plume monitoring			1				1		2	0
	MW-114	OB	JACKSON	shallow bedrock plume monitoring			1	1			1	1	2	2
	BR-114	BR	JACKSON	deep bedrock plume monitoring			1	1			1	1	2	2
	BR-116	BR	PFAUDLER	shallow bedrock plume monitoring			1						1	0
	BR-116D	BR deep	PFAUDLER	deep bedrock plume monitoring			1						1	0
	BR-117D	BR deep	QUARRY	deep bedrock plume monitoring			1						1	0
	BR-118D	BR deep	QUARRY	deep bedrock plume monitoring			1						1	0
	BR-119D	BR deep	QUARRY	deep bedrock plume monitoring			1						1	0
	BR-120D	BR deep	QUARRY	deep bedrock plume monitoring			1						1	0
	BR-121D	BR deep	QUARRY	deep bedrock plume monitoring			1						1	0
	BR-122D	BR deep	QUARRY	deep bedrock plume monitoring			1						1	0
	BR-123D	BR deep	QUARRY	deep bedrock plume monitoring			1						1	0
	BR-124D	BR deep	QUARRY	deep bedrock plume monitoring			1	1			1	1	2	2
	NESS-E	BR deep	NESS	deep bedrock plume monitoring			1	1			1	1	2	2
	NESS-W	BR deep	NESS	deep bedrock plume monitoring			1	1			1	1	2	2
	PZ-101	BR	McKee Rd	shallow bedrock plume monitoring			1	1			1	1	2	2
	PZ-102	BR	McKee Rd	shallow bedrock plume monitoring			1	1			1	1	2	2
	PZ-103	BR	McKee Rd	shallow bedrock plume monitoring			1	1			1	1	2	2
	PZ-104	BR	ALH	shallow bedrock plume monitoring			1	1			1	1	2	2
ON-SITE MONITORING	PZ-107	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	PZ-106	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	PZ-105	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	BR-102	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	BR-3	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	BR-8	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	BR-9	pumping well	ON-SITE	onsite tracking of removed contaminants			1	1			1	1	2	2
	BR-5A	pumping well	ON-SITE	onsite tracking of removed contaminants			1	1			1	1	2	2
	BR-6A	pumping well	ON-SITE	onsite tracking of removed contaminants			1	1			1	1	2	2
	BR-7A	pumping well	ON-SITE	onsite tracking of removed contaminants			1	1			1	1	2	2
	B-17	OB	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	B-7	OB	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	B-9	OB	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	S-3	OB	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	S-4	OB	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	E-1	OB	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	E-3	OB	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	PW10	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	PW11	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
	PW12	BR	ON-SITE	onsite tracking of contam trends			1	1			1	1	2	2
QUARRY/CANAL MONITORING	QS-4	quarry seep	QUARRY	track quarry seep quality	1		1	1	1		1	1	4	2
	QO-2	quarry outfall	CANAL	track water quality input to canal	1		1	1	1		1	1	4	2
	QO-2S1	canal at outfall	CANAL	track dilution of input to canal	1		1		1		1		4	0
	SW-1	barge canal	CANAL	track canal water quality	1		1		1		1		4	0
	SW-2	barge canal	CANAL	track canal water quality	1		1		1		1		4	0
	SW-3	barge canal	CANAL	track canal water quality	1		1		1		1		4	0
	SW-6	barge canal	CANAL	track canal water quality	1		1		1		1		4	0
	SW-12	barge canal	CANAL	track canal water quality	1		1		1		1		4	0
TOTAL SAMPLES					8	0	62	45	8	0	53	45	131	90

LEGEND

ARCH PROPERTY

BR-114 BEDROCK WELL

N

I-390

ERIE BARGE CANAL

BUFFALO ROAD

HOWARD ROAD

LETTINGTON ROAD

DOLOMITE PRODUCTS QUARRY

MAIN EXTENT OF WATER-BEARING FRACTURE IN QUARRY WALL

MORIE WELL

MW-107/BR-107

FIRTH RIXSON

McKEE ROAD

MW-BR-9

MW-108/BR-108

BR-111/111D

MW-106/BR-106

MW-PZ-105

ARCH

MW-103/BR-103

KODAK

AID TO HOSPITALS

AMERICAN RECYCLE

BR-112/112D

BR-105/BR-105D

MW-104 /BR-104

MW-114/BR-114

CUMBERLAND FARMS PETROLEUM TERMINAL

12-6

8-6

7-6

OW-105

11-6

RW-1

10-6

9-6

13-4

OW-102A

BR-122-D

OW-103

NESS-W

NESS-E

BR-113/113D

LEXINGTON

GENERAL RAIL SIGNAL CO.

PFAUDLER

BR-116D

BR-116

BR-123-D

BR-124-D

BR-117D

BR-117

BR-121D

BR-118

BR-118D

BR-120D

BR-119D

Scale in Feet

0 500 1000

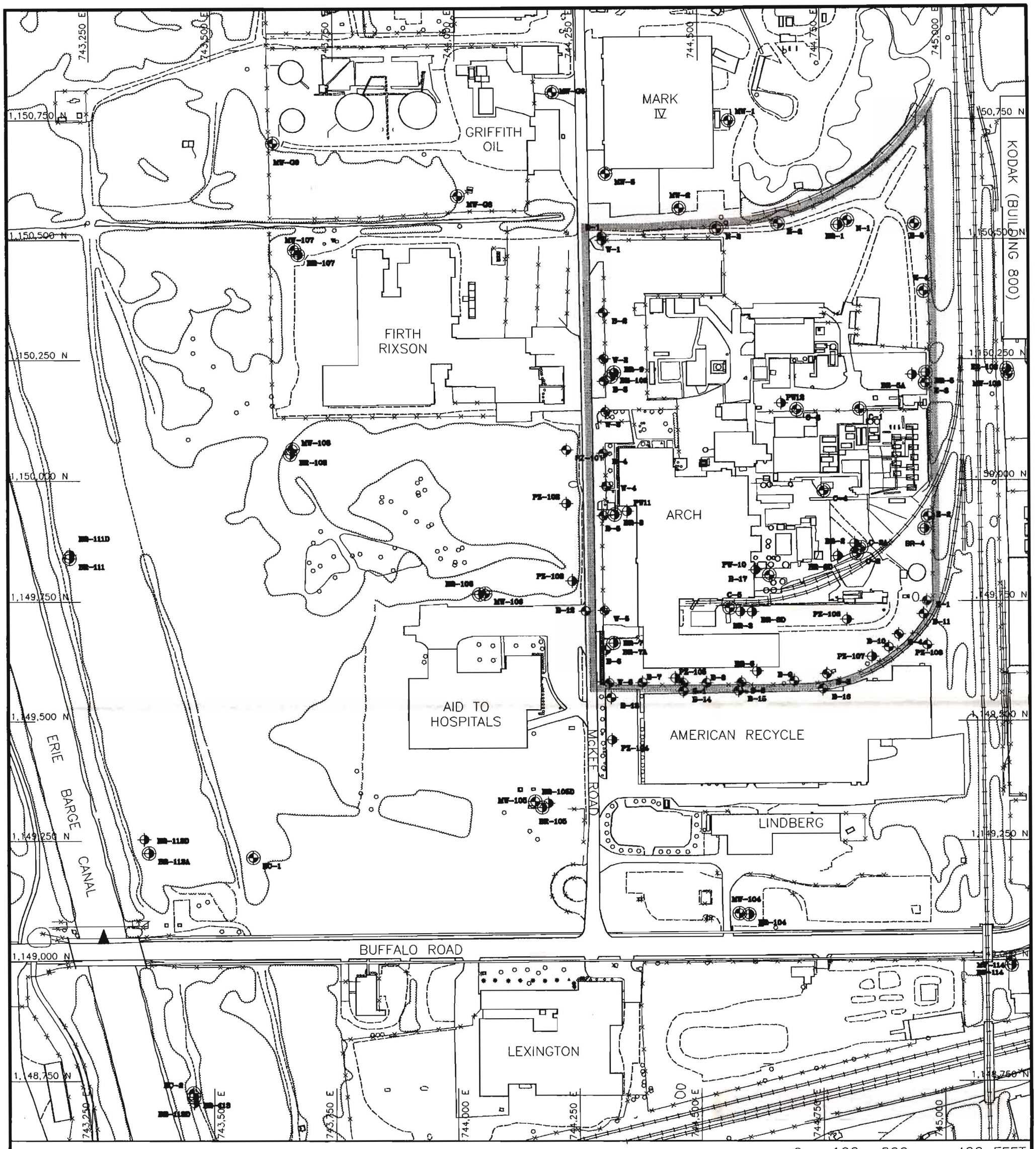
Source:
USGS Topographic Quadrangle 7.5-Minute Series:
Rochester West, N.Y., 1971 (Photorevised 1978).

FIGURE 1

OFF-SITE GROUNDWATER MONITORING WELL LOCATIONS

ARCH CHEMICALS
ROCHESTER, N.Y.

T:\7311-34\7311F202.DWG 2/15/00 SMC



LEGEND

- OUTLINE OF ARCH PROPERTY BOUNDARY
- OVERBURDEN PIEZOMETER / PUMPING WELL
- BEDROCK PIEZOMETER / PUMPING WELL / DEEP BEDROCK MONITORING WELL
- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- SURFACE WATER MEASUREMENT POINT

NOTE:

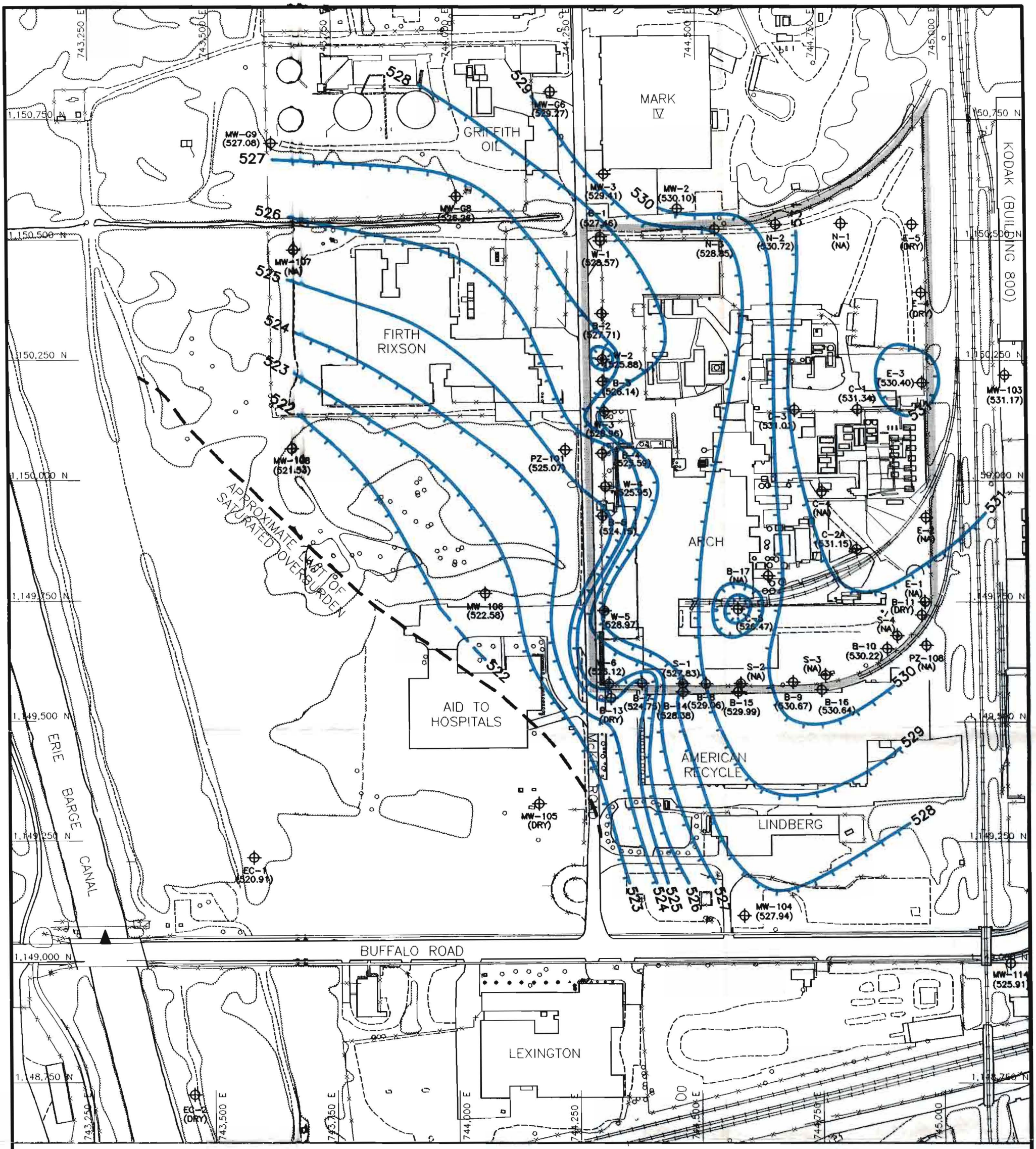
1. OFF-SITE WELL LOCATIONS ALSO INCLUDED ON FIGURE

FIGURE 2

ON-SITE MONITORING WELL LOCATIONS

ARCH CHEMICALS
ROCHESTER, N.Y.

J:\7311-52\7311F201.DWG 2/15/00 SMC



LEGEND

- OUTLINE OF ARCH PROPERTY BOUNDARY
- 530 — OVERBURDEN PIEZOMETRIC ELEVATION CONTOUR (MSL)
- INTERPRETED GROUNDWATER FLOW DIRECTION
- MW-106 (522.58) — PIEZOMETRIC ELEVATION AT WELL OR PIEZOMETER (MSL)
- (502.07) ▲ — PIEZOMETRIC ELEVATION AT SURFACE WATER MEASUREMENT POINT

NOTE:

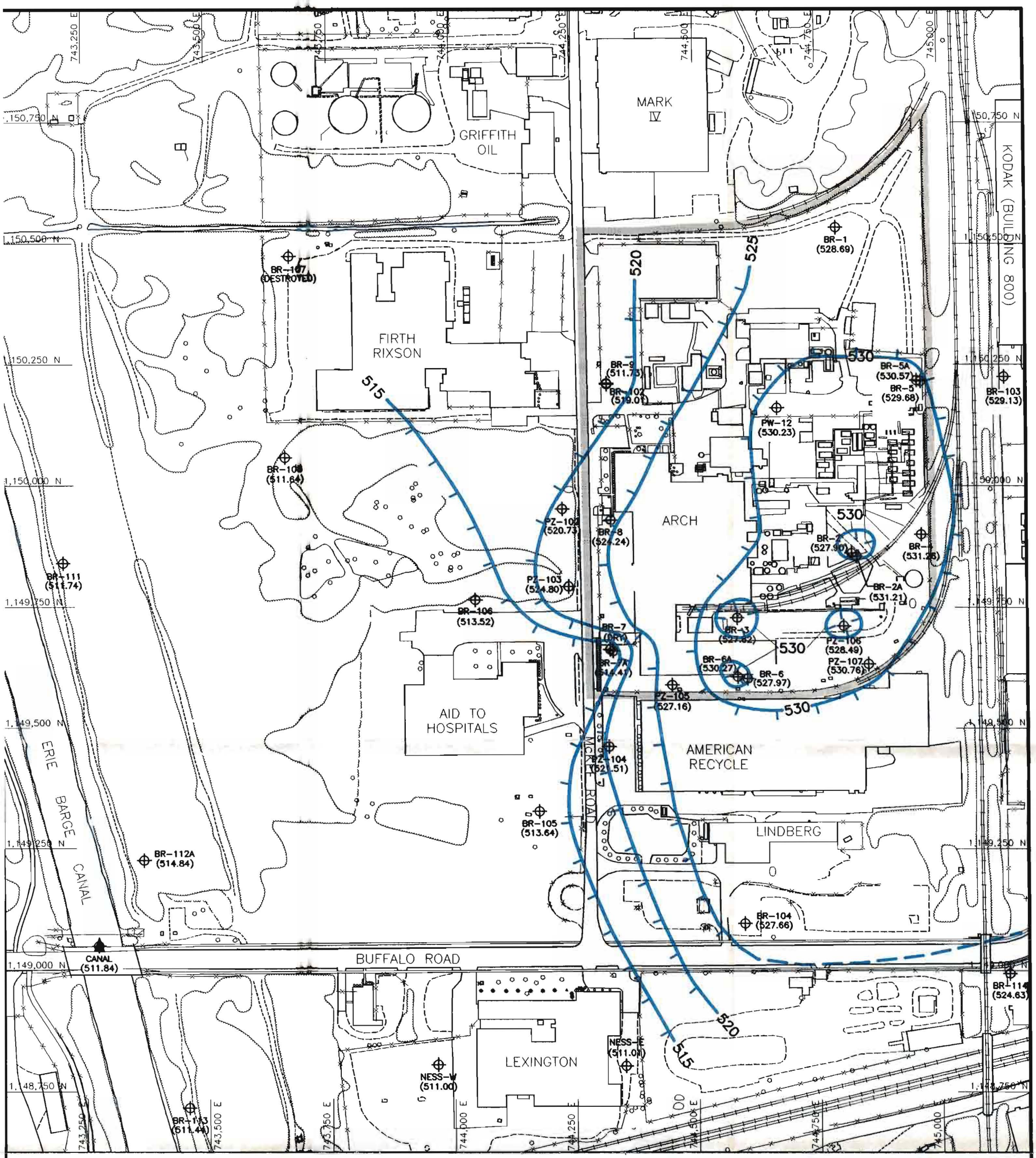
1. WATER LEVELS MEASURED ON OCTOBER 20, 1999

FIGURE 3

OCTOBER 1999 OVERBURDEN GROUNDWATER INTERPRETED PIEZOMETRIC CONTOURS

ARCH CHEMICALS
ROCHESTER, N.Y.

J:\7311-52\7311F048.DWG 01/13/00 EJL



SCALE: 1"=200'

LEGEND

- OUTLINE OF ARCH PROPERTY BOUNDARY
- 525 — BEDROCK PIEZOMETRIC ELEVATION CONTOUR (MSL)
- INTERPRETED GROUNDWATER FLOW DIRECTION (SHALLOW BEDROCK SYSTEM)
- BR-113 (511.44) — PIEZOMETRIC ELEVATION AT WELL OR PIEZOMETER (MSL)
- ▲ PIEZOMETRIC ELEVATION AT SURFACE WATER MEASUREMENT POINT

NOTE:

1. WATER LEVELS MEASURED ON OCTOBER 20, 1999.

FIGURE 4

OCTOBER 1999 BEDROCK GROUNDWATER INTERPRETED PIEZOMETRIC CONTOURS

ARCH CHEMICALS
ROCHESTER, N.Y.

J:\7311-52\7311F047.DWG 01/13/00 EJL

LEGEND

ARCH PROPERTY

500 — DEEP BEDROCK GROUNDWATER PIEZOMETRIC ELEVATION CONTOUR (MSL)

BR-114D — BEDROCK WELL ('D' DESIGNATES DEEP WELL)

(500.0) — PIEZOMETRIC ELEVATION AT DEEP BEDROCK WELL

INTERPRETED GROUNDWATER FLOW DIRECTION (DEEP BEDROCK GROUNDWATER SYSTEM)

NOTES:

1. WATER LEVELS MEASURED OCTOBER 20, 1999
2. DASHED CONTOURS REFLECT UNCERTAINTY

N

ERIE BARGE CANAL

I-390

HOWARD ROAD

BUFFALO ROAD

LETTINGTON DRIVE

MOREY WELL

DOLOMITE PRODUCTS QUARRY

FIRTH RIXSON

ARCH

KODAK

AID TO HOSPITALS

AMERICAN RECYCLE

CUMBERLAND FARMS PETROLEUM TERMINAL

LEXINGTON

GENERAL RAIL SIGNAL CO.

PFAUDLER

BR-107, BR-108, BR-111, BR-111D (511.54), BR-9, BR-103, BR-106, BR-9D (536.91), BR-9S (492.13), MW-PZ-105, BR-112, BR-112D (511.55), BR-105, BR-105D (512.11), BR-104, BR-114, 12-6 (NM), 8-6 (NM), 7-6 (NM), OW-105 (NM), BR-113, BR-113D (511.55), 11-6 (NM), RW-1 (NM), 9-6 (NM), 10-6 (NM), 13-4 (NM), OW-102A (NM), OW-103 (NM), BR-122D (507.80), BR-117D (497.36), BR-117, BR-116, BR-118D (499.27), BR-121D (496.49), BR-120D (497.68), BR-119D (501.66), BR-123D (508.22), BR-116D (509.21), BR-116, BR-124D (506.97)

498, 500, 502, 504, 506, 508, 510

Scale in Feet

0 500 1000

Source:
USGS Topographic Quadrangle 7.5-Minute Series;
Rochester West, N.Y., 1971 (Photorevised 1978).

FIGURE 5

OCTOBER 1999
DEEP BEDROCK GROUNDWATER
INTERPRETED PIEZOMETRIC CONTOURS

ARCH CHEMICALS
ROCHESTER, N.Y.

J:\7311-52\7311F049.DWG 01/13/00 EJL

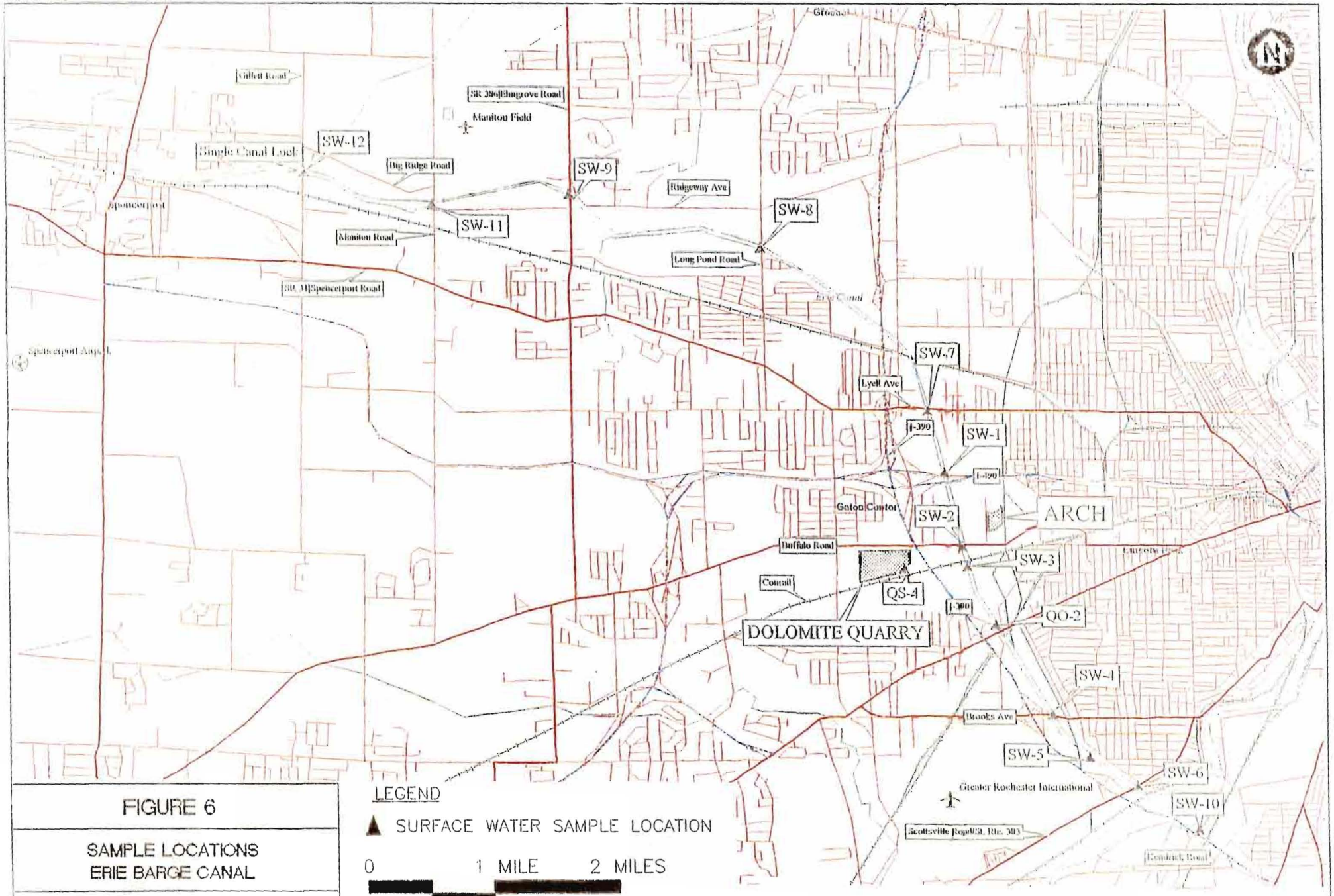


FIGURE 6

SAMPLE LOCATIONS
ERIE BARGE CANAL

ARCH CHEMICALS
ROCHESTER, N.Y.

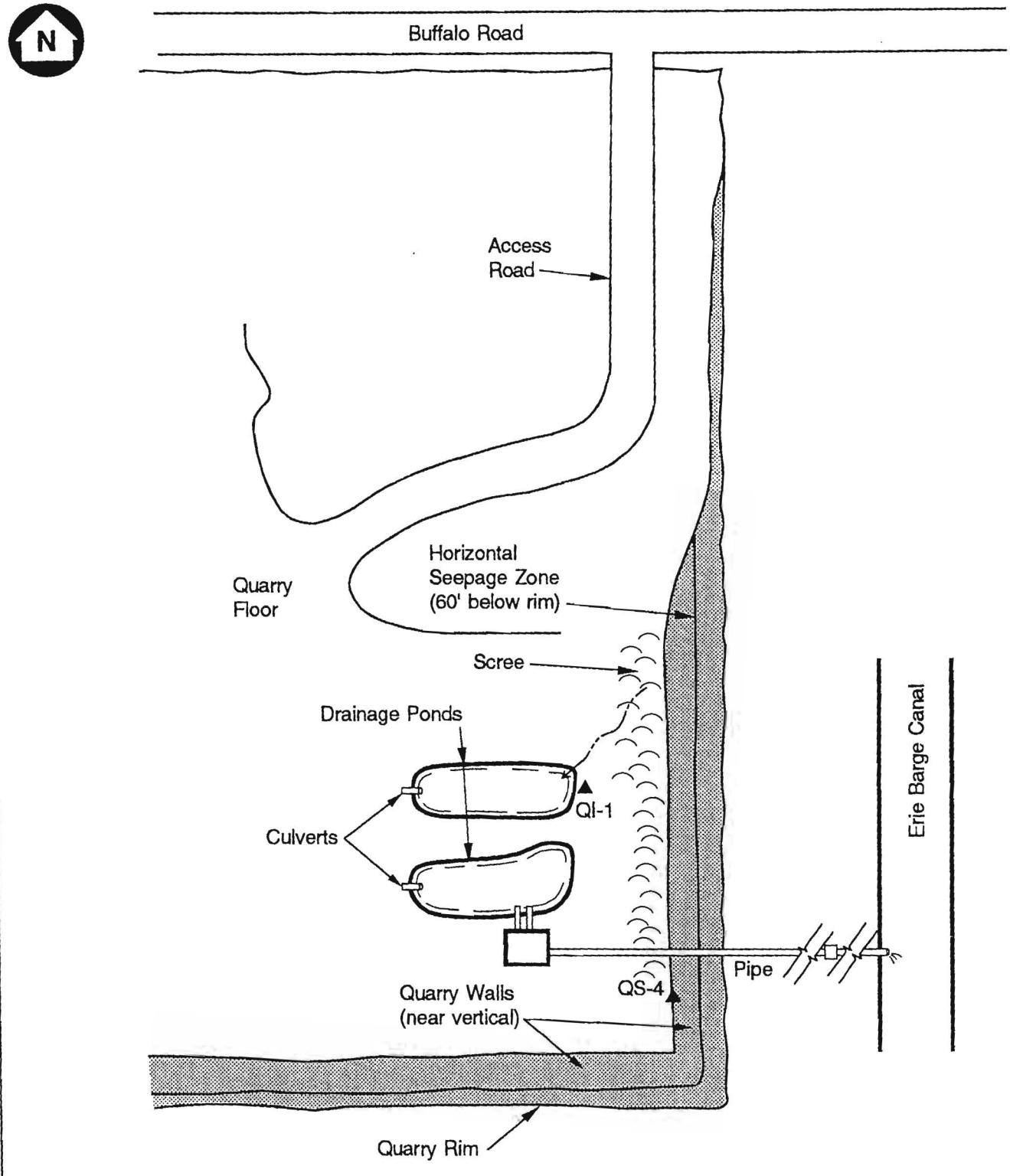
LEGEND

▲ SURFACE WATER SAMPLE LOCATION

0 1 MILE 2 MILES

SCALE: 1"=1 MILE

SOURCE: DeLorme Mapping 1995



Legend

QS-4 ▲ Seep Sample Location

QI-1 ▲ Pond Inflow Sample Location

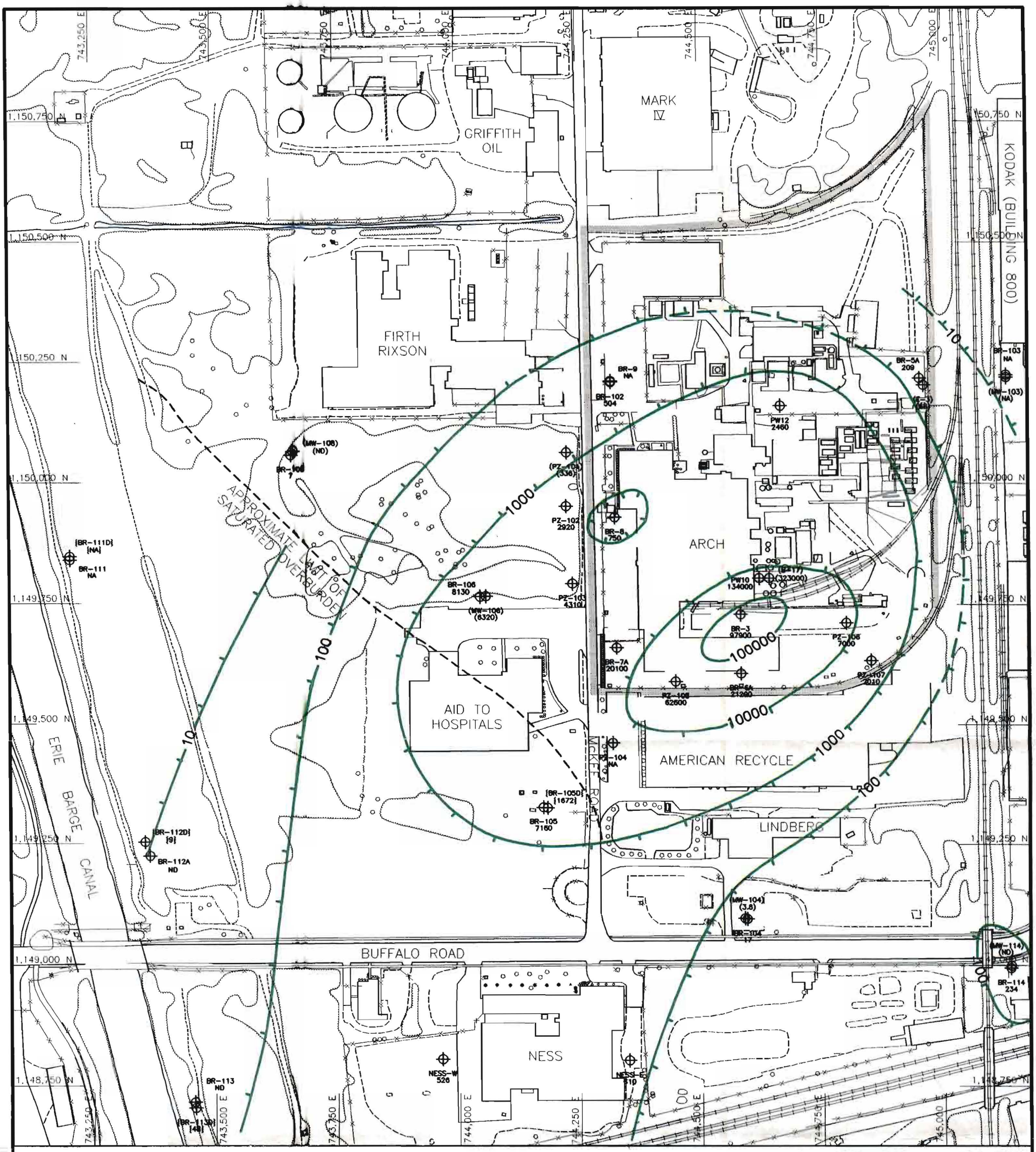
Not to Scale

FIGURE 7

SAMPLE LOCATIONS DOLOMITE PRODUCTS QUARRY

ARCH CHEMICALS
ROCHESTER, NEW YORK

W9908010(d)



LEGEND

- OUTLINE OF ARCH PROPERTY BOUNDARY
- BR-105 1140 — CONCENTRATION AT SAMPLE LOCATION (ug/L)
- {1000} — DEEP BEDROCK WELL
- (1000) — OVERBURDEN WELL
- 1000 — BEDROCK WELL

NOTE:

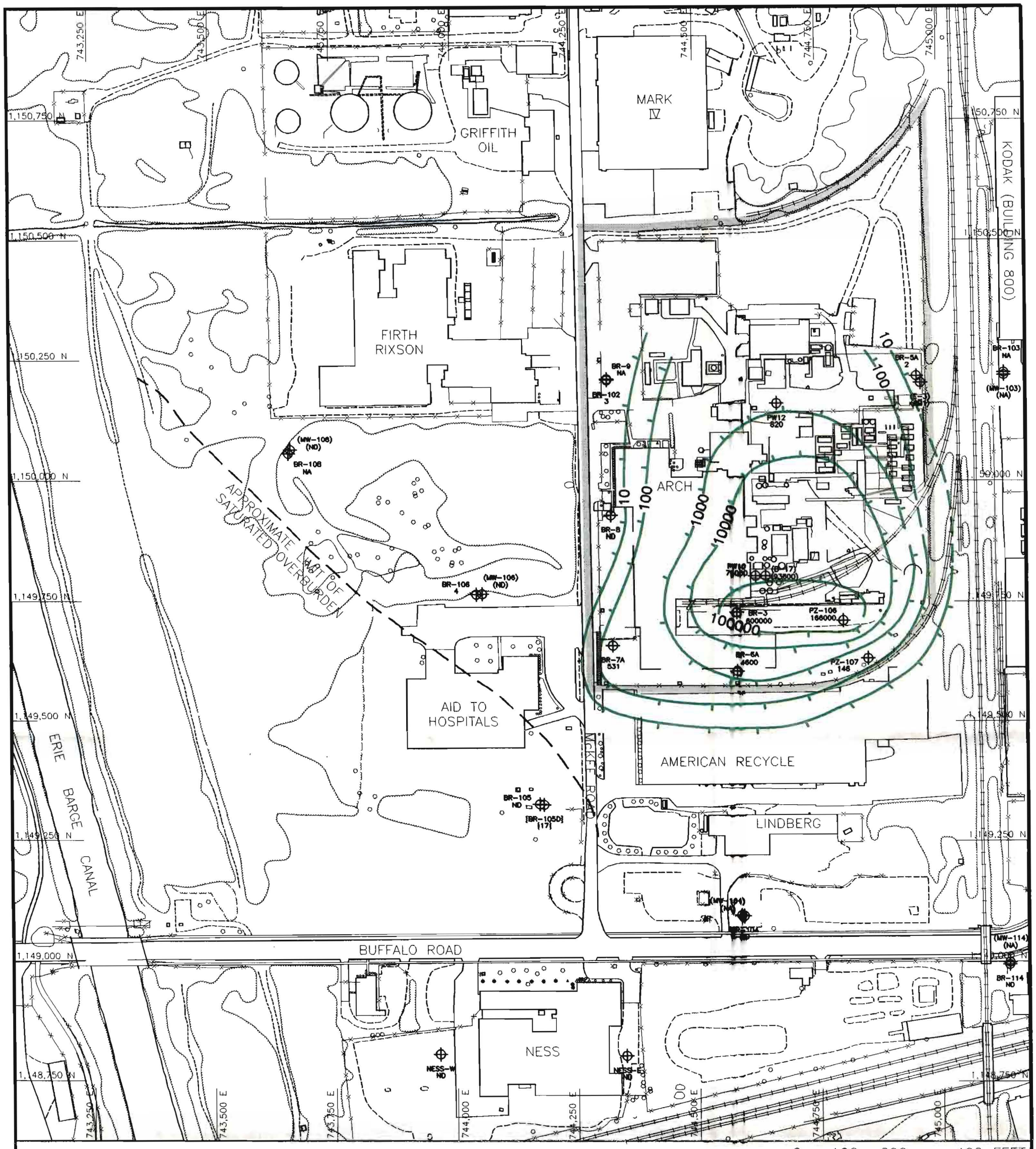
1. SAMPLES COLLECTED NOVEMBER 9 TO DECEMBER 2, 1999.
2. SELECTED CHLOROPYRIDINES CONSIST OF 2,6–DICHLOROPYRIDINE, 2–CHLOROPYRIDINE, AND 3–CHLOROPYRIDINE.

FIGURE 8

NOVEMBER 1999 SELECTED CHLOROPYRIDINE CONCENTRATION CONTOURS (IN BEDROCK GROUNDWATER)

ARCH CHEMICALS
ROCHESTER, N.Y.

J:\7311-52\7311F052.DWG 2-10-00



LEGEND

- OUTLINE OF ARCH PROPERTY BOUNDARY
- PZ-105 540 — CONCENTRATION AT SAMPLE LOCATION (ug/L)
- {1000} — DEEP BEDROCK WELL
- (1000) — OVERBURDEN WELL
- 1000 — BEDROCK WELL

NOTES:

1. SAMPLES COLLECTED NOVEMBER 9 TO DECEMBER 2, 1999.
2. SELECTED VOLATILE ORGANIC COMPOUNDS CONSIST OF CARBON TETRACHLORIDE, CHLOROFORM, METHYLENE CHLORIDE, TETRACHLOROETHENE AND TRICHLOROETHENE.

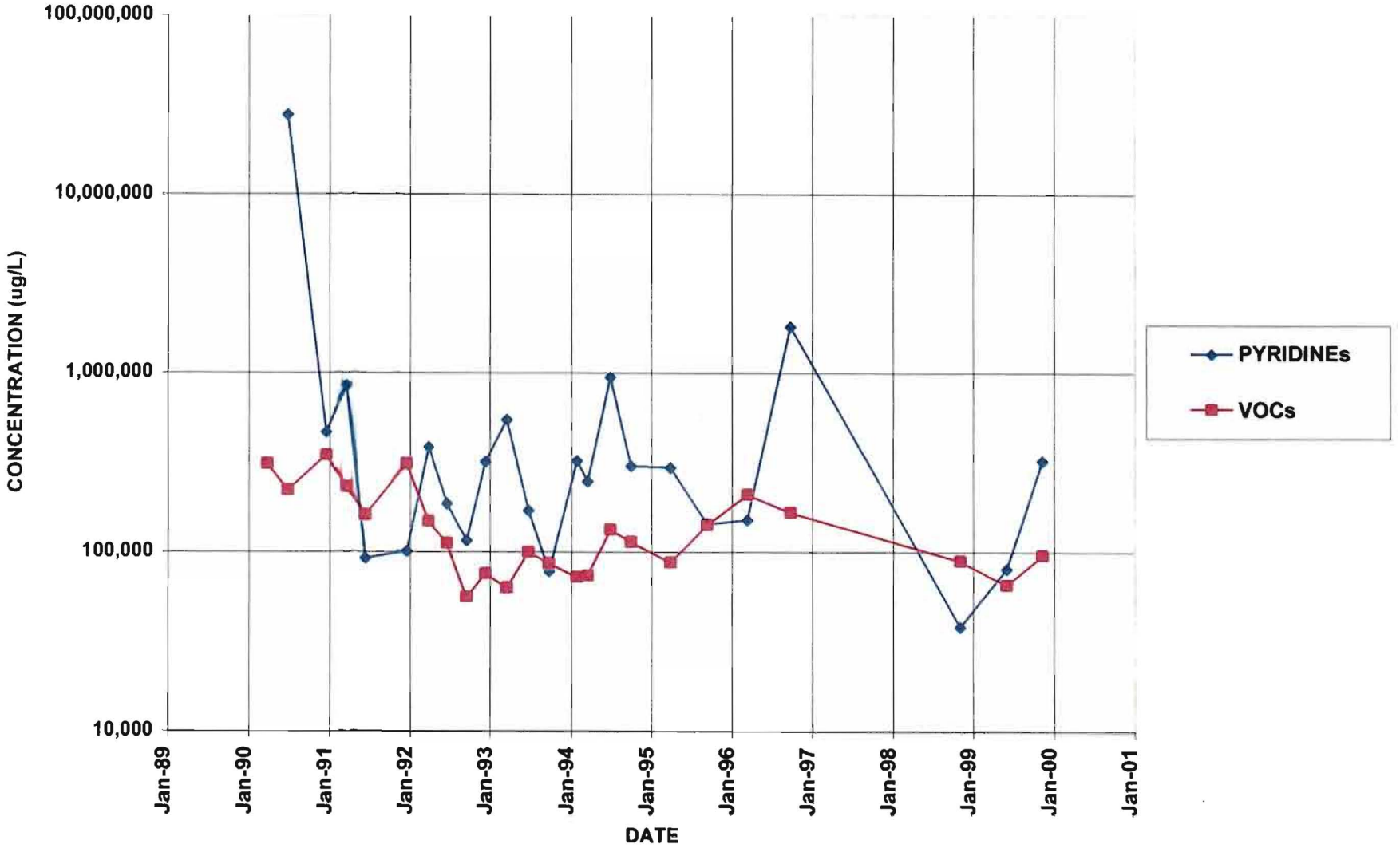
FIGURE 9

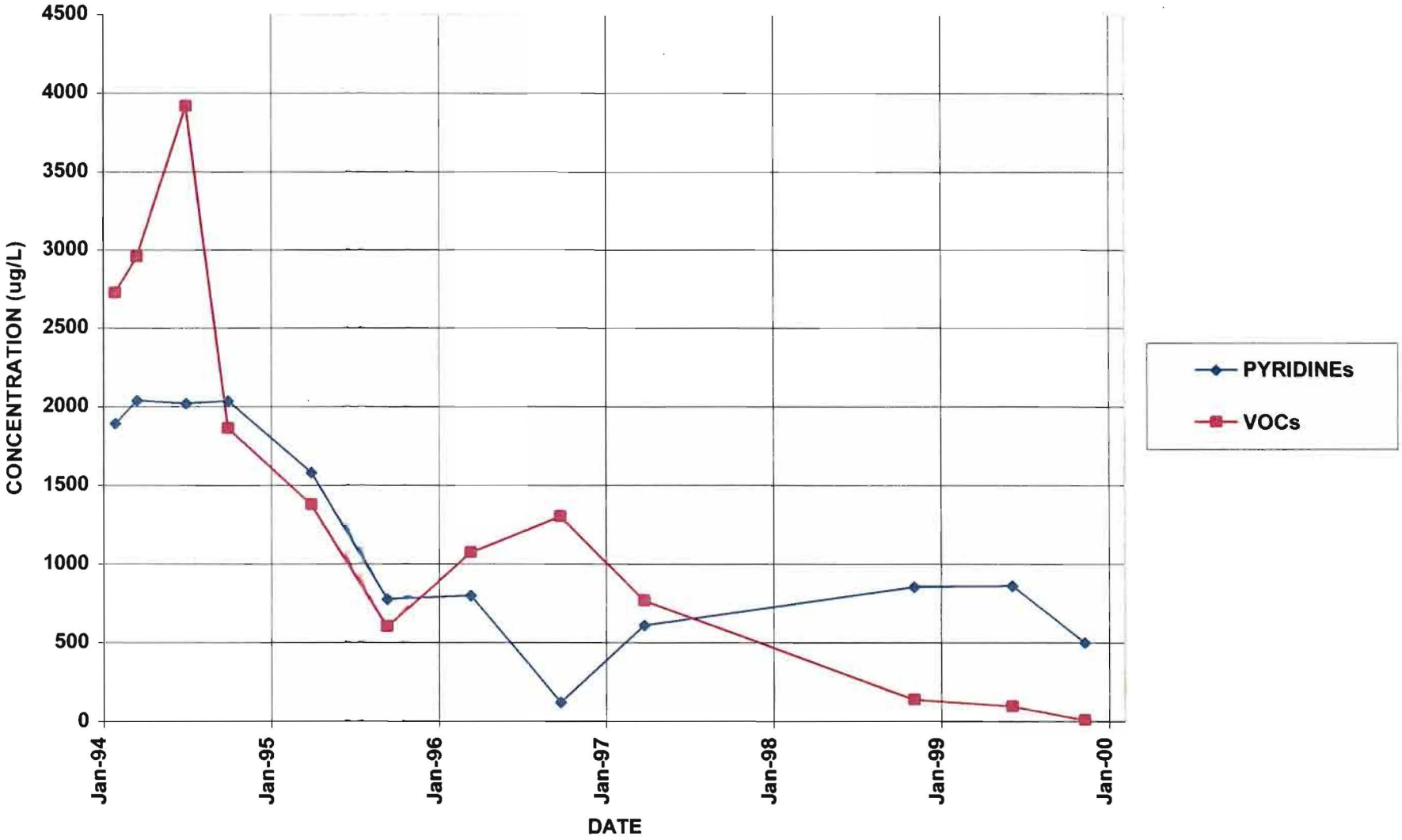
NOVEMBER 1999 SELECTED VOLATILE ORGANIC COMPOUND CONCENTRATION CONTOURS (IN BEDROCK GROUNDWATER)

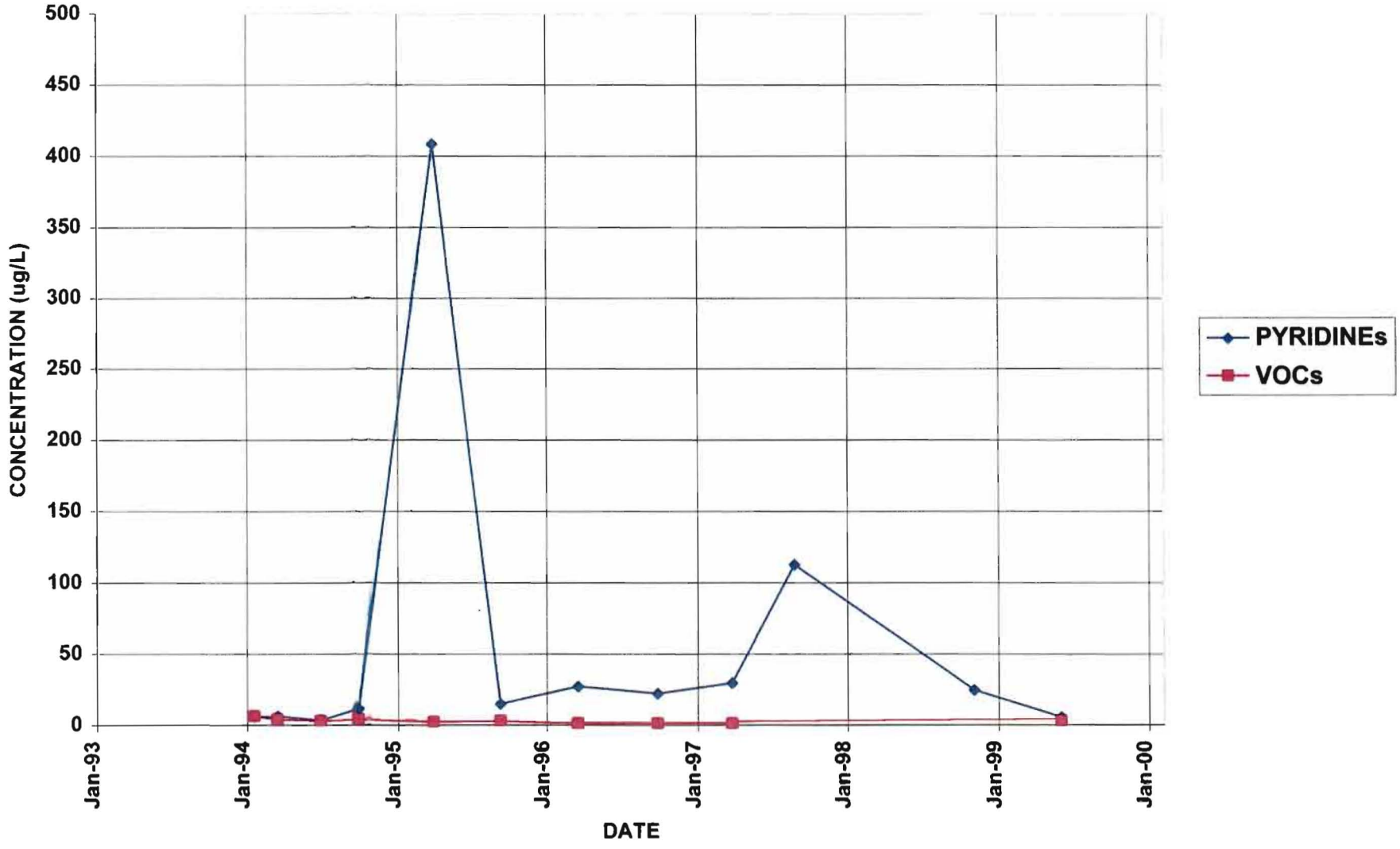
ARCH CHEMICALS
ROCHESTER, N.Y.

J:\7311-52\7311F050.DWG 2-29-00

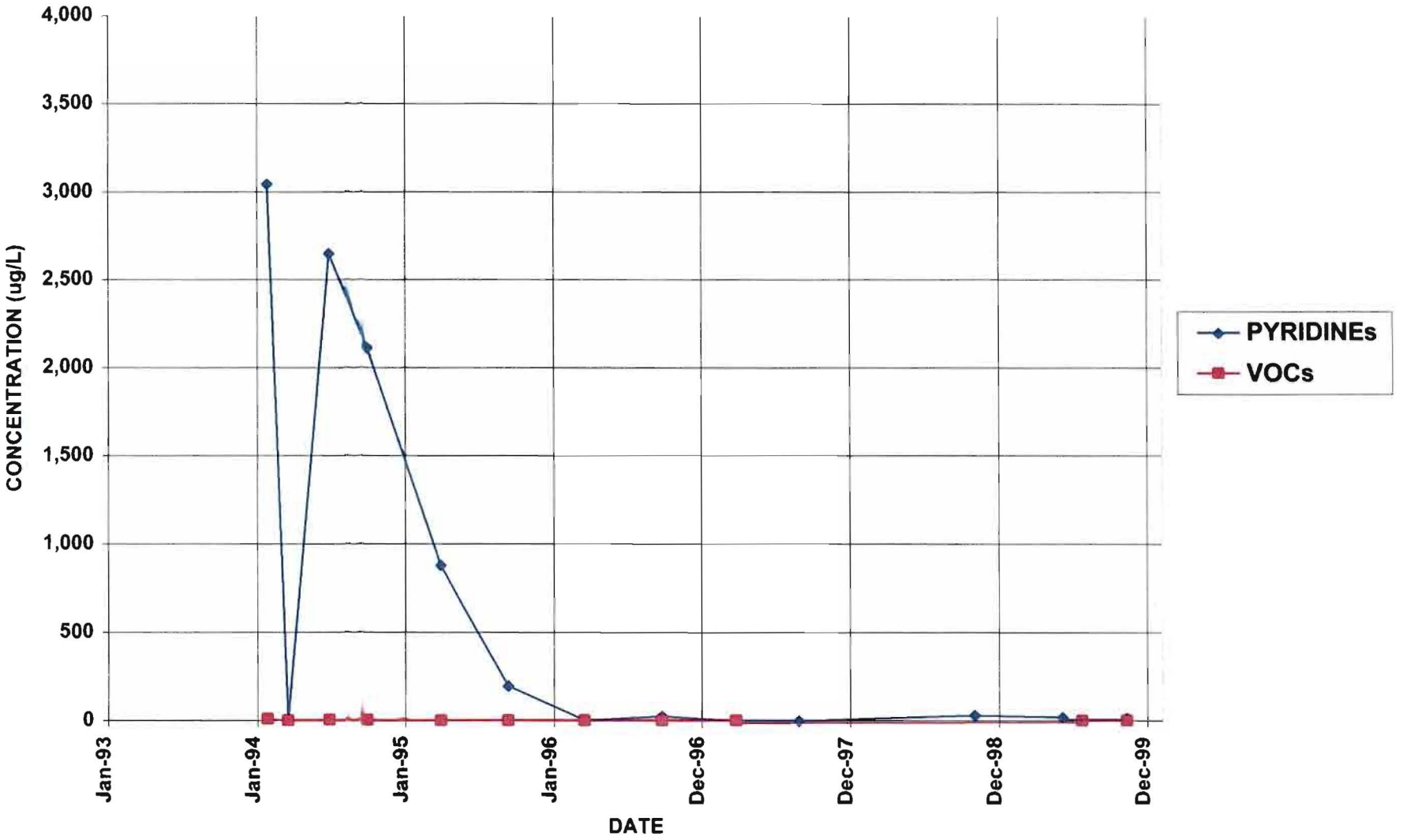
B-17

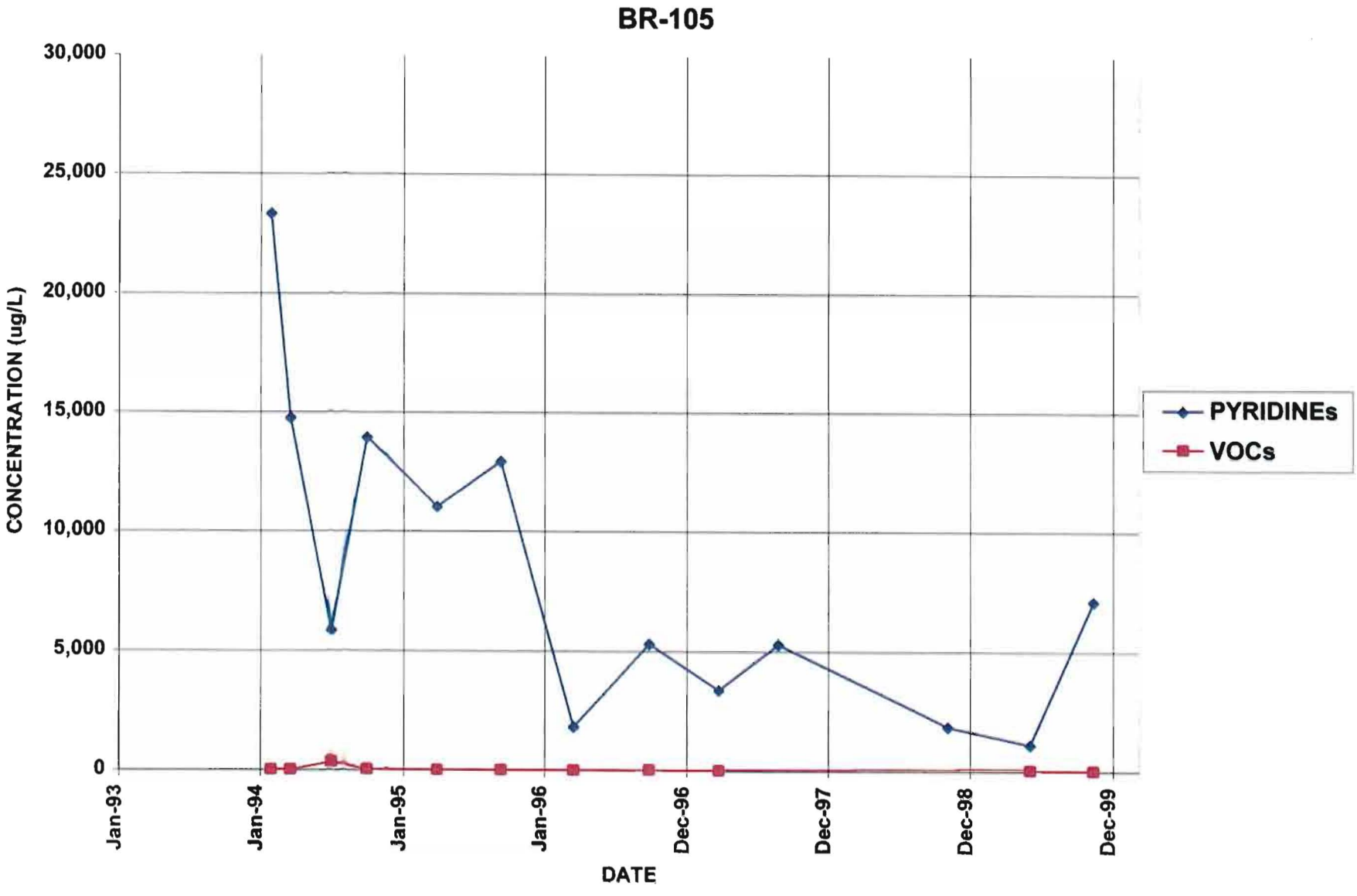

100,000,000
10,000,000
1,000,000
100,000
10,000
CONCENTRATION (ug/L)
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
DATE
PYRIDINEs
VOCs

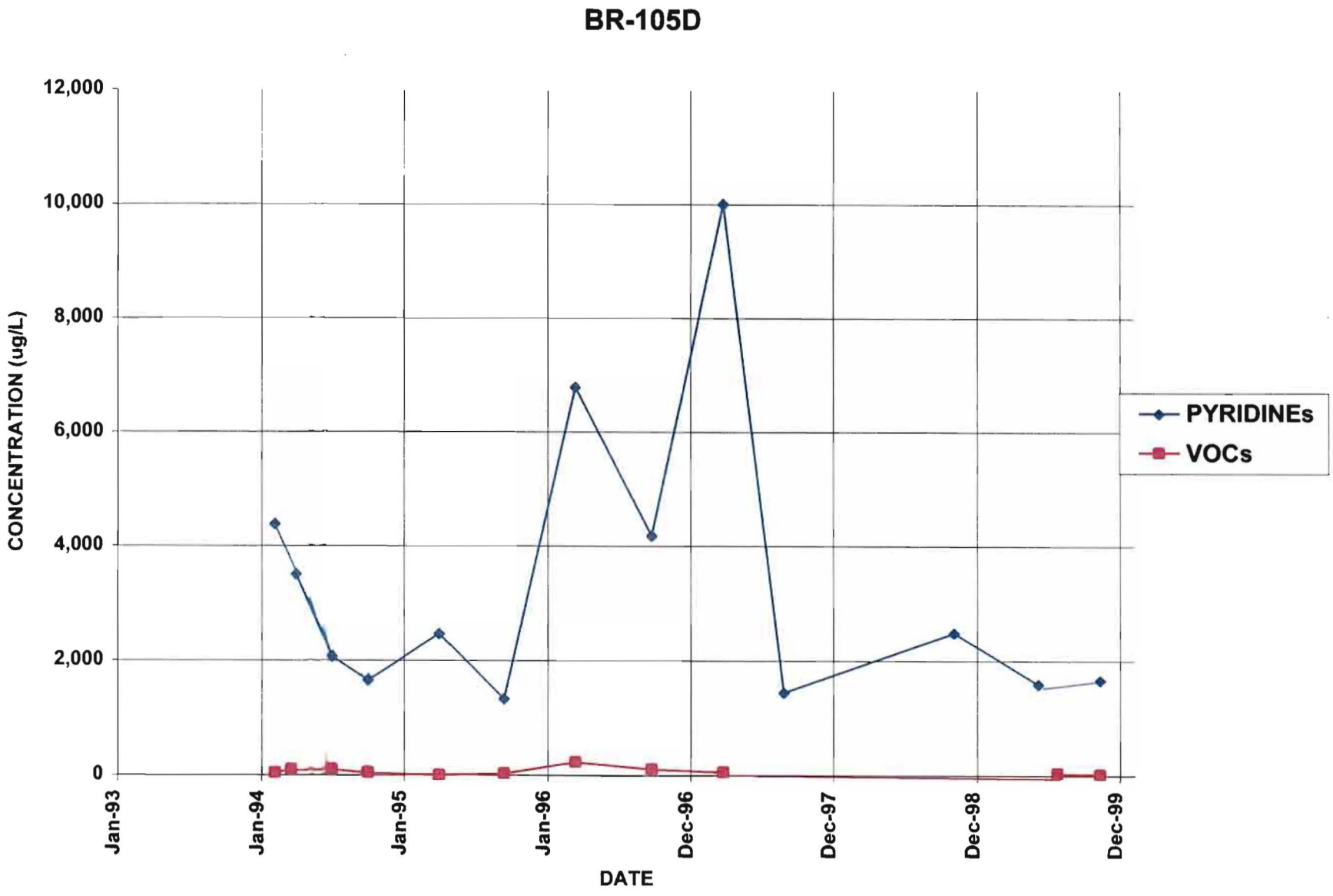

BR-102
4500
4000
3500
3000
2500
2000
1500
1000
500
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

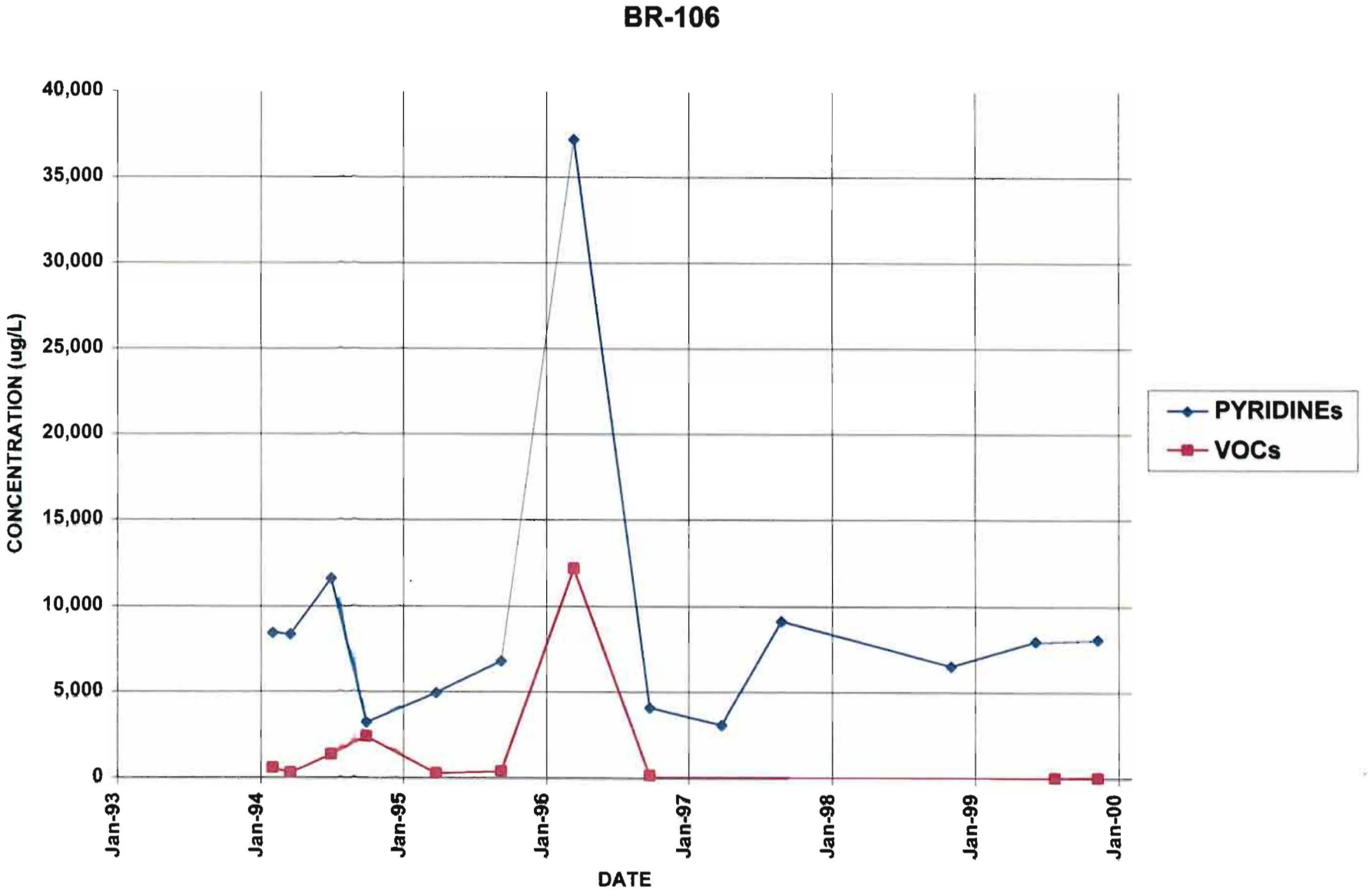

BR-103
CONCENTRATION (ug/L)
500
450
400
350
300
250
200
150
100
50
0
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

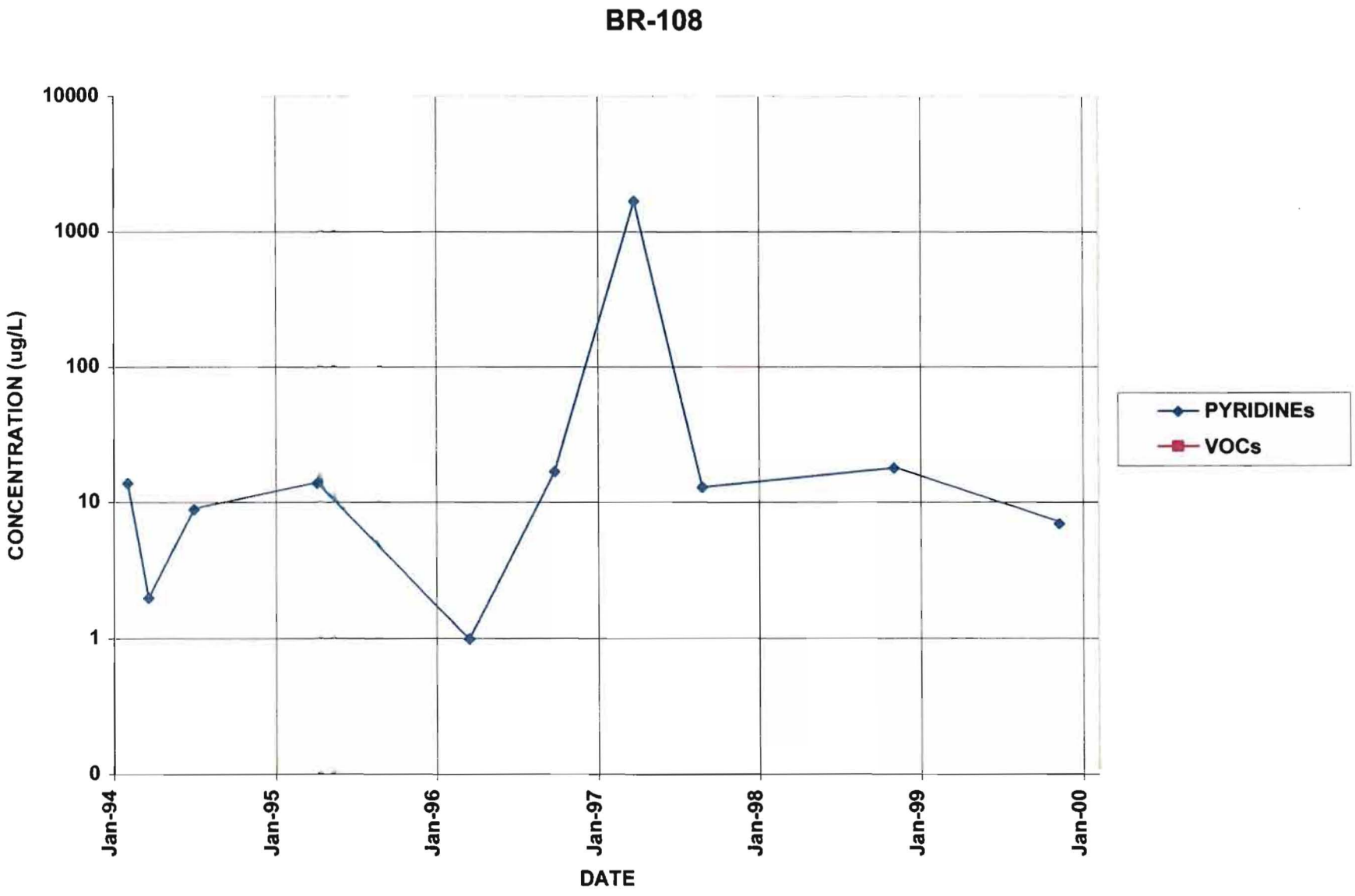
BR-104

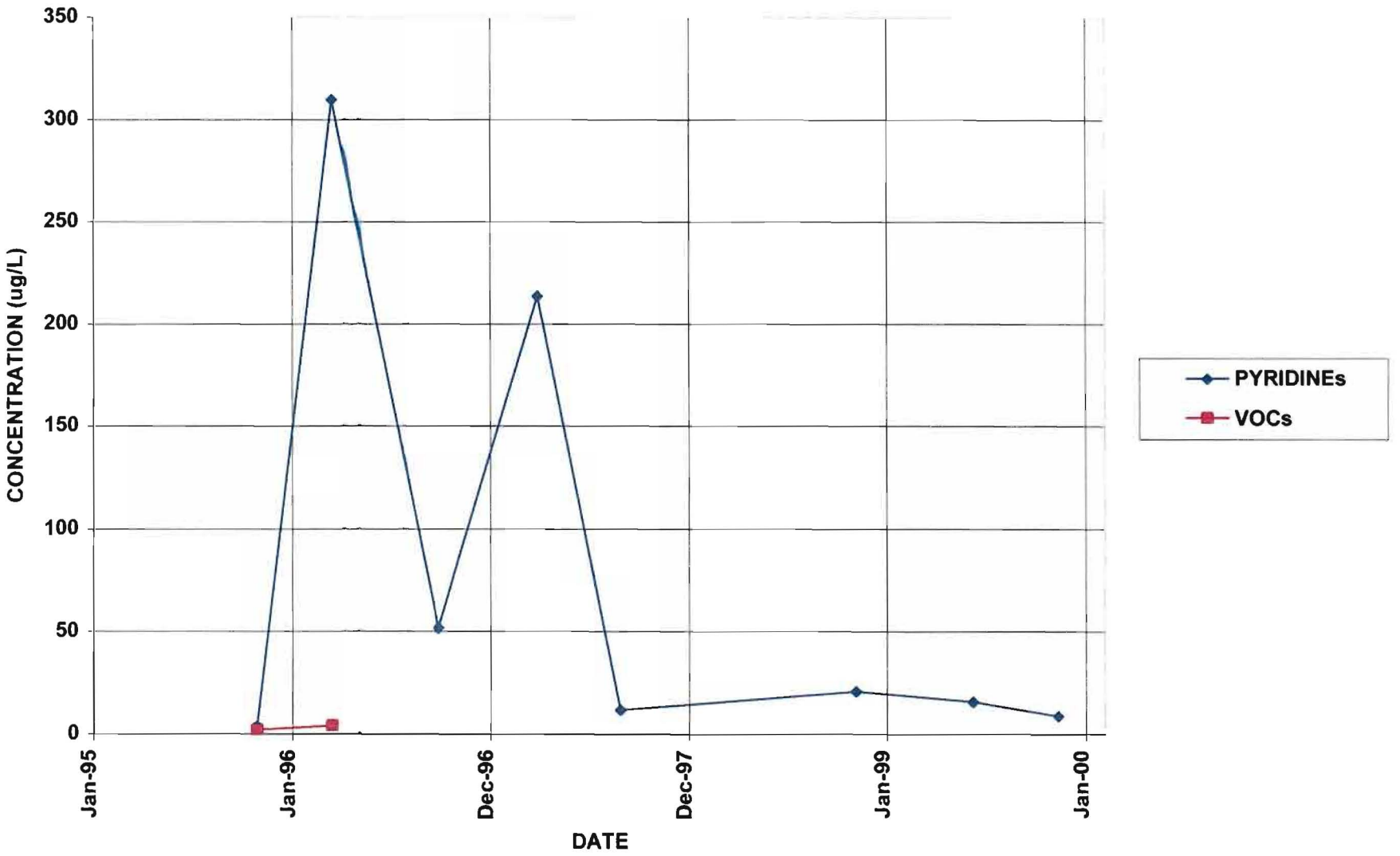

4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
DATE
PYRIDINEs
VOCs

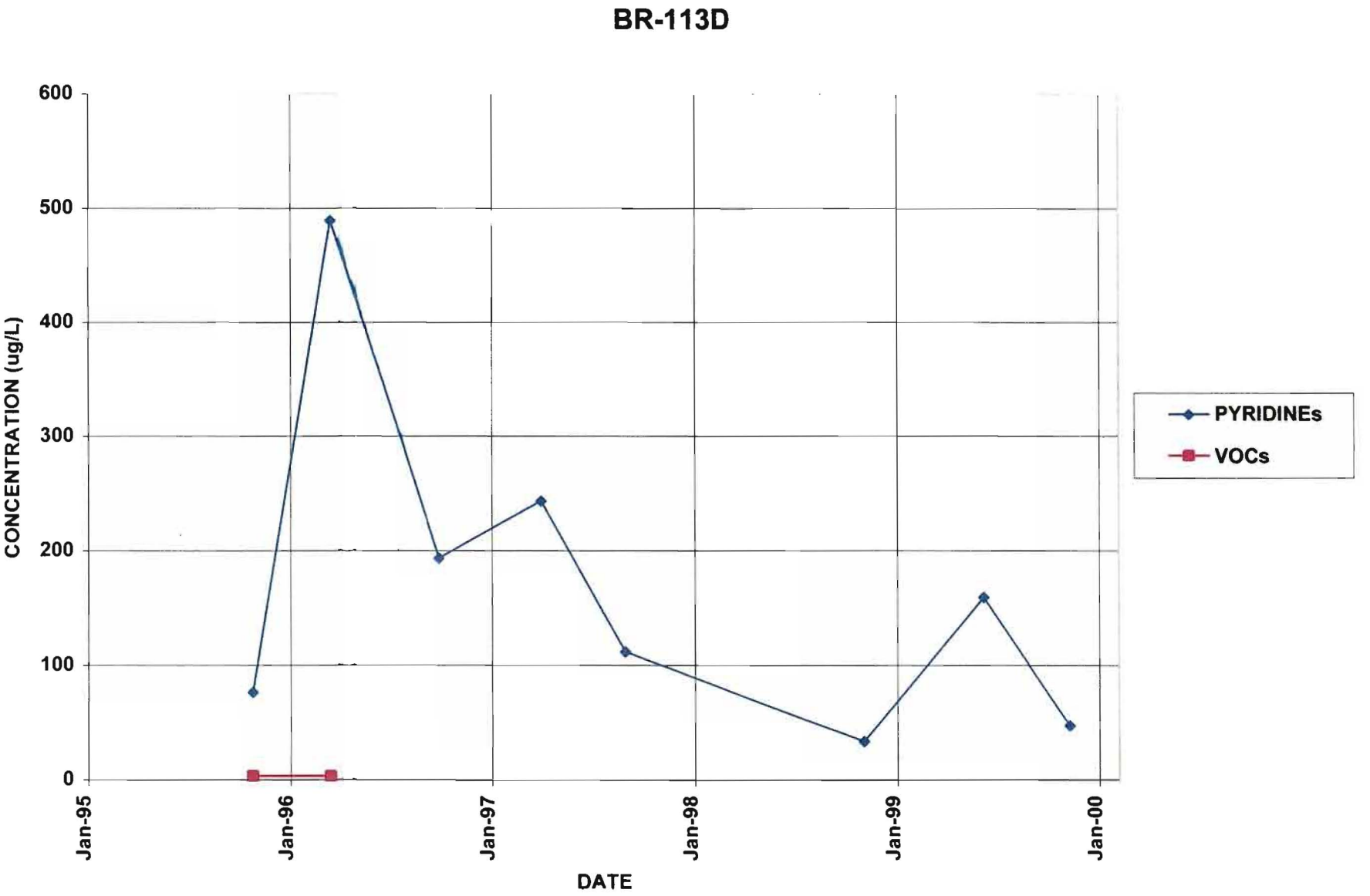

BR-105
30,000
25,000
20,000
15,000
10,000
5,000
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
DATE
PYRIDINEs
VOCs


BR-105D
12,000
10,000
8,000
6,000
4,000
2,000
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
DATE
PYRIDINEs
VOCs

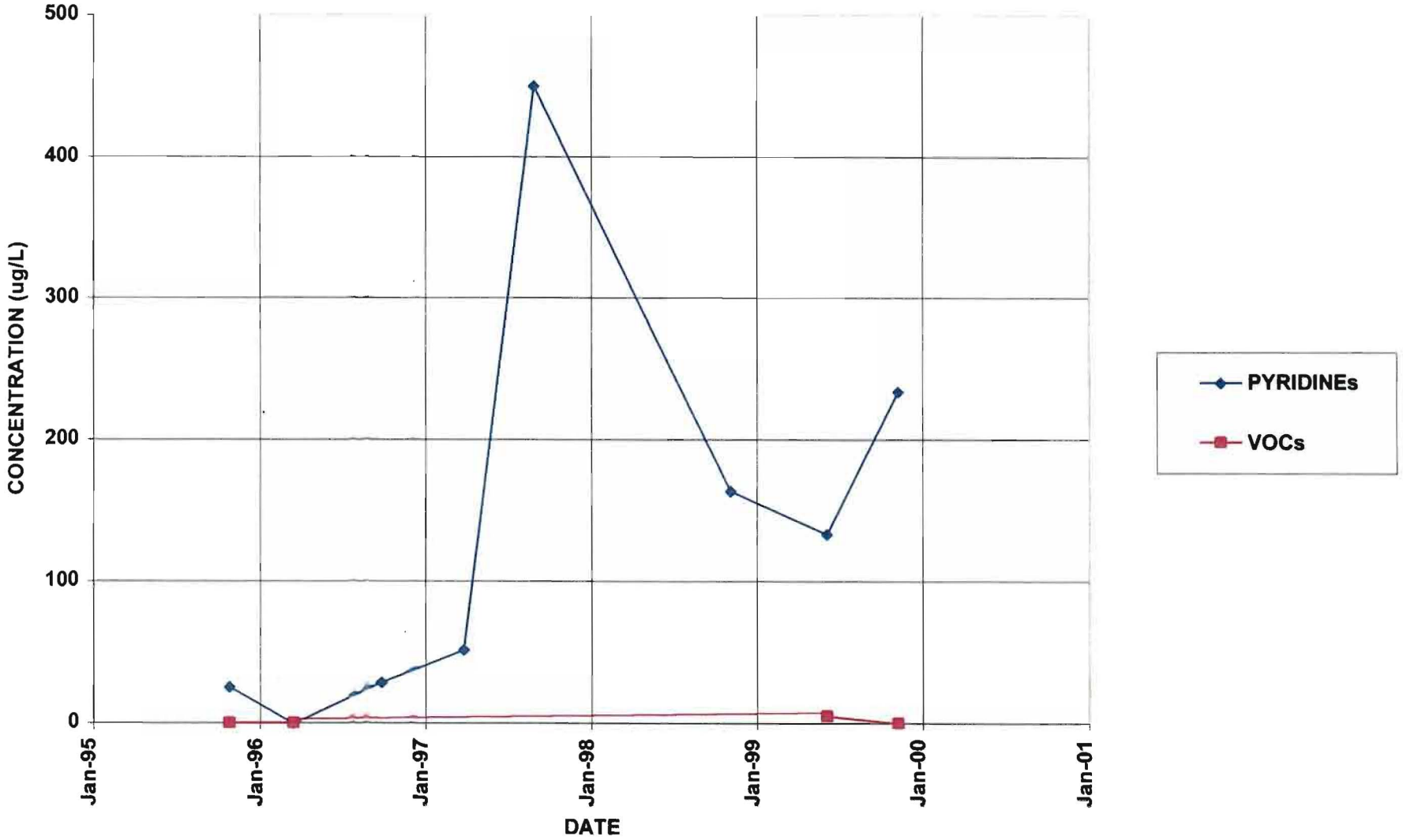

BR-106
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

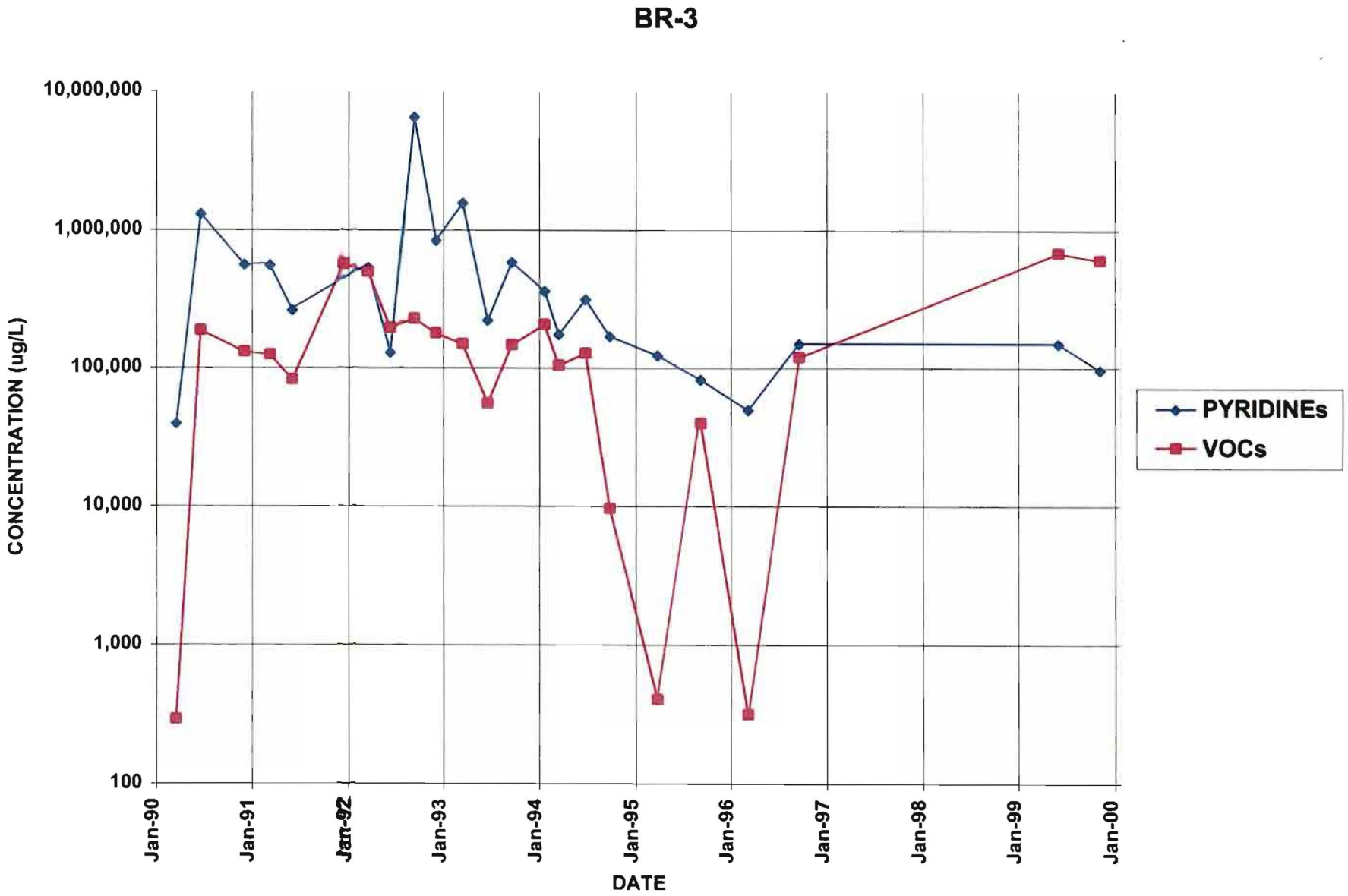

BR-108
10000
1000
100
10
1
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

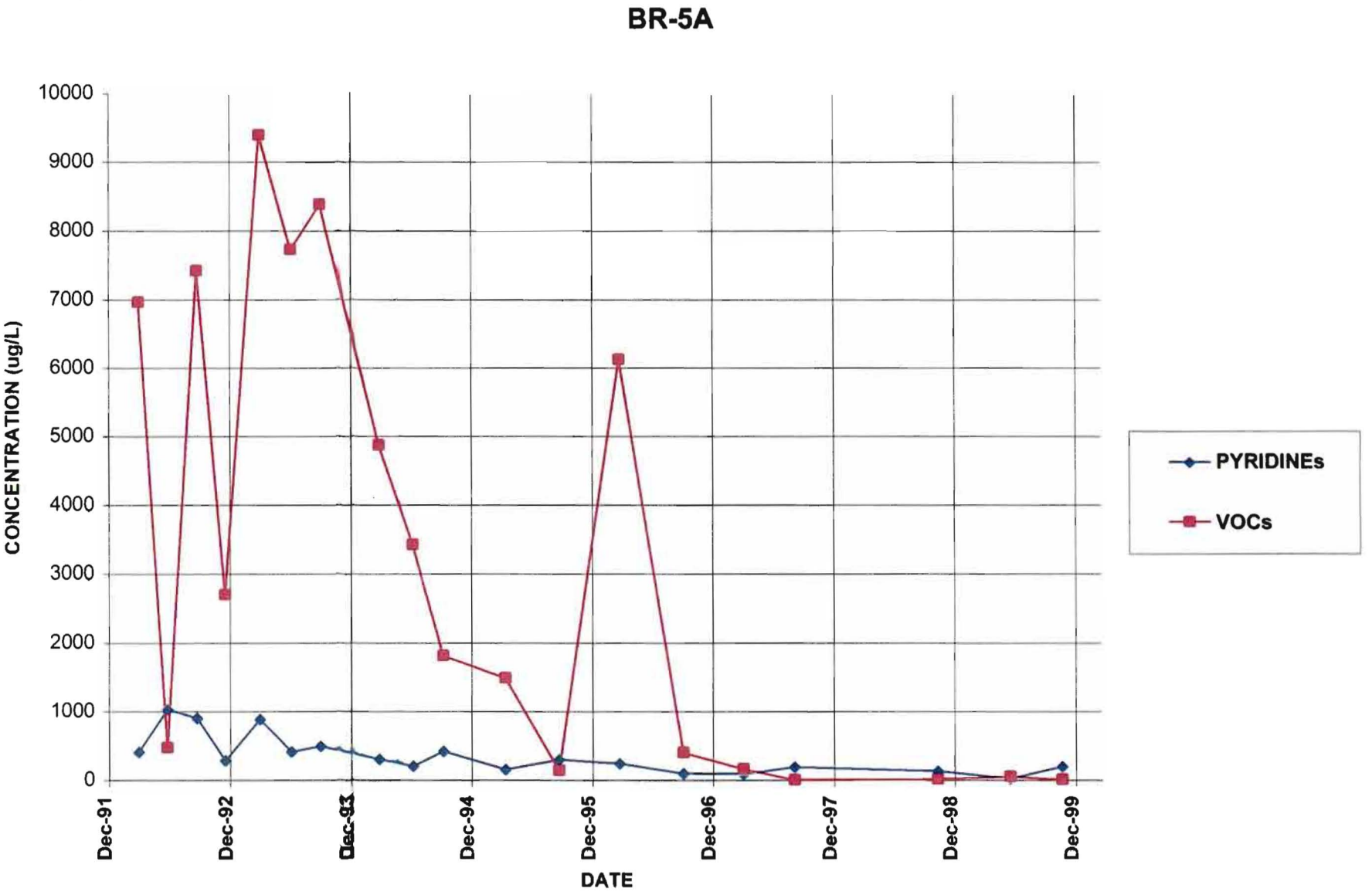

BR-112D
CONCENTRATION (ug/L)
350
300
250
200
150
100
50
0
Jan-95
Jan-96
Dec-96
Dec-97
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

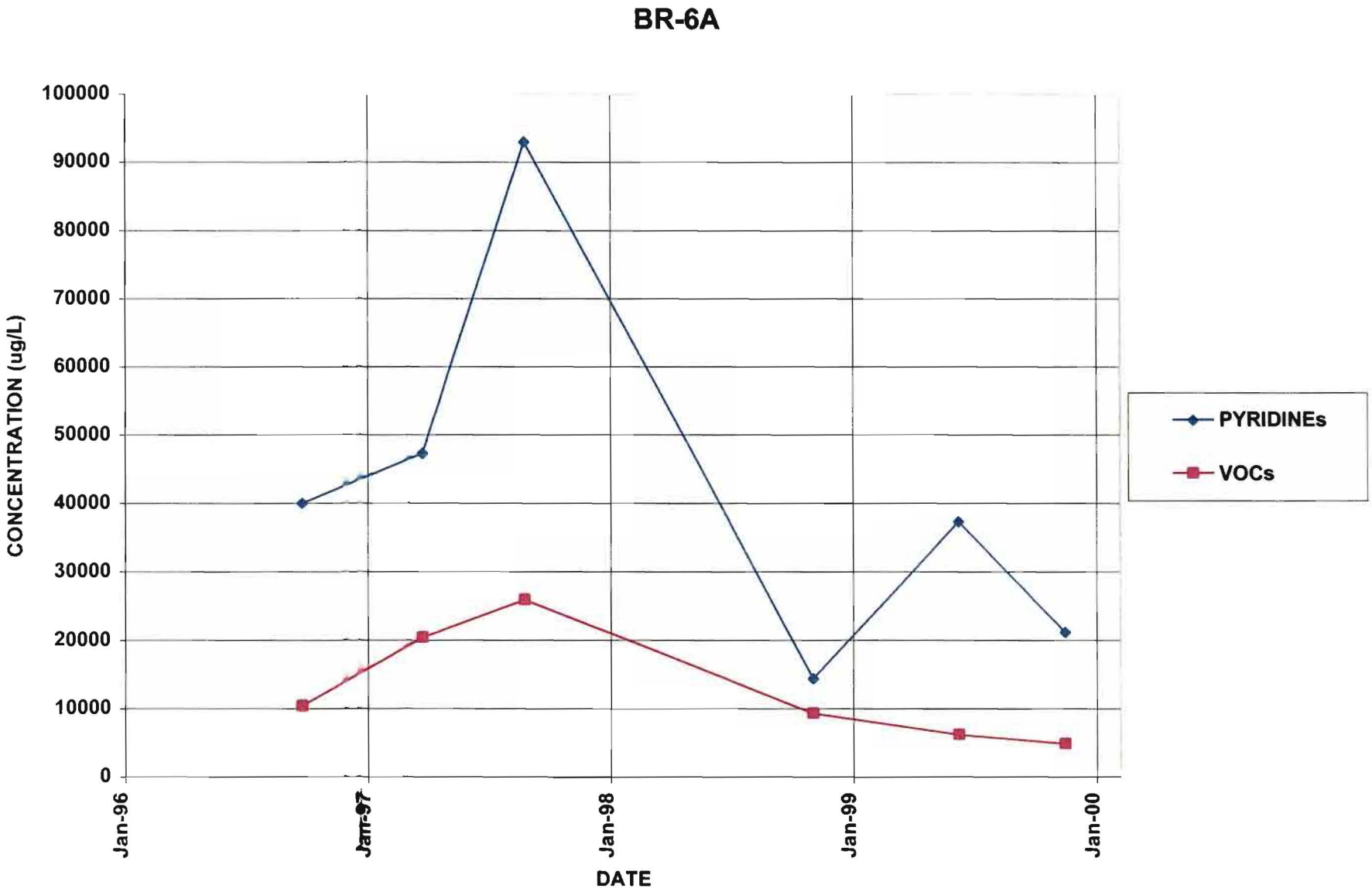

BR-113D
600
500
400
300
200
100
0
CONCENTRATION (ug/L)
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

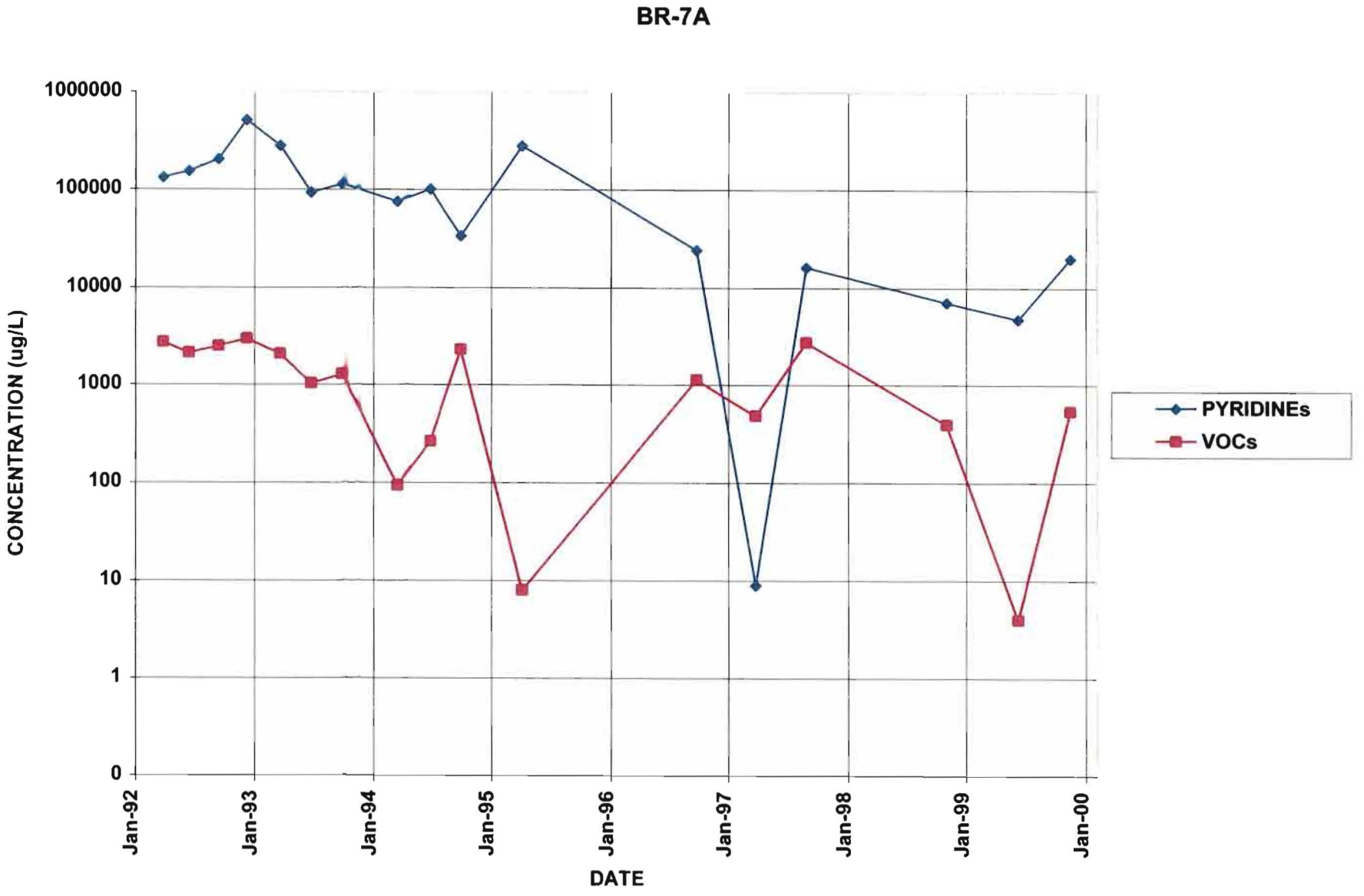
BR-114


500
400
300
200
100
0
CONCENTRATION (ug/L)
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
DATE
PYRIDINEs
VOCs

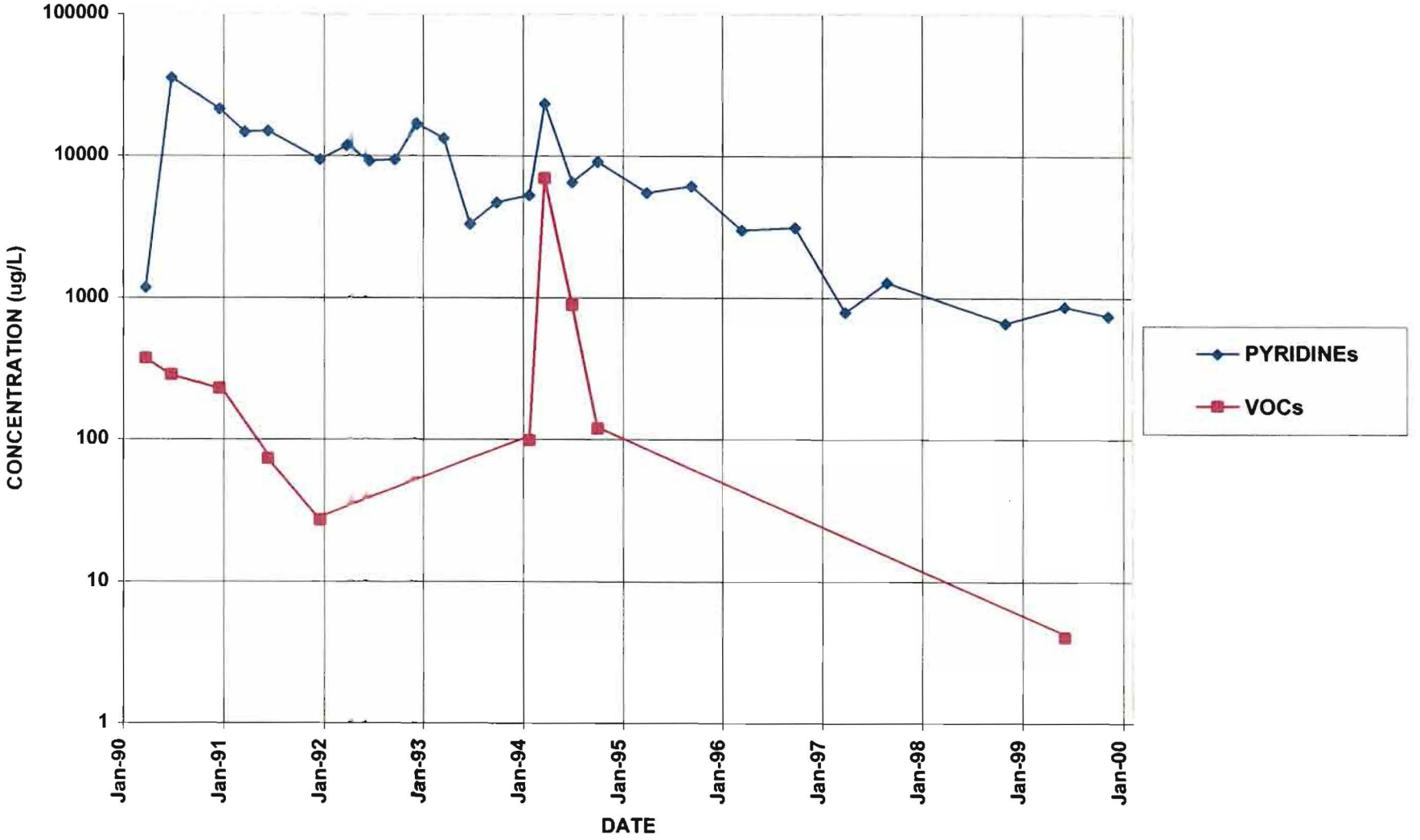

BR-3
10,000,000
1,000,000
100,000
10,000
1,000
100
CONCENTRATION (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

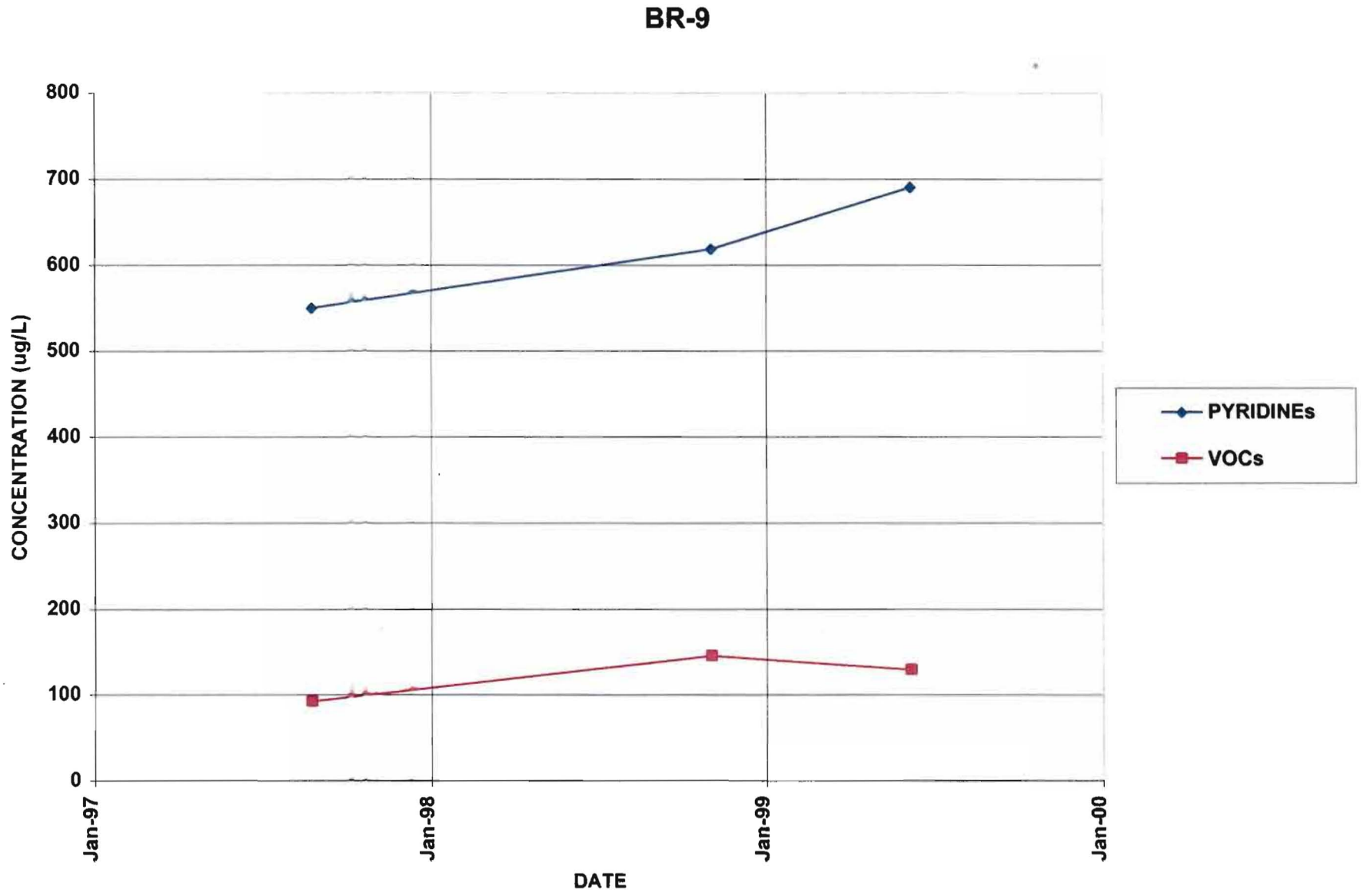

BR-5A
CONCENTRATION (ug/L)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Dec-91
Dec-92
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
DATE
PYRIDINEs
VOCs

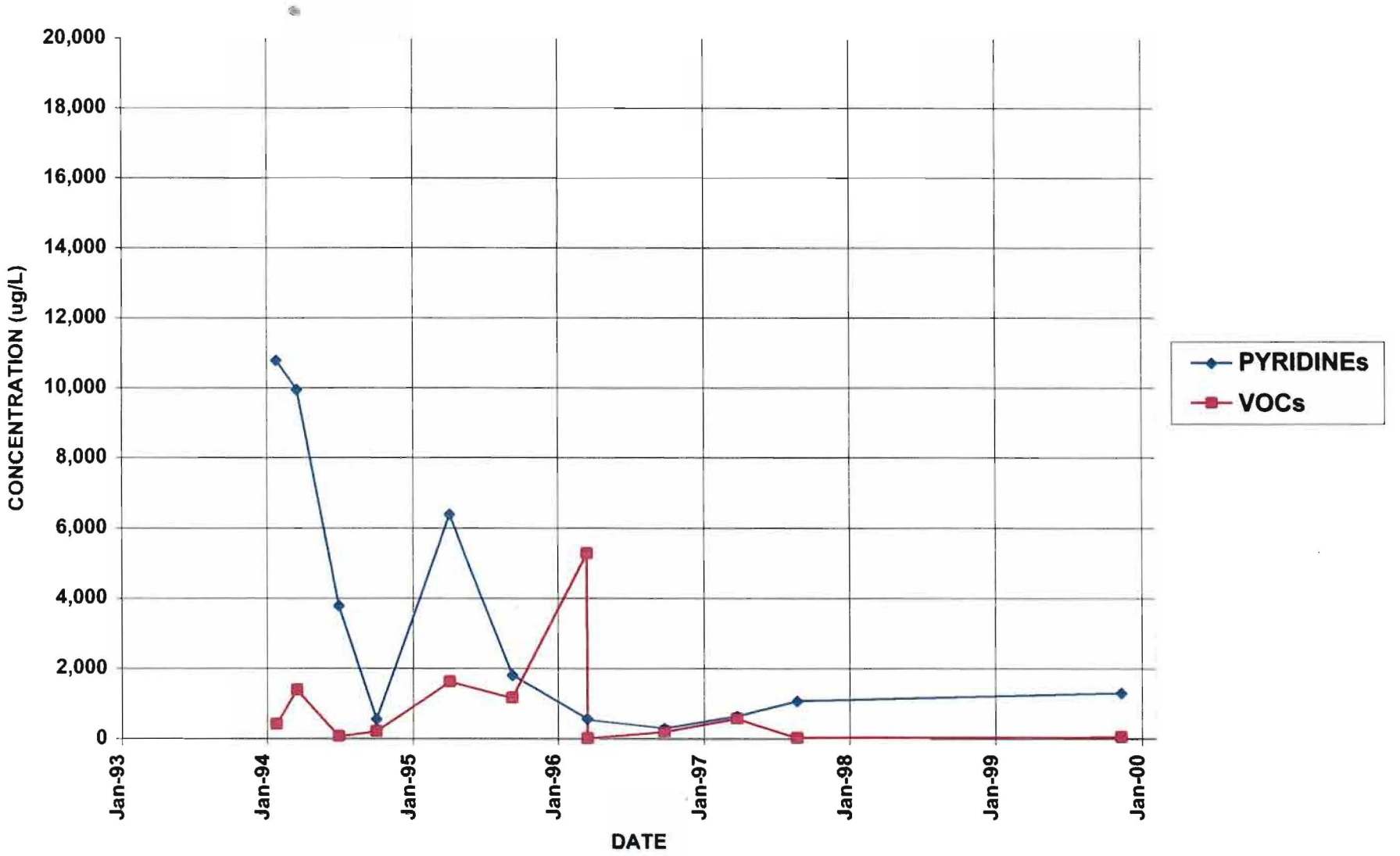

BR-6A
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
CONCENTRATION (ug/L)
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs


BR-7A
1000000
100000
10000
1000
100
10
1
0
CONCENTRATION (ug/L)
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

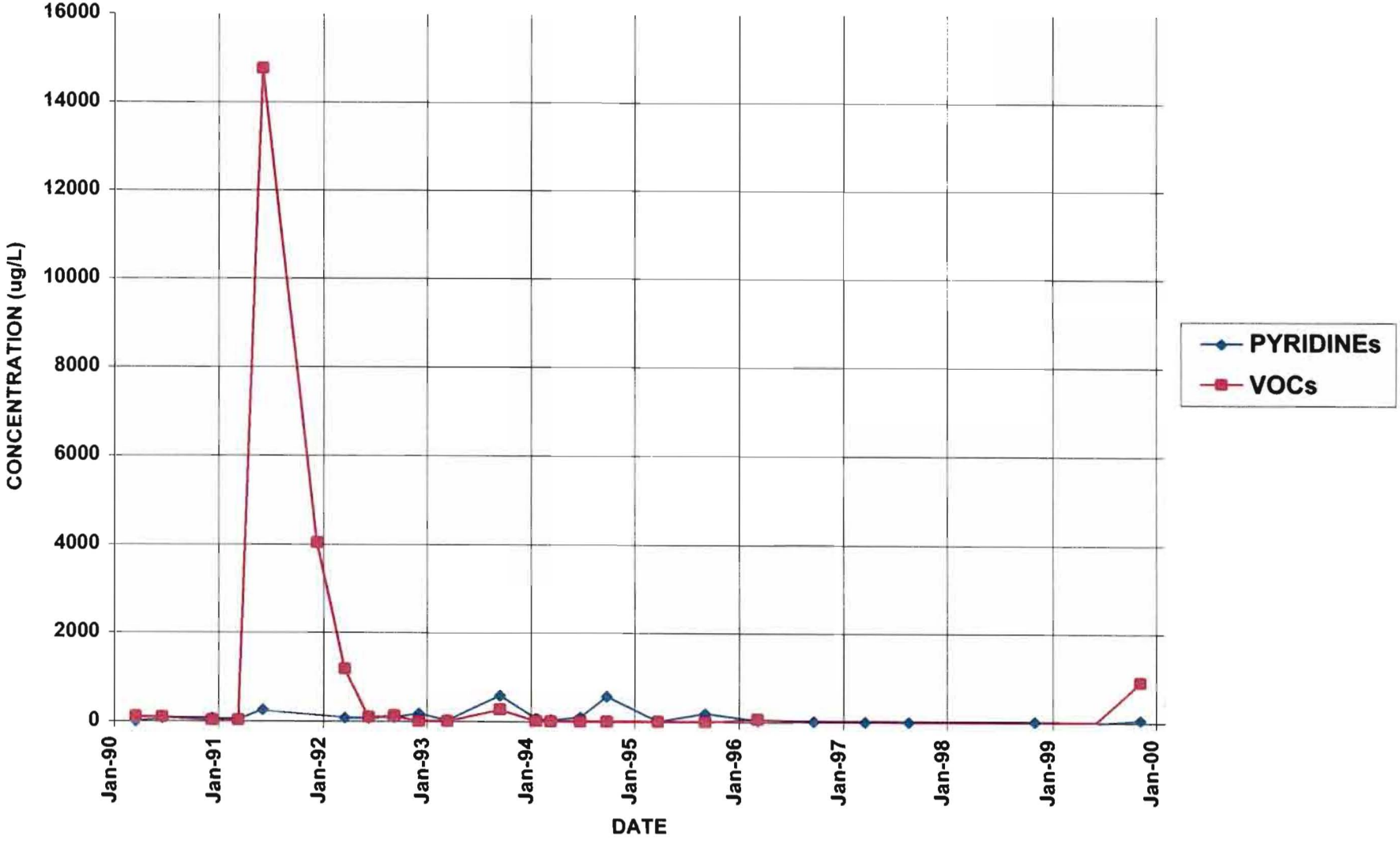
BR-8


100000
10000
1000
100
10
1
CONCENTRATION (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

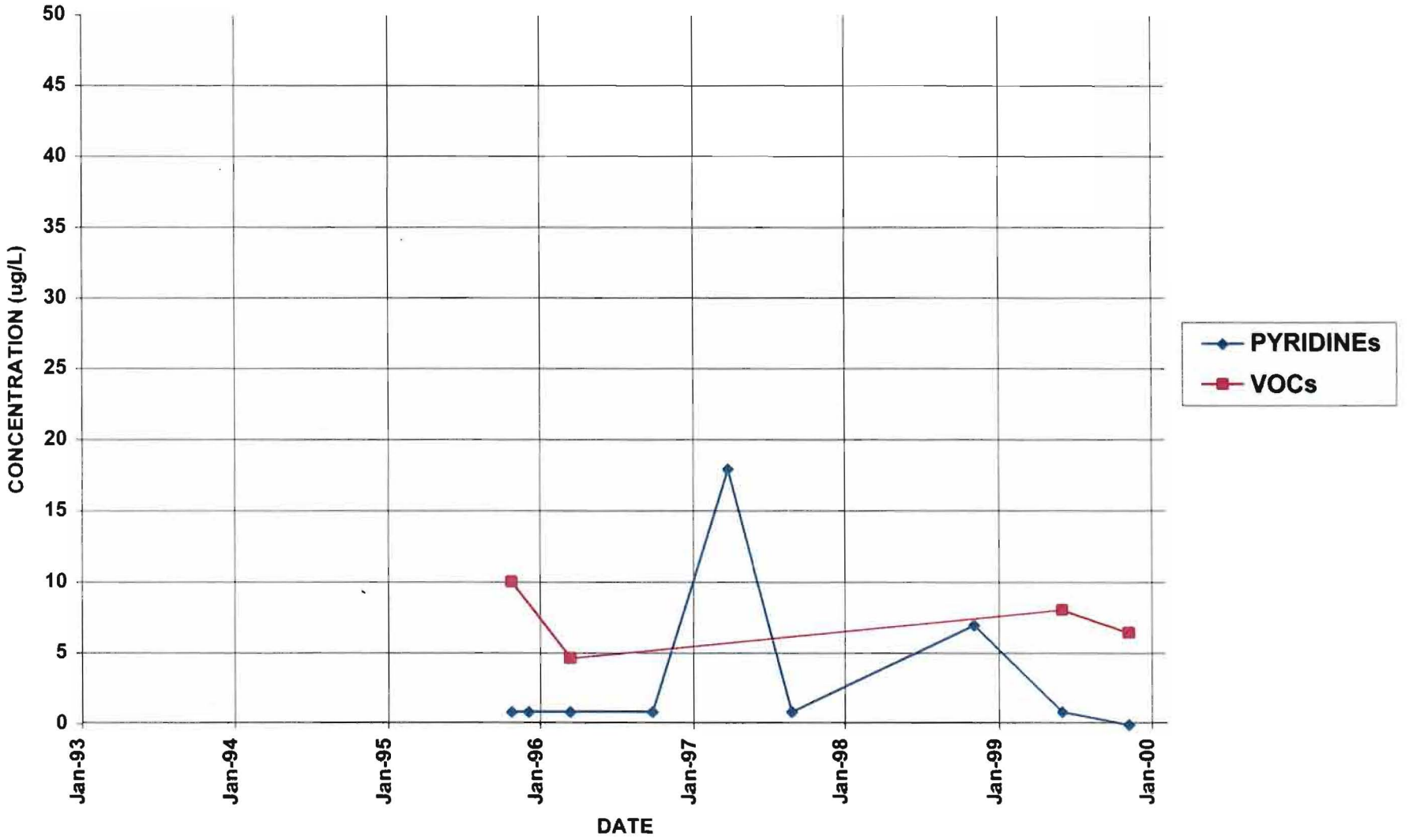

BR-9
800
700
600
500
400
300
200
100
0
CONCENTRATION (ug/L)
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

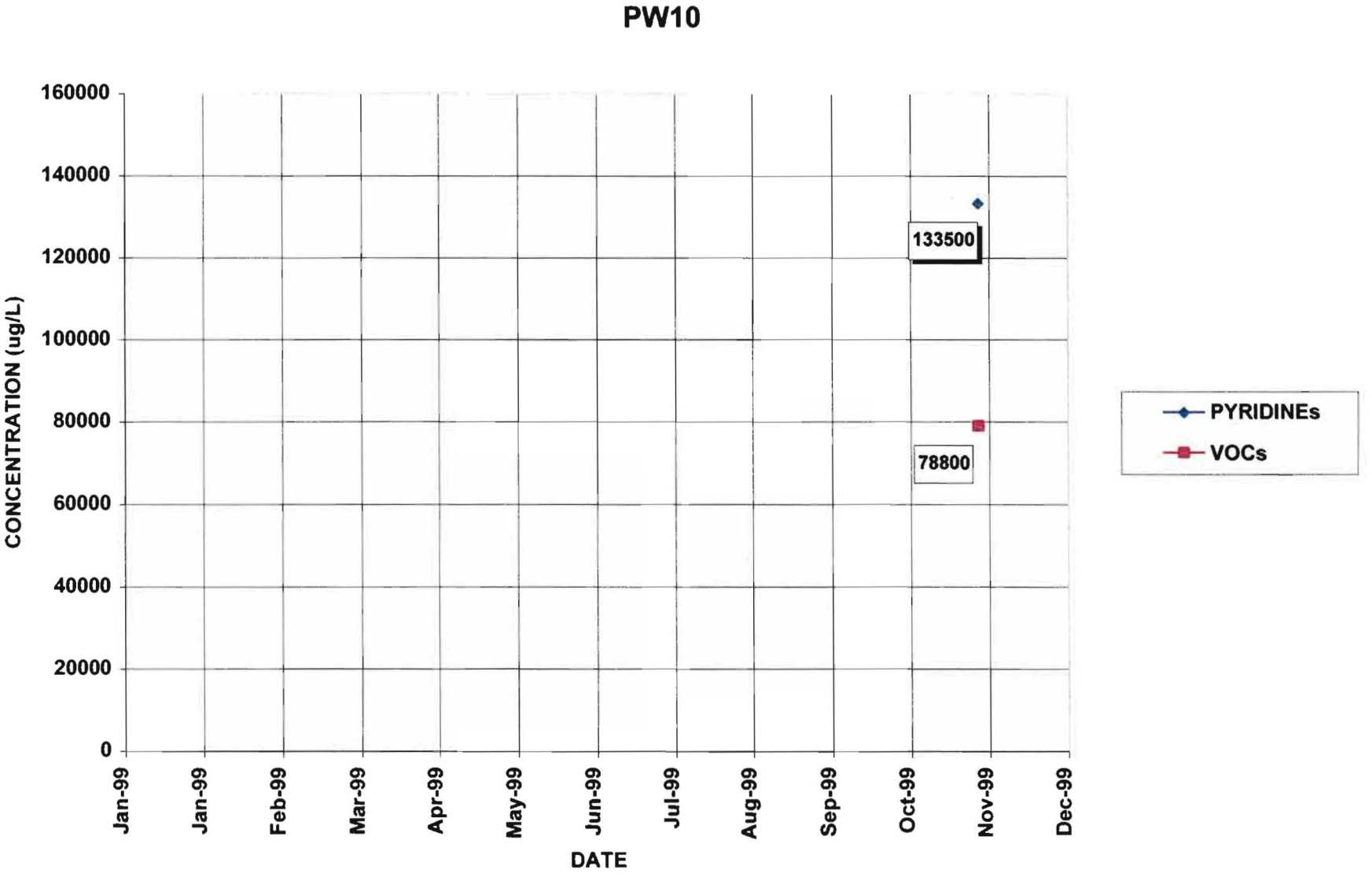

E-1
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

E-3

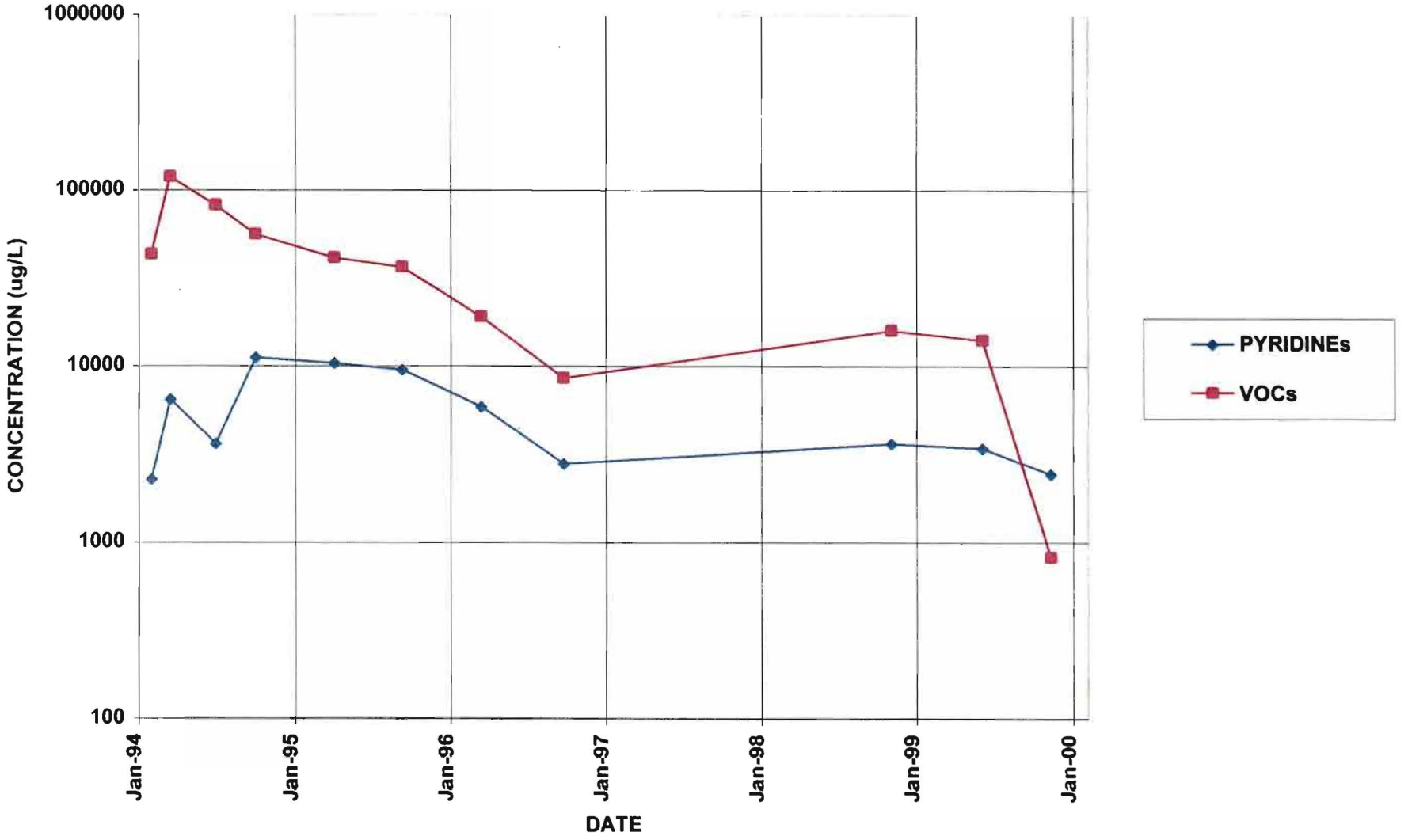

16000
14000
12000
10000
8000
6000
4000
2000
0
CONCENTRATION (ug/L)
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

MW-114

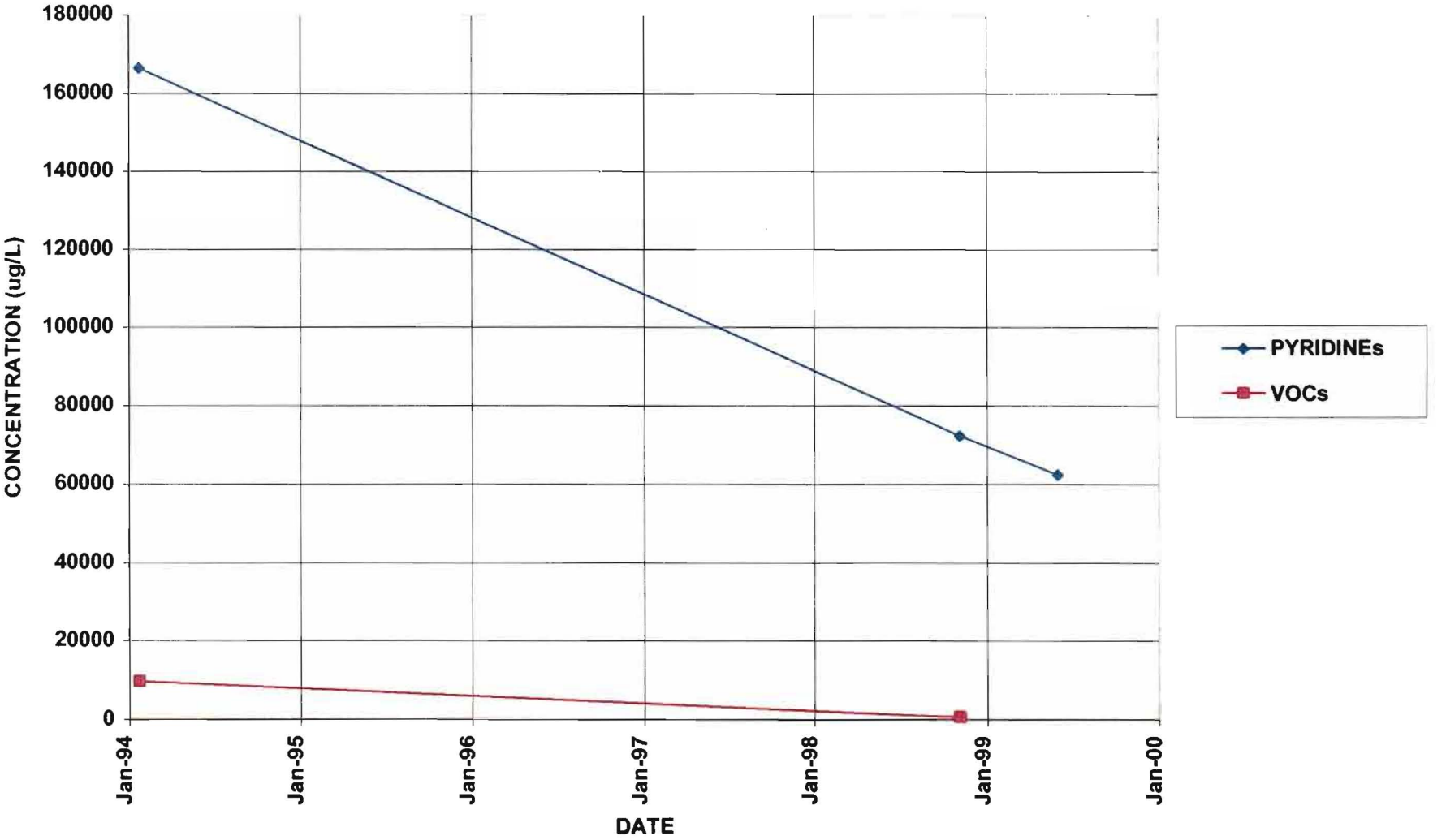

50
45
40
35
30
25
20
15
10
5
0
CONCENTRATION (ug/L)
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs


PW10
160000
140000
120000
100000
80000
60000
40000
20000
0
CONCENTRATION (ug/L)
133500
78800
PYRIDINEs
VOCs
Jan-99
Jan-99
Feb-99
Mar-99
Apr-99
May-99
Jun-99
Jul-99
Aug-99
Sep-99
Oct-99
Nov-99
Dec-99
DATE

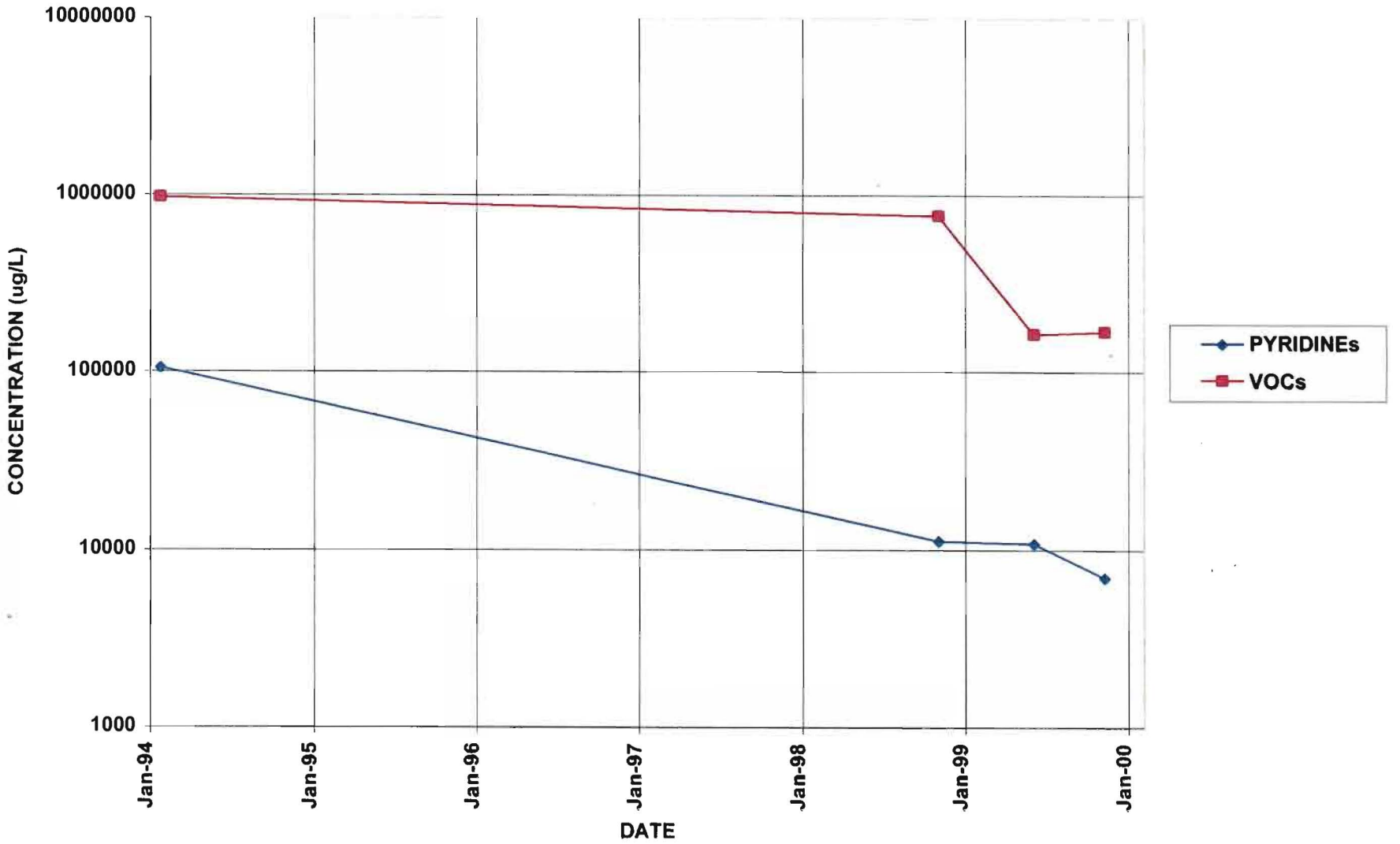
PW12 (Formerly BR-101)

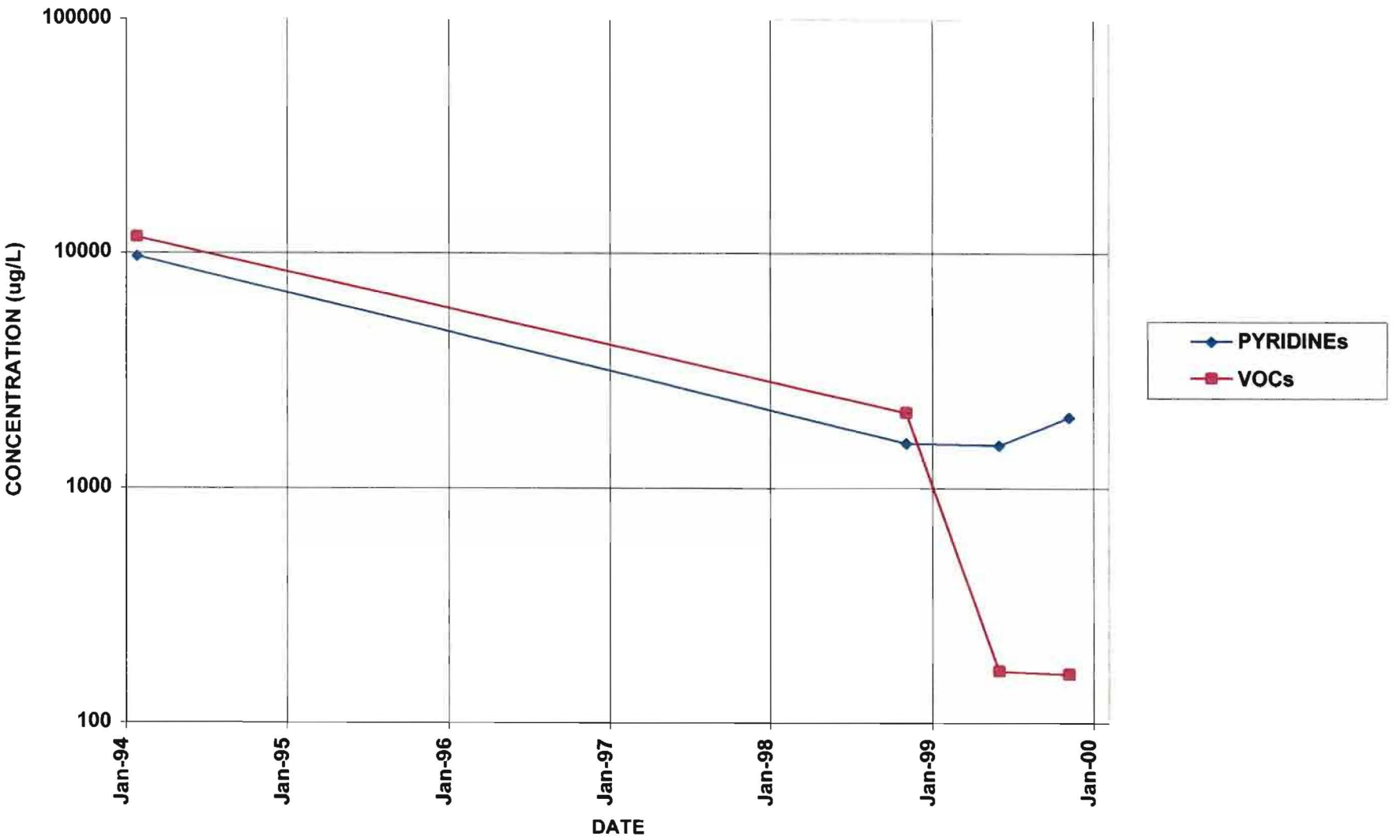


PZ-105

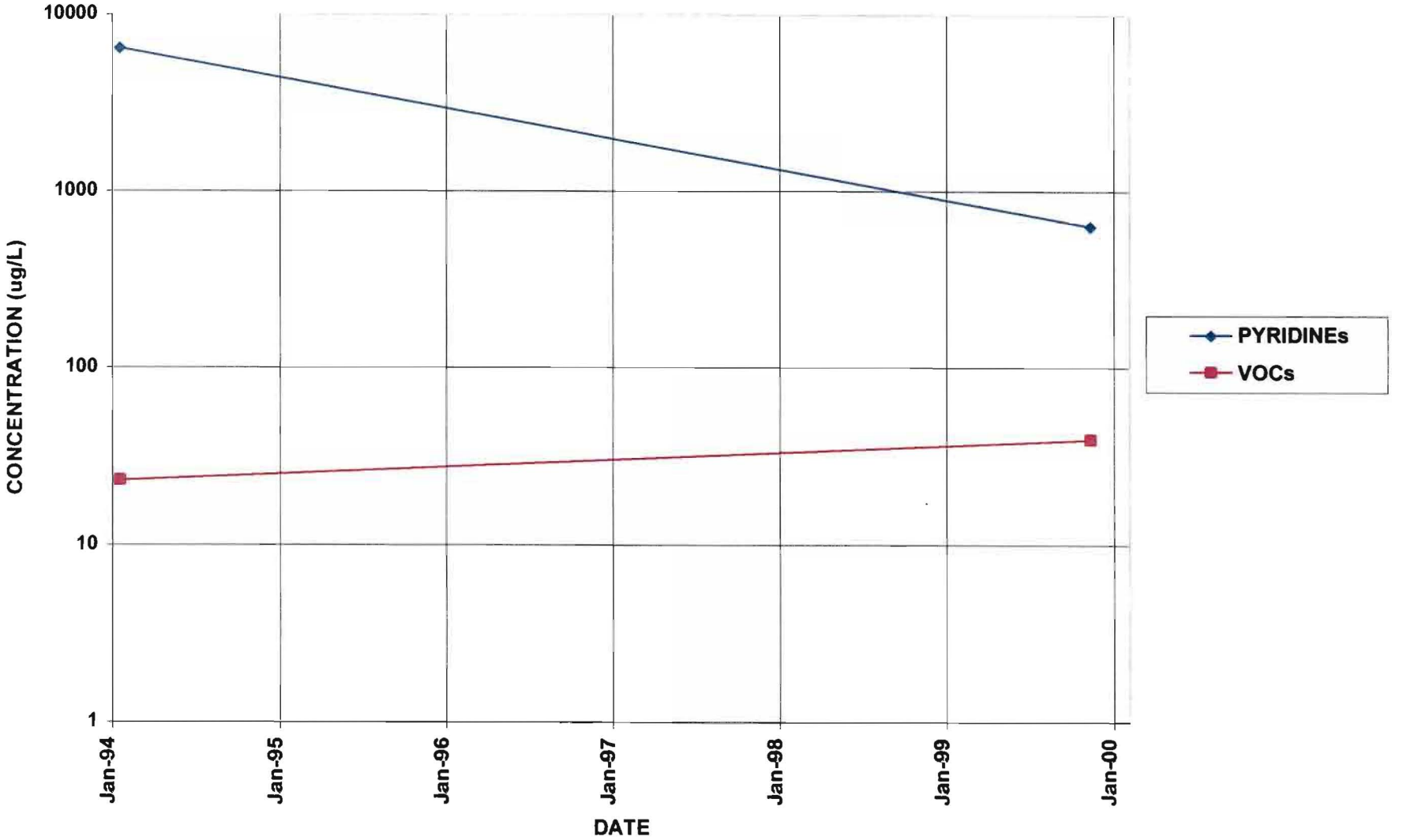

180000
160000
140000
120000
100000
80000
60000
40000
20000
0
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

PZ-106


10000000
1000000
100000
10000
1000
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs


PZ-107
100000
10000
1000
100
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

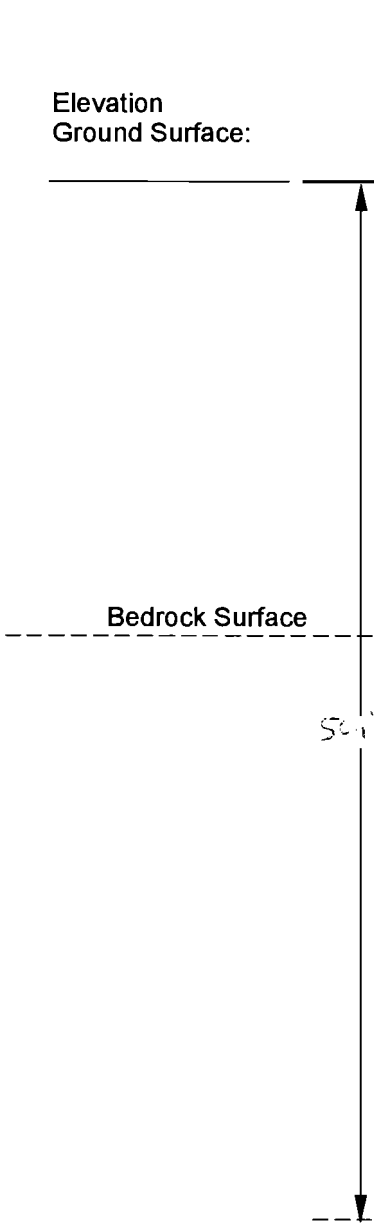
S-3


10000
1000
100
10
1
CONCENTRATION (ug/L)
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
DATE
PYRIDINEs
VOCs

APPENDIX II - PW11 WELL CONSTRUCTION LOG
(Retrofitted from 8/99 installation)

Well: PW-1

(Retrofitted 12/99)



Outside Casing Type: 6" min. dia. steel
Size:
Upper Seal: Bentonite chips
Borehole Dia.: 12 inch
Backfill: native soil/cement grout
Top of Sandpack: 7.4
Inside Well Casing Type: 4" min. dia. stainless steel
Top of Core Hole: 17'
Type of Well Seal: cement/Bentonite grout
Bottom of Casing and Outer Well Seal (top of screen): 18.5'
Borehole Dia.: 5 7/8" (reamed)
Type of Sand Pack: #0 size silica
Type of Screen: 4 inch dia. stainless steel (#0.30) w/ 0.01" machine slots
Bottom of Screen Boring: 48.5'
Bottom of Boring: 50'

WELL CONSTRUCTION DETAILS
ARCH ROCHESTER
FEASIBILITY STUDY
ROCHESTER, NY

Harding Lawson Associates

W9908010(c)

ATTACHMENT 3

CHAIN OF CUSTODY FORM

STL
Committed To *Your* Success

Report To:
Contact:
Company:
Address:
Phone:
Fax:
E-Mail:

Bill To:
Contact:
Company:
Address:
Phone:
Fax:
POI: Quote:

Internal Use Only

Sampler Name: JEFF YOHE / PL
Signature:
Project Name: ARCH CHEMICAL
Project Number: 5A5762
Project Location:
Date Required:

STL Sample No.	Client Sample ID	Sampling Date	Sampling Time	MATRIX	COMP / GRAB	2/1 VOC	4/1 PYRIDINES	Additional Analyses / Remarks
	QS-4	9-10-99	1005	W	G	2	2	
	SW-2		0930				2	Hold all VOC's Per Jeff Yohe
	SW-3		0950				2	
	SW-1		1208				2	
	SW-6		1149				2	Rosa TP
	SW-12		1045				2	
	QO2		1115			6	5	MS/MSD
	QO251		1130				2	
	BAILER RINSE BLANK		0945			2	2	
	TRIP BLANK	↓	0700	↓	↓	2		

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
Jeff Yohe	STL	9-10-99	1430				
						9/10/99	1436

Matrix Key
WW = Wastewater
W = Water
S = Soil
SL = Sludge
MS = Miscellaneous Solids
OL = Oil
A = Air
O = _____

Container Key
1. Plastic
2. VOA Vial
3. Sterile Plastic
4. Amber Glass
5. Widemouth Glass
6. Other
—

Preservative Key
1. HCl, Cool to 4°
2. H_2SO_4, Cool to 4°
3. HNO_3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn Acetate, Cool to 4°
6. Cool to 4°
7. None

COMMENTS:
OLIN RT
cooler 5°C

Courier:
Bill of Lading:

000033

Harding Lawson Associates

November 3, 1999

Ms. Gayle Bahn
Arch Chemicals, Inc.
P.O. Box 800, 1200 Lower River Road
Charleston, TN 37310

Subject: **Arch Chemicals - Rochester Site**
Third Quarter 1999 - Erie Barge Canal Water and Quarry Sampling Results

Dear Ms. Bahn:

Analytical results for the water samples collected during the third quarter of 1999 from the Erie Barge Canal (Canal) and the Dolomite Products Company quarry (quarry) are enclosed. Canal and quarry sampling are conducted as part of the on-going quarterly monitoring program for the Arch Rochester site. The sampling program, analytical procedure, data review findings, and validated data for the September 1999 sampling event are discussed below.

Sampling

Eight canal and quarry surface-water samples were collected by and submitted to Severn Trent Laboratories (STL) for selected chloropyridine analysis on September 10, 1999. The locations sampled during this quarter are listed below and are shown on the maps in Attachment 1.

Canal Samples	Quarry Samples
SW-1	QS-4 (Quarry Seep)
SW-2	QO-2 (Quarry Outfall)
SW-3	QO-2S1 (100 ft south of QO-2)
SW-6	
SW-12	

Analytical Procedures and Data Review

All water samples were analyzed and reviewed in accordance with Analytical Services Protocols (ASP95) for the Arch suite of selected chloropyridines (pyridine, 2-chloropyridine, 3-chloropyridine, 4-chloropyridine, 2,6-dichloropyridine, and p-fluoroaniline). The reporting limit for the selected chloropyridines is 10 micrograms per liter (µg/L) for undiluted samples.

A preliminary review of the quality control sample results associated with the analytical results was performed for data quality assurance purposes. Sample results were reviewed for holding time compliance; instrument calibration; surrogate standard recoveries; blank contamination; and matrix spike blank (MSB) and matrix spike/matrix spike duplicate (MS/MSD) accuracy and precision. The results of the data review are discussed in the quality control section of this letter. Overall, the data quality appears to be very good based on the information reviewed.

Engineering and
Environmental Services
511 Congress Street, P.O. Box 7050, Portland, ME 04112-7050 207/775-5401 Fax: 207/772-4762

Analytical Results

The results from the September 1999 canal and quarry monitoring event are presented in Attachment 2. Samples that were observed to contain one or more of the selected chloropyridines are summarized below; all results are expressed in µg/L.

Sample ID	2,6-DCPYR	2-CPYR
QO-2	7 J	16
QS-4	96	390

Notes: J = Estimated value below reporting limit, but greater than zero.
CPYR = chloropyridine
DCPYR = dichloropyridine

Selected chloropyridines were not detected in any of the canal surface water samples.

Quality Control

As part of the September 1999 Canal and quarry surface water monitoring program, MS/MSD sample and a field blank sample were collected as quality control samples. Laboratory MSB and field MS/MSD results indicated poor relative percent difference (greater than laboratory-specified limits) between recoveries for 3-chloropyridine, pyridine, and p-fluoroaniline. As a result, the results for these compounds were qualified as estimated (J/UJ). All other quality control results were acceptable.

Conclusions

Results from the third quarter 1999 canal and quarry seep sampling program show the following:

- Chloropyridines were not detected in any of the samples collected from the canal.
- Chloropyridines were detected in the quarry seep and quarry outfall at concentrations consistent with historical observations.

The fourth quarter sampling event will be conducted in November 1999.

If you have any questions or comments on the material described in this letter, please do not hesitate to contact me at (207) 828-3498.

ATTACHMENT 2

LABORATORY DATA SUMMARY TABLE

Sincerely,

Harding Lawson Associates

Nelson Breton, C.G.
Project Geologist

NB/jpc
Attachments: Sample Location Maps - Attachment 1
Laboratory Data Summary Table - Attachment 2
Chain of Custody Form - Attachment 3

cc: J. Brandow
J. Connolly
file 10.1

ATTACHMENT 1

SAMPLE LOCATION MAPS

T:\7311-34\7311F501 C&P 4/1/97

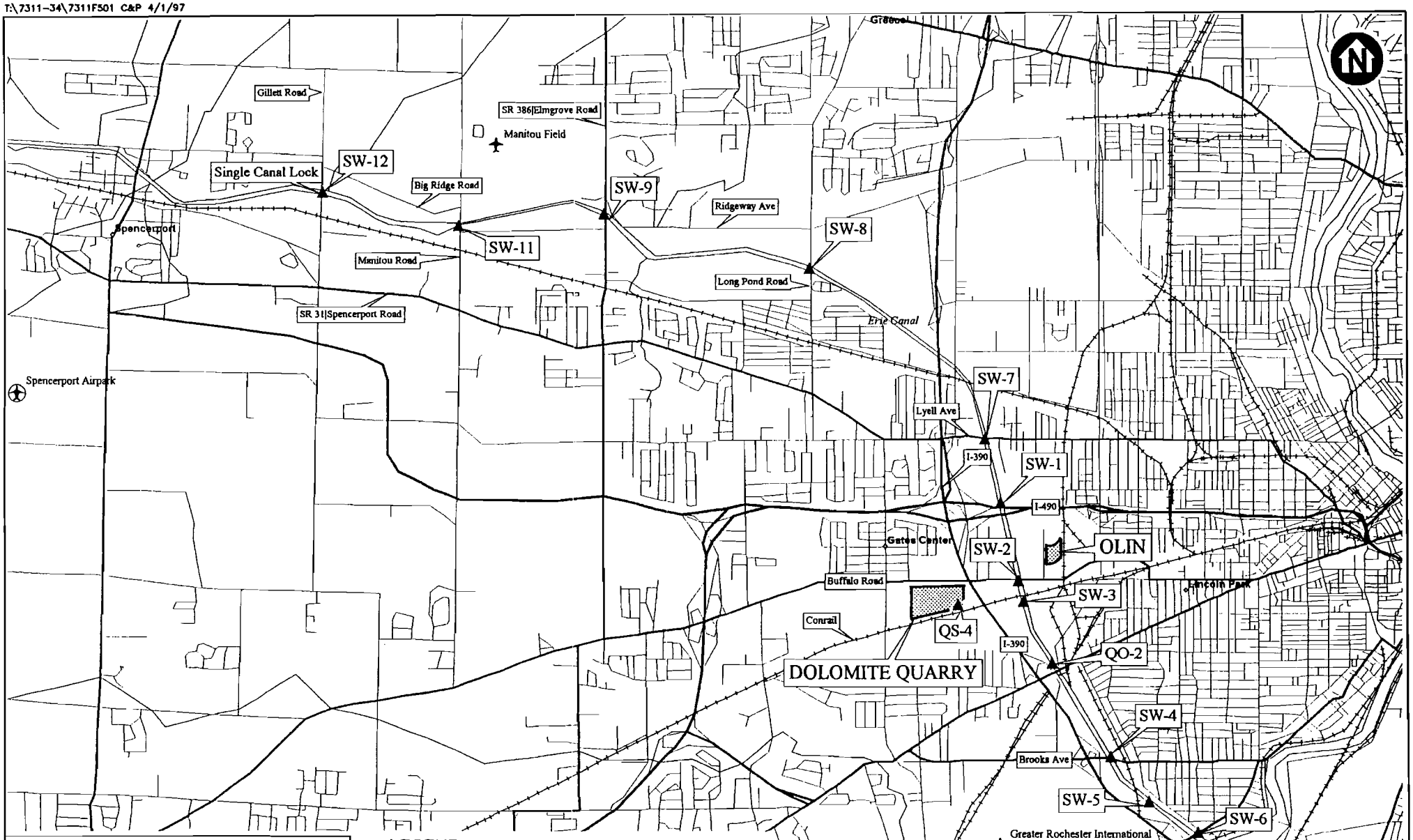
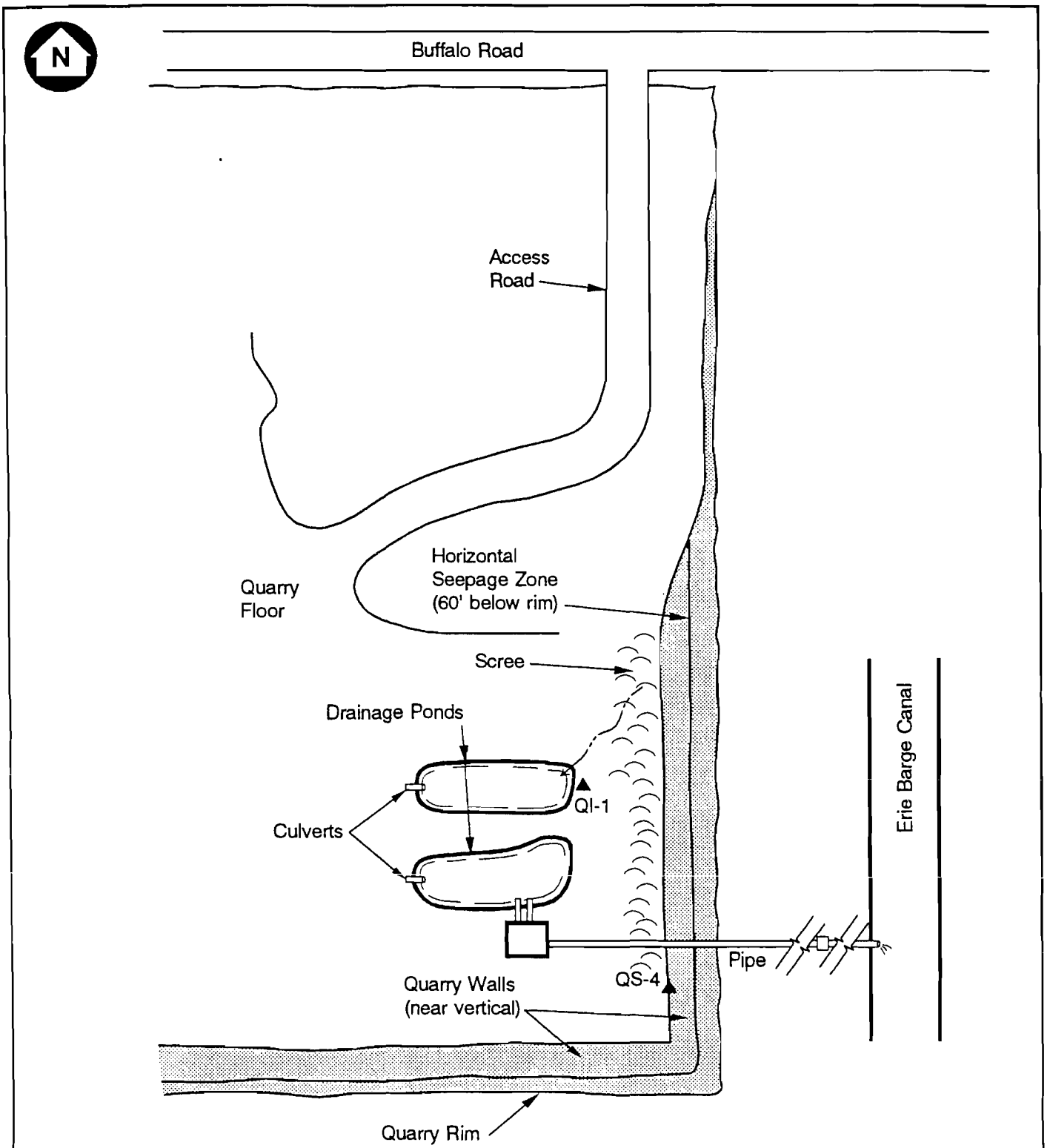


FIGURE 1

SAMPLE LOCATIONS
ERIE BARGE CANAL

OLIN CHEMICALS
ROCHESTER, N.Y.



Legend

QS-4 ▲ Seep Sample Location

QI-1 ▲ Pond Inflow Sample Location

Not to Scale

FIGURE 2

SAMPLE LOCATIONS DOLOMITE PRODUCTS QUARRY

OLIN CHEMICALS
PHASE II RI REPORT ADDENDUM
ROCHESTER, NEW YORK

W9801019

SEPTEMBER 1999 CANAL/QUARRY MONITORING RESULTS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	QO-2	QO-2S1	QS-4	SW-1	SW-2	SW-3	SW-6	SW-12
SAMPLE DATE:	9/10/99	9/10/99	9/10/99	9/10/99	9/10/99	9/10/99	9/10/99	9/10/99
SAMPLE TYPE:	FS	FS	FS	FS	FS	FS	FS	FS
SELECTED CHLOROPYRIDINES BY ASP95 95-2 (µg/L)								
Pyridine	10 UJ	9 UJ	93 UJ	9 UJ	9 UJ	9 UJ	9 UJ	9 UJ
2-Chloropyridine	**16**	9 U	**390**	9 U	9 U	9 U	9 U	9 U
3-Chloropyridine	10 UJ	9 UJ	93 UJ	9 UJ	9 UJ	9 UJ	9 UJ	9 UJ
4-Chloropyridine	10 U	9 U	90 U	9 U	9 U	9 U	9 U	9 U
2,6-Chloropyridine	**7 J**	9 U	**96**	9 U	9 U	9 U	9 U	9 U
p-Fluoroaniline	10 UJ	9 UJ	93 UJ	9 UJ	9 UJ	9 UJ	9 UJ	9 UJ

Notes:
U = Compound not detected; value represents sample quantitation limit
J = Estimated value
FS = Field sample