Arch Chemicals, Inc.

Rochester, New York (Site #828018a)

Groundwater Monitoring Report 59
Fall 2017

March 2018

SURFACE WATER AND GROUNDWATER MONITORING PROGRAM
FALL 2017 MONITORING REPORT

ARCH CHEMICALS
ROCHESTER PLANT SITE
ROCHESTER, NEW YORK

ARCH CHEMICALS, INC.
(A WHOLLY-OWNED SUBSIDIARY OF LONZA)

MARCH 2018

SURFACE WATER AND GROUNDWATER MONITORING PROGRAM
FALL 2017 MONITORING REPORT

ARCH CHEMICALS
ROCHESTER PLANT SITE
ROCHESTER, NEW YORK

Prepared by

AMEC Foster Wheeler Environment & Infrastructure, Inc.
Portland, Maine

for

ARCH CHEMICALS, INC.
(A Wholly-Owned Subsidiary of Lonza)

March 2018

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EXECUTIVE SUMMARY

This monitoring report presents the results of an on-going groundwater and surface water monitoring program being conducted by Arch Chemicals at its Rochester, New York, manufacturing facility. Arch Chemicals is a wholly-owned subsidiary of Lonza, a leading supplier to the global life sciences, healthcare and pharmaceutical industries headquartered in Basel, Switzerland.

During this monitoring event conducted in November 2017, samples from a total of 29 groundwater monitoring or pumping wells and four locations associated with the Dolomite Products Quarry seep and outfall were collected by Matrix Environmental Technologies Inc., of Orchard Park, New York, and analyzed by Paradigm Environmental Services, Inc., of Rochester, New York.

As in prior reports, monitoring results were compared with previous average concentrations at each sampling location. Nine of the 33 wells sampled for chloropyridines had contaminant concentrations that were above their respective 5-year prior averages. Four of the 29 wells sampled for volatile organic compounds had concentrations above their 5-year prior averages.

Sampling locations associated with the quarry included the main quarry seep (QS-4), the quarry ditch where the quarry dewatering discharge enters the ditch (QD-1), the quarry ditch as it enters the Erie Barge Canal (QO-2), and the surface water in the canal approximately 100-feet downstream of the quarry ditch (QO-2S1). The total concentration of chloropyridines in quarry seep QS-4 was 65 micrograms per liter (µg/L), which is below its prior 5-year average of 95 µg/L. Chloropyridines were not detected in the ditch sample from location QD-1, the ditch outfall sample at location QO-2, or the canal water at sample location QO2-S1.

On-site monitoring wells were checked for the presence of dense non-aqueous phase liquids (DNAPL) and floating (or light) NAPL (LNAPL), using an interface probe. No DNAPL or LNAPL was observed in any of these wells.

During the period June 2017 through November 2017, the on-site groundwater extraction system pumped approximately 10.8 million gallons of groundwater to the on-site treatment system, containing an estimated 4,700 pounds of chloropyridines and 100 pounds of target volatile organic compounds.

The next regular monitoring event will occur in May 2018 and will include groundwater, surface water, and seep sampling.

1.0 INTRODUCTION

In accordance with the Order on Consent executed between Arch Chemicals, Inc., and the New York State Department of Environmental Conservation (NYSDEC), effective August 21, 2003, Arch is conducting a Remedial Action program at its facility on McKee Road in Rochester, New York. As part of this program, Arch conducts twice-yearly monitoring events consisting of sampling and chemical analysis of groundwater and surface water in the vicinity of the Rochester facility.

The Fall 2017 sampling event included the collection and analysis of groundwater, surface water, and seep samples from a total of 33 off-site and on-site locations. Samples were collected from November 7 through 13, 2017, for analysis of selected chloropyridines and volatile organic compounds (VOCs).

This report presents the results of the Fall 2017 monitoring event.

2.0 SAMPLE COLLECTION AND ANALYSIS

2.1 GROUNDWATER

Groundwater samples were collected from off-site wells, 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) VOCs. Samples were collected by personnel from Matrix Environmental Technologies Inc., (Matrix) and transported to the analytical laboratories of Paradigm Environmental Services, Inc. (Paradigm) in Rochester, New York for analysis. Table 1 lists the wells that were sampled and the requested analyses. The off-site and on-site locations of these sampling points are shown in Figures 1 and 2, respectively.

Groundwater sampling data sheets are provided in Appendix A.

Groundwater was collected with the low flow/low stress purging technique from most of the wells using bladder or peristaltic pumps. Samples from active pumping wells were collected from the discharge lines.

Groundwater piezometric elevations were measured on November 6, 2017. Piezometric contour maps were constructed for each water-bearing zone (overburden, bedrock, and deep bedrock) and are presented in Figures 3, 4, and 5.

On-site monitoring wells were checked for the presence of non-aqueous phase liquid (NAPL), using an interface probe. No dense NAPL (DNAPL) or floating (light) NAPL (LNAPL) was observed in any of these wells.

2.2 SURFACE WATER

Surface water and quarry seep samples were collected as part of the on-going monitoring program for the Arch Rochester site. The location of the quarry and its outfall in relation to the site is shown on Figure 6. Samples of the main quarry seep (QS-4), the quarry ditch where the quarry dewatering discharge enters the ditch (QD-1), the quarry ditch as it enters

the Erie Barge Canal (QO-2), and the surface water in the canal approximately 100-feet downstream of the quarry ditch (QO-2S1) were collected by Matrix on November 13, 2017. All quarry-related samples were analyzed for the Arch suite of selected chloropyridines. The quarry locations sampled during the Fall 2017 event are shown on Figure 7.

2.3 ANALYTICAL PROCEDURES

The analytical procedures, data review findings, and validated data for this groundwater monitoring event are discussed in the following paragraphs.

Samples were analyzed for the Arch suite of selected chloropyridines and TCL volatile organic compounds (VOCs) by USEPA SW-846 Methods 8270D and 8260C, respectively. The reporting limits for the chloropyridines and VOCs are approximately 10 micrograms per liter (µg/L) and 2 to 20 µg/L, respectively, for undiluted samples.

2.4 QUALITY CONTROL

All laboratory analytical results were reviewed and qualified following U.S. Environmental Protection Agency Contract Laboratory Program (USEPA CLP), "National Functional Guidelines for Superfund Organic Methods Data Review", June 2008, using professional judgment and guidance from USEPA Region II SOPs No. HW-24 Revision 4, October 2014, and No. HW-35 Revision 2, March 2013. Analytical results were evaluated for the following parameters:

* Collection and Preservation
* Holding Times
  Surrogate Recoveries
* Blank Contamination
* Duplicates
  Laboratory Control Samples
  Matrix Spike/Matrix Spike Duplicates
  Miscellaneous

* - *all criteria were met for this parameter*

With the qualifications discussed below, results are determined to be usable as reported by the laboratory.

Surrogate Recoveries. Percent recoveries of the VOC surrogates 1,2-dichloroethane-d4, pentafluorobenzene, and/or toluene-d8 in a subset of samples were less than the laboratory statistically derived control limits, indicating potential low biases. Positive and non-detected results in affected samples were qualified estimated (J/UJ): BR106, BR6A, BR8, MW106, PZ102, PZ103, and PW13.

Percent recoveries of the SVOC surrogate 2-fluorobiphenyl in samples BR105D and QO-2 were less than the laboratory statistically derived control limits, indicating potential low biases. Positive and non-detected results in samples BR105D and QO-2 were qualified estimated (J/UJ).

Duplicates. Field duplicates were collected for samples BR127 and BR7A. Relative percent differences (RPDs) between sample and field duplicate results for all target analytes in both field duplicate pairs were within the control limit.

Laboratory Control Samples (LCS). Percent recoveries of pyridine (24 to 27) in all laboratory control samples associated with the sampling event were below nominal control limits of 50-140, indicating potential low biases for pyridine in all samples. Percent recoveries of 4-fluoroaniline (48) in the LCS associated with samples of SDGs 175013, 175039, and 175064 were less than the 50-140 control limits, indicating potential low biases for 4-fluoroaniline in samples in these SDGs.. Nominal control limits were used in the absence of statistically derived laboratory control limits. 4-Fluoroaniline was not detected in the samples of SDGs 175013, 175039, and 175064, and reporting limits were qualified estimated (UJ). Positive and non-detect results for pyridine in all samples were qualified estimated (J/UJ).

Matrix Spike/Matrix Spike Duplicates (MS/MSD). MS/MSD analyses were specified on the chain of custody forms for samples PW15, BR9, and QD-1 (chloropyridines only). The MS/MSD for SVOC sample PW15 was not evaluated due to dilutions of the sample and MS/MSD that were required because of high concentrations of target analytes. In the MS/MSD associated with SVOC sample BR9, percent recoveries of 4-chloropyridine (45, 47), 4-fluoroaniline (46), and pyridine (19, 22) were less than the 50-140 nominal control limits, indicating potential low bias. These analytes were not detected in sample BR9 and reporting limits were qualified estimated (UJ).

In the MS/MSD associated with SVOC sample QD-1, percent recoveries of 4-chloropyridine (49) and pyridine (25, 20) were less than the 50-140 nominal control limits, indicating potential low bias. These analytes were not detected in sample QD-1 and reporting limits were qualified estimated (UJ).

In the MS/MSD associated with VOC sample PW15, all percent recoveries and RPDs were within laboratory control limits or had no impact on reported sample results. Results for sample PW15 were reported unqualified.

In the MS/MSD associated with VOC sample BR9, MS/MSD percent recoveries for 1,2-dichloroethane (84, 84) and benzene (78, 83) were less than the laboratory control limits indicating potential low bias. Positive and non-detect results for benzene and 1,2-dichloroethane in sample BR9 were qualified estimated (J/UJ).

Miscellaneous. Samples from a subset of wells were analyzed at dilutions due to high concentrations of volatile organic and/or semi-volatile organic target analytes. Non-detects are reported at elevated reporting limits.

3.0 ANALYTICAL RESULTS

3.1 GROUNDWATER

The validated results from the Fall 2017 groundwater monitoring event are provided in Tables 2 and 3. Table 4 provides a comparison of the Fall 2017 analytical results for selected chloropyridines and VOCs in representative wells to mean concentrations of the prior five years (Fall 2012 through Spring 2017). Long term trends for both selected chloropyridines

and VOCs are also presented as time-series plots for representative wells in Appendix B. A summary of the analytical findings is presented below by parameter class.

3.1.1 Chloropyridines

On-Site. Chloropyridines were detected above sample quantitation limits in all 22 of the on-site wells sampled in the Fall 2017 event. Concentrations of chloropyridines (sum of all chloropyridine and pyridine isomer concentrations) ranged from 12 µg/L in well B-15 to 510,000 µg/L in well BR-8. Nine of the on-site wells exhibited total chloropyridine concentrations that were above their respective means from monitoring events over the previous five years (see Table 4).

Off-Site. Chloropyridines were detected above sample quantitation limits in all seven of the off-site wells that were sampled. Concentrations of total chloropyridines ranged from 62 µg/L in well BR-105D to 22,000 µg/L in well MW-106. None of the off-site wells contained total chloropyridine concentrations above their respective five-year prior means (see Table 4).

Concentration Contours. Chloropyridine distribution in groundwater is shown as a set of concentration contours on Figure 8. The contours were developed using data from both overburden and bedrock monitoring wells. The chloropyridine plume extent is generally similar to the prior monitoring event in May 2017, with some notable increases in wells around the perimeter of the plume (MW-106 and PZ-101). Other wells around the perimeter of the plume remained generally consistent with the prior monitoring event (e.g., BR-105, BR-126, and BR-9). The chloropyridine level remains high in well BR-8 and increased from the May 2017 sampling event. Increases in chloropyridine levels were observed for wells PZ-106 and PZ-107, while decreases were noted for wells B-11, MW-127, PW-10, and PZ-102. Concentrations are fluctuating in well BR-106, which suggests an influence from the raising and lowering of the water level in the canal. The chloropyridine concentration level in BR-106 is notably lower than observed for the May 2017 monitoring event. Relatively high concentrations of chloropyridines are noted in wells BR-127, PW-13, PW-15, PW-16, and PW-17, which are all active pumping wells. This indicates these wells are effectively pulling in water from areas of elevated chloropyridines.

3.1.2 Selected VOCs

On-Site. Selected VOCs were detected in 18 of the 22 on-site wells sampled for VOCs in the Fall 2017 event. Total concentrations of selected VOCs (sum of carbon tetrachloride, chlorobenzene, chloroform, methylene chloride, tetrachloroethene, and trichloroethene) ranged from not detected (in wells BR-5A, B-15, BR-126, and MW-127) to 44,000 µg/L in well PZ-107. Four of the on-site wells contained concentrations of total VOCs above their respective five-year prior means (see Table 4).

In addition to the selected VOCs, other notable constituents detected in multiple on-site wells include toluene (in 8 out of 22 wells), benzene (10 of 22), 1,2-dichlorobenzene (9 of 22), 1,4-dichlorobenzene (6 of 22), carbon disulfide (6 of 22), 1,3-dichlorobenzene (6 of 22), acetone (2 of 22), vinyl chloride (6 of 22), cis-1,2-dichloroethene (4 of 22), 1,2,3-trichlorobenzene (2 of 22), 1,2,4-trichlorobenzene (2 of 22), and 1,1-dichloroethane (3 of 22).

Off-Site. Selected VOCs were detected in six of the seven off-site wells sampled for VOCs during the Fall 2017 event. Total concentrations of selected VOCs ranged from not detected

(in well BR-105D) to 350 µg/L (in well MW-106). Selected VOC concentrations in these wells were below the 5-year prior mean. (see Table 4).

In addition to the selected VOCs, other notable constituents detected in multiple off-site wells include benzene (in 6 out of 7 wells), 1,2-dichlorobenzene (5 of 7), 1,3-dichlorobenzene (4 of 7), 1,4-dichlorobenzene (4 of 7), and cis-1,2-dichloroethene (2 of 7).

Concentration Contours. The distribution of selected VOCs in groundwater is shown as a set of concentration contours on Figure 9. These contours were developed using both overburden and bedrock groundwater data, and are dashed where approximated using historical data. The VOC plume extent is generally consistent with previous monitoring events. Notable decreases in VOCs were observed in wells BR-6A, PW-13, and PW-15, while increases were observed in wells BR-127, BR-8, PW-14, PZ-106, and PZ-107. VOCs observed in off-site wells primarily consist of chlorobenzenes, which appear to be closely associated with chloropyridines at this site.

3.2 SURFACE WATER

Results from the Fall 2017 canal and quarry monitoring event are presented in Table 5, and are discussed below.

3.2.1 Quarry

One quarry seep sample (QS-4) was collected in the Fall 2017 monitoring event. The sample contained 65 µg/L total chloropyridines, which is below its prior five-year mean of 95 µg/L.

3.2.2 Quarry Discharge Ditch

Two locations within the quarry discharge ditch were sampled and analyzed for chloropyridines: QD-1, at the point where the quarry's dewatering discharge enters the ditch; and QO-2, at the location where the ditch discharges to the canal. Chloropyridine compounds were not detected in either sample.

3.2.3 Barge Canal

One sample was collected from the Erie Barge Canal location (QO-2S1, approximately 100 feet downstream of QO-2). Chloropyridines were not detected in this sample.

4.0 EXTRACTION SYSTEM PERFORMANCE

Table 6 is a summary of the system flow measurements for the on-site extraction wells from June 2017 through November 2017. The total volume pumped during the six-month period was approximately 10.8 million gallons. Overall, the system pumped reliably throughout the period with system flow rates ranging between 39 and 44 gpm on a monthly basis. PW-17 continues to be a poorly performing well due to very low yield. In addition, the performance of well PW-15 is frequently impacted by formation of precipitate and scale within the well, pump, and discharge lines, and requires frequent cleaning and maintenance. With the exception of two weeks in mid-July well BR-7A pumped consistently throughout the entire six-month period. Well BR-9 pumped consistently throughout the six-month period with one exception in late September when the well was shut down temporarily due to a pump failure.

The remaining wells (PW-13, PW-16, and BR-127) pumped consistently through the entire six-month period.

Table 7 provides a calculation of mass removal rates since the previous groundwater monitoring event (i.e., from June 2017 through November 2017). Arch estimates that approximately 100 pounds of target VOCs and 4,700 pounds of chloropyridine compounds were removed by the groundwater extraction system and treated by the plant's activated carbon adsorption units over that time period.

5.0 NEXT MONITORING EVENT

The next regular monitoring event will occur in May 2018 and will include groundwater, surface water, and seep sampling.

Table 8 shows the 2018 monitoring program for the Arch Rochester site.

Figures

Legend

Property Owned by Lonza

Monitoring Well

NOTES

1. Source - Topographic Quadrangle 7.5-Minute Series

N

0 250 500 1,000 Feet

Prepared by JEB | Checked by NMB

BARGE CANAL

I-390

FIRTH RIXSON

ARCH

BUFFALO RD. BUSINESS CENTER

MW-103/BR-103

MW-108/BR-108

PZ-102

BR-111/BR-111D

BR-106/MW-106

PZ-103

MW-16

AID TO HOSPITALS

BR-126

BR-112A/BR-112D

MW-105/BR-105

MW-104/BR-104

BUFFALO ROAD

MW-114/BR-114

12-6

CUMBERLAND FARMS PETROLEUM TERMINAL

OW-105

NESS-W

NESS-E

BR-113/BR-113D

8-8

7-6

LEXINGTON

11-8

GENERAL RAIL SIGNAL CO.

9-6

RW-1

10-6

13-4

Morey

OW-102A

OW-103

BR-122D

PFAUDLER

DOLOMITE PRODUCTS QUARRY

ERIE BARGE CANAL

BR-117/BR-117D

BR-121D (Abandoned)

BR-118/BR-118D

BR-123D

BR-116/BR-116D

I-390

BR-120D (Abandoned)

BR-119D (Abandoned)

LETTINGTON DRIVE

BR-124D

Figure 1
Off-Site Groundwater Monitoring Well Locations

Arch Chemicals
Rochester, NY

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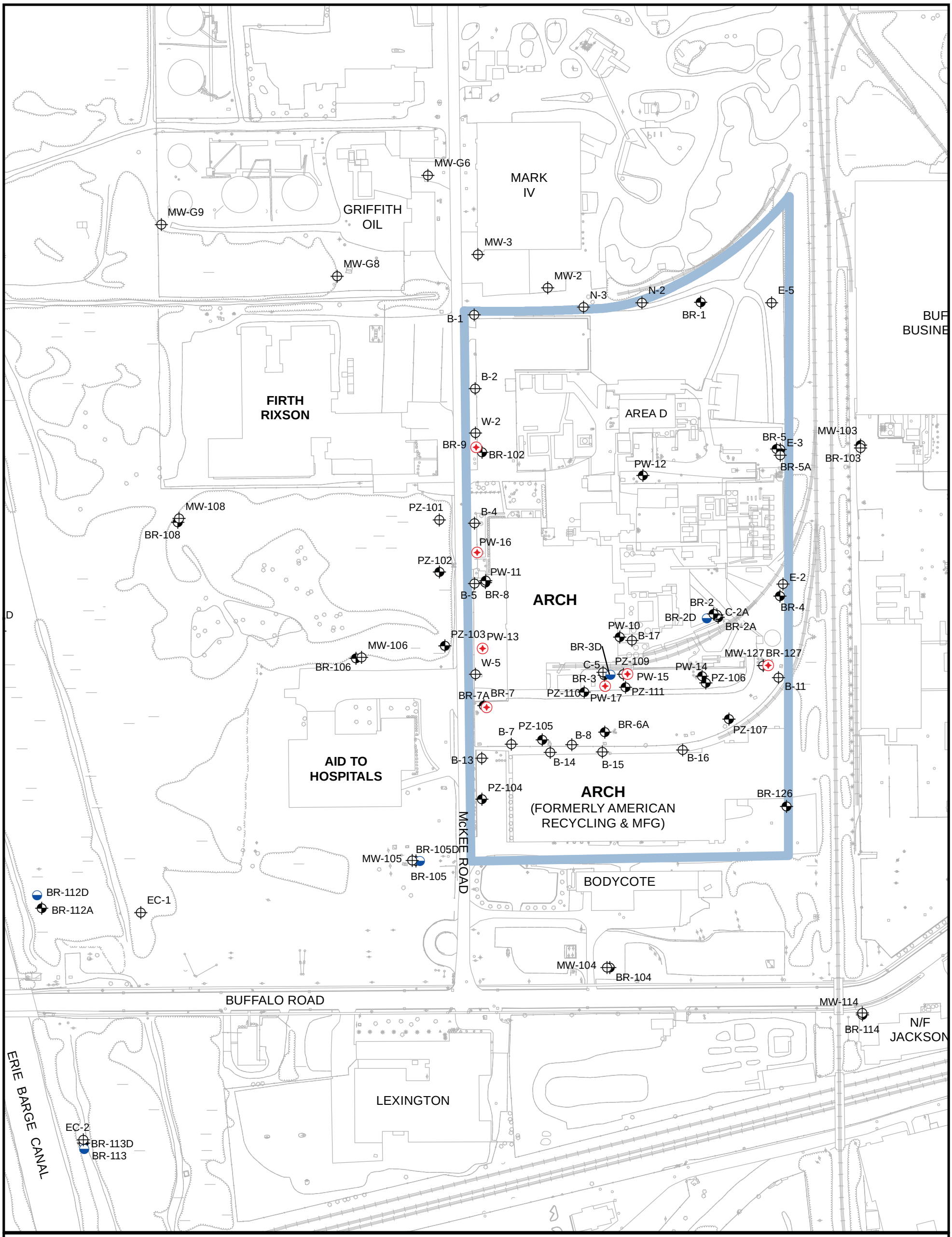

NOTES:

1. Off-Site Well Locations also Included on Figure 1

Legend

- Active Pumping Well
- Overburden Monitoring Well
- Bedrock Monitoring Well
- Deep Bedrock Monitoring Well
- Property Owned by Lonza

N

0 100 200 400 Feet

Prepared/Date: JEB 07/13/16 | Checked/Date: NMB 07/13/16

Figure 2
Onsite Monitoring Well Locations

Arch Chemicals
Rochester, NY

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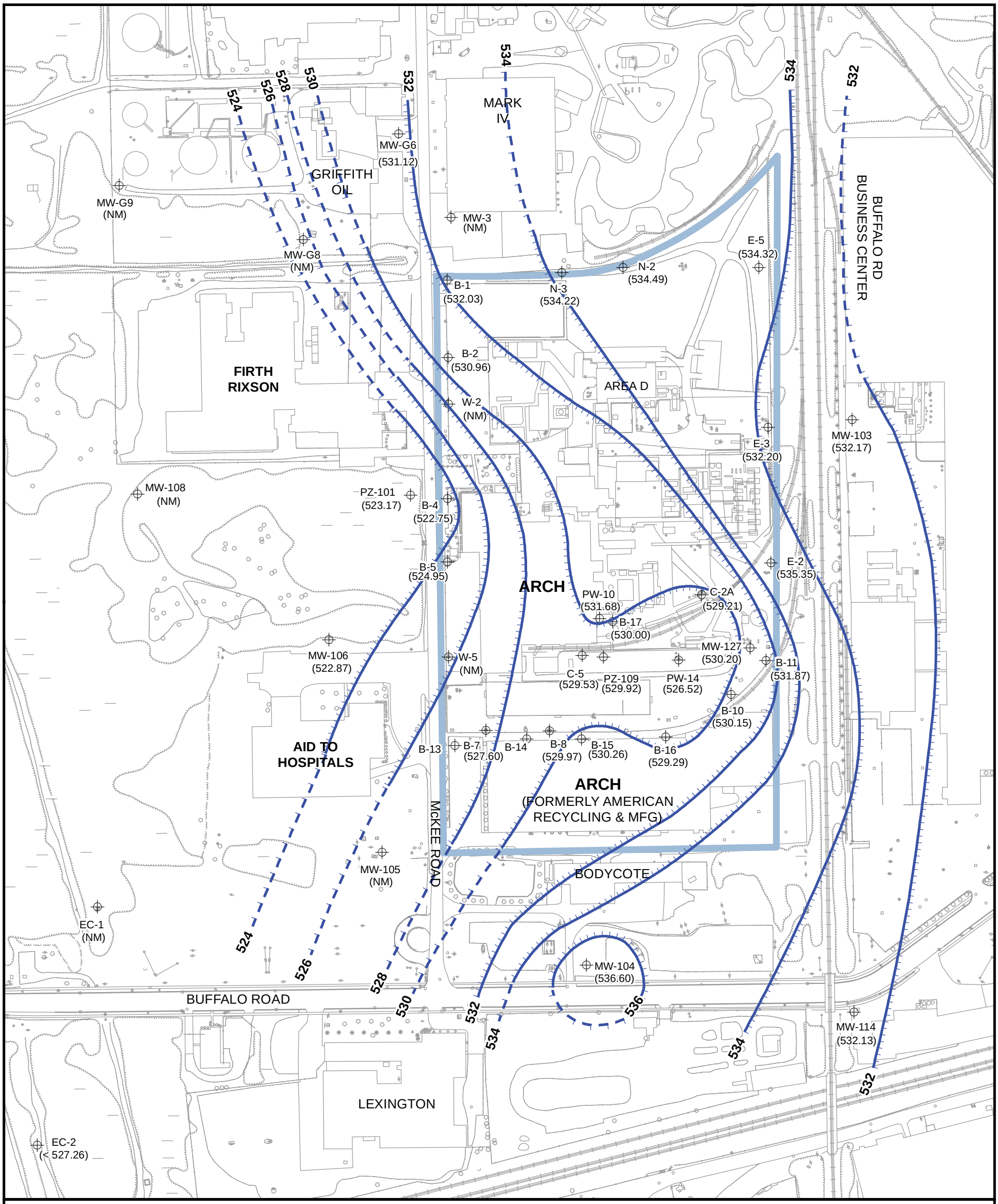

N

Legend

- MW-114 (532.13) — Piezometric Elevation at Well or Piezometer
- Interpreted Groundwater Flow Direction
- **528** — Overburden Piezometric Elevation Contour (MSL)
- Outline of Arch Property Boundary

Figure 3
Fall 2017
Overburden Groundwater
Interpreted Piezometric Contours

Arch Chemicals
Rochester, NY

NOTES:

1. Water Levels Measured on November 6, 2017
2. Dashed Contours Reflect Uncertainty

0 100 200 400 Feet

Prepared/Date: JEB 11/13/17 | Checked/Date: NMB 11/13/17

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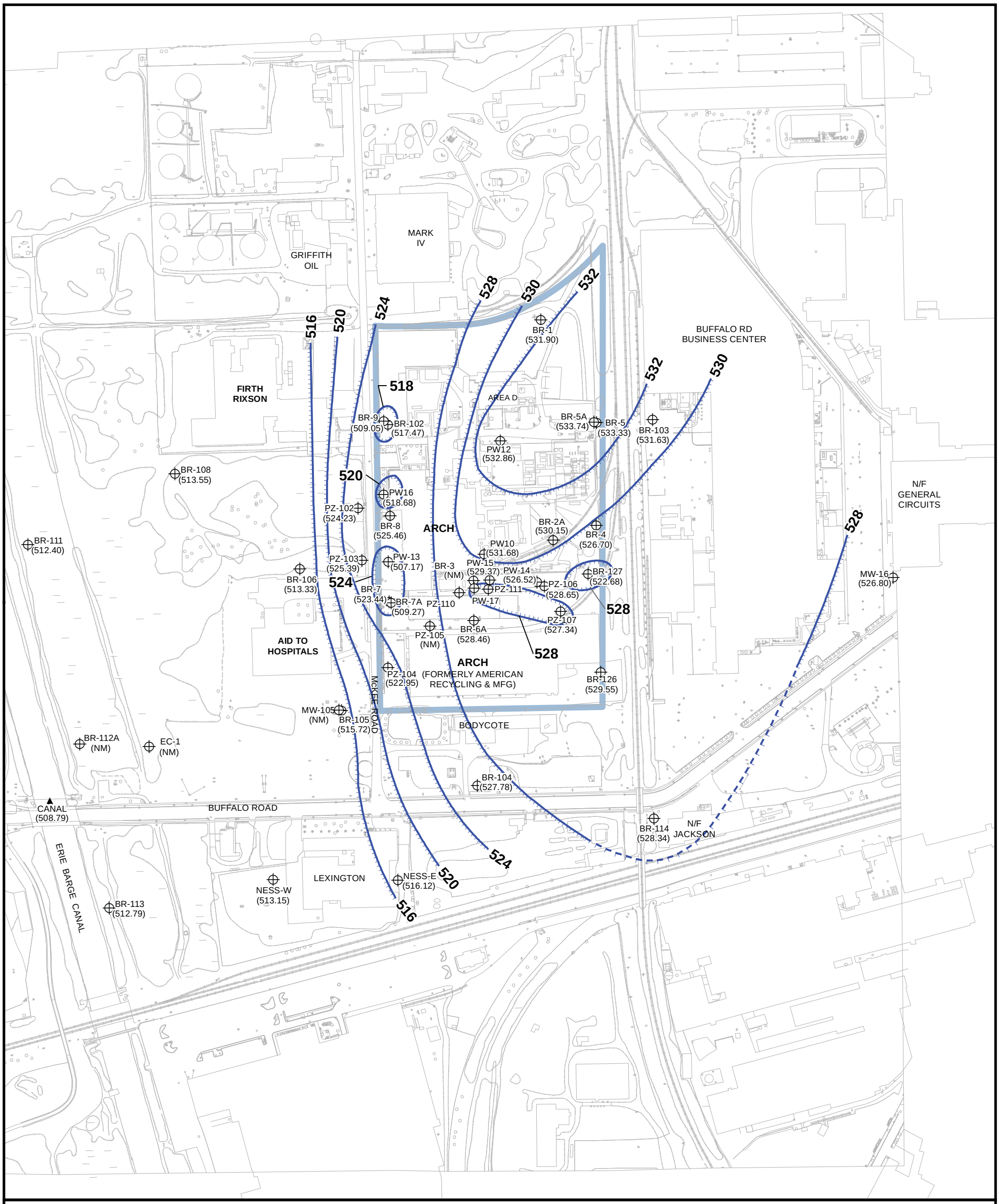

Legend

N

BR-114 (528.34) — Piezometric Elevation at Well or Piezometer (Feet MSL)

▲ — Piezometric Elevation at Surface Water Measuring Point

Property Owned by Lonza

Interpreted Groundwater Flow Direction

526 — Bedrock Piezometric Elevation Contour (MSL)

Figure 4
Fall 2017
Bedrock Groundwater
Interpreted Piezometric Contours

Arch Chemicals
Rochester, NY

NOTES:

1. Water Levels Measured on November 6, 2017
2. Dashed Contours Reflect Uncertainty
3. The measurements in wells BR-4 and PW-14 are considered anomalous and were not used in contouring

Prepared/Date: JEB 11/10/17	Checked/Date: NMB 11/10/17

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Legend

- Bedrock Well ('D' Designates Deep Well)
- 500 — Deep Bedrock Elevation Contour (MSL)
- Interpreted Groundwater Flow Direction
- Property Owned by Lonza
- BR-116D (511.67) — Piezometric Elevation at Deep Bedrock Well

NOTES

1. Water Levels Measured on November 6, 2017
2. Dashed Contours Reflect Uncertainty
3. Wells BR-105D and BR-3D not used in contouring

N

0 250 500 1,000 Feet

Prepared/Date: JEB 11/13/17 | Checked/Date: NMB 11/13/17

ERIE BARGE CANAL
I-390
FIRTH RIXSON
BUFFALO RD. BUSINESS CENTER
ARCH
AID TO HOSPITALS
BUFFALO ROAD
CUMBERLAND FARMS PETROLEUM TERMINAL
LEXINGTON
GENERAL RAIL SIGNAL CO.
PFAUDLER
DOLOMITE PRODUCTS QUARRY
LETTINGTON DRIVE

BR-9, BR-103, BR-108, BR-111D (512.56), BR-111, BR-106, BR-3D (486.28), BR-105, BR-105D (510.78), BR-112D (512.62), BR-112, BR-104, BR-114, BR-113, BR-113D (512.58), BR-122D (509.82), BR-123D (510.55), BR-116D (511.67), BR-116, BR-117D (502.10), BR-117, BR-118, BR-118D (503.87), BR-124D (506.34)

502 504 506 508 510 512

Figure 5
Fall 2017
Deep Bedrock Groundwater
Interpreted Piezometric Contours

Arch Chemicals
Rochester, NY

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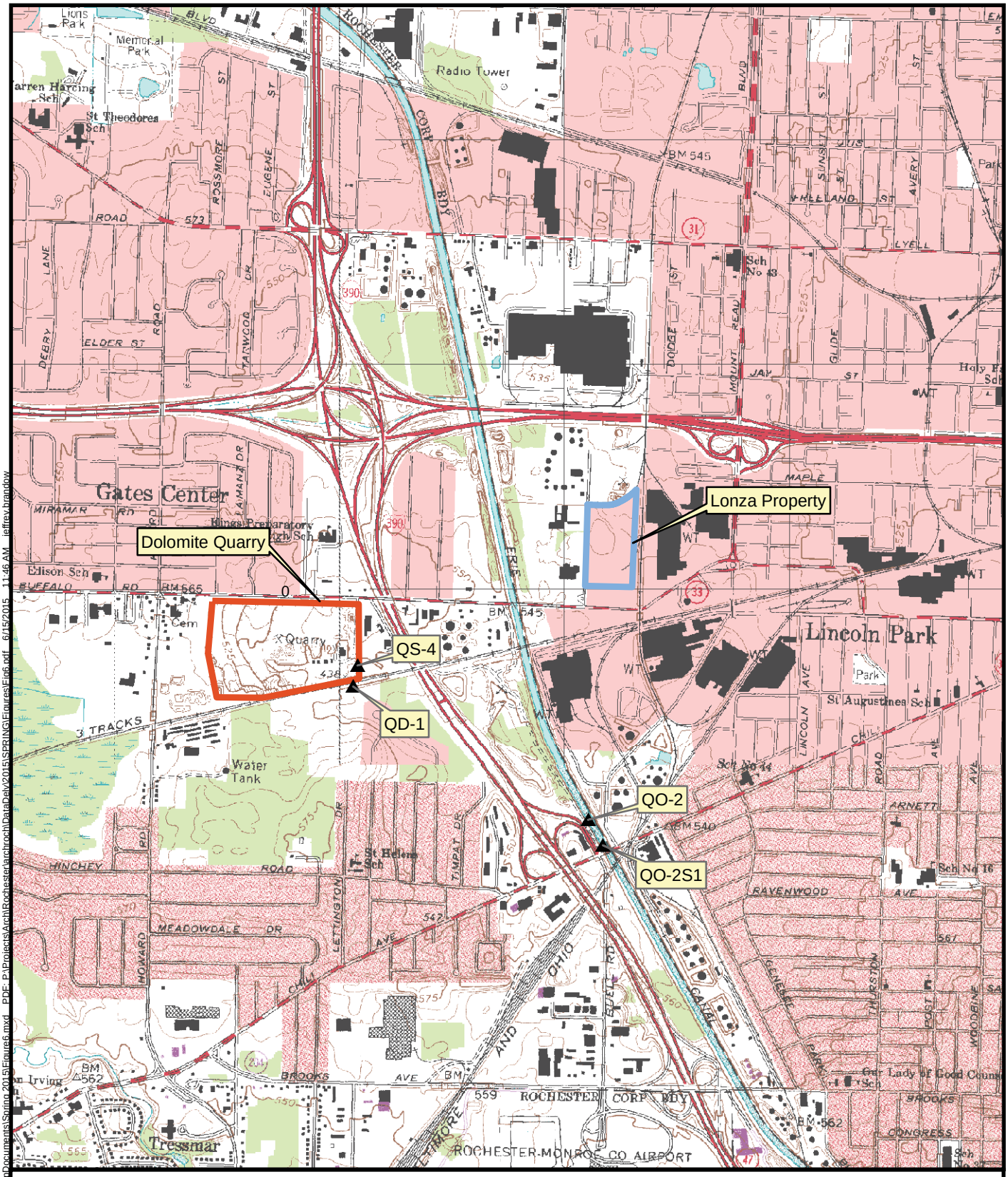

Source:
1:24,000 scale digital topographic map
obtained from New York State GIS
Clearinghouse at: www.nysgis.state.ny.us

Legend

- Lonza Property
- Dolomite Quarry Boundary
- ▲ Surface Water Sample Location

N

0 1,000 2,000 Feet

Prepared by JEB | Checked by NMB

Figure 6
Sample Locations
Erie Barge Canal

Arch Chemicals
Rochester, New York

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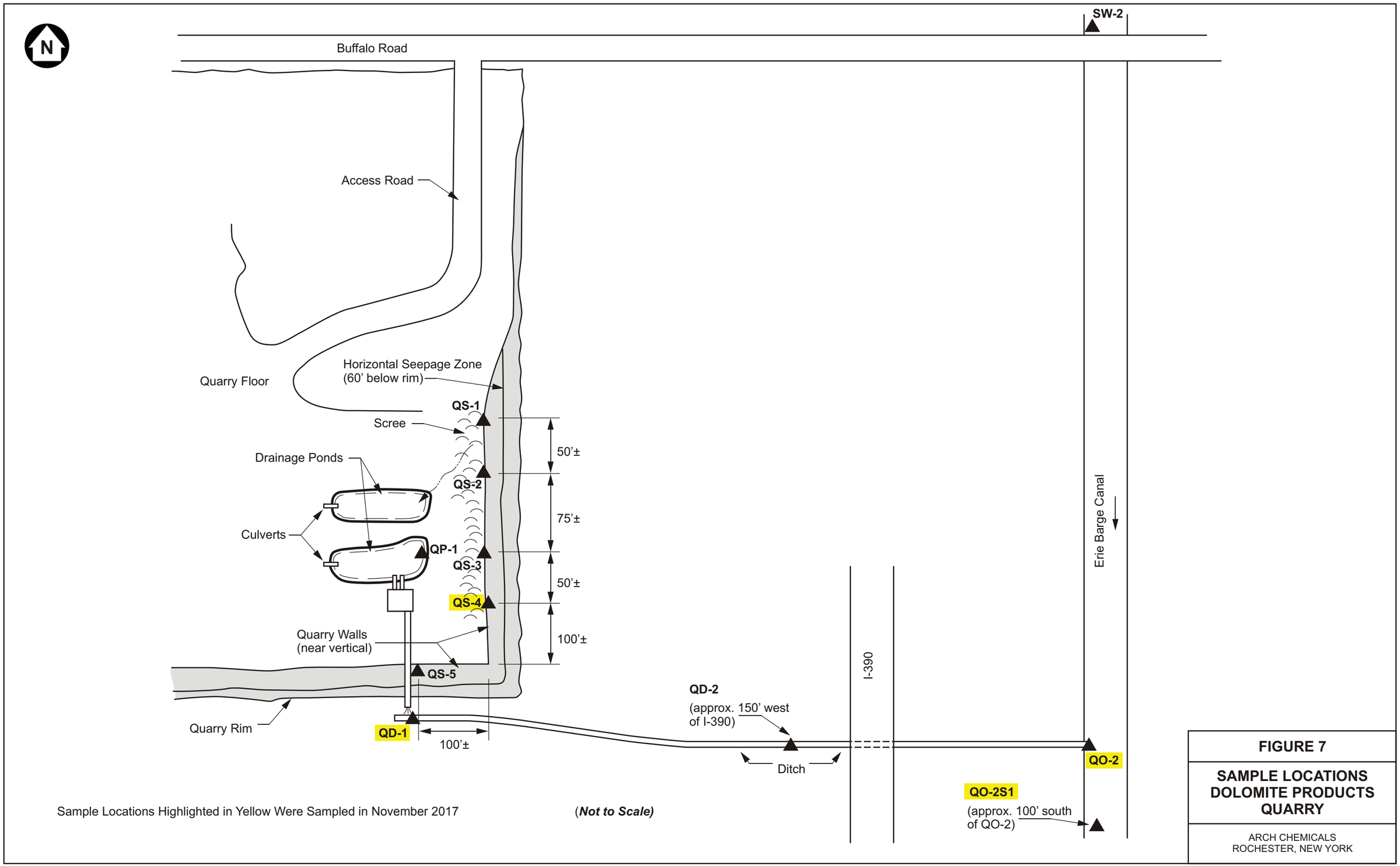


Sample Locations Highlighted in Yellow Were Sampled in November 2017

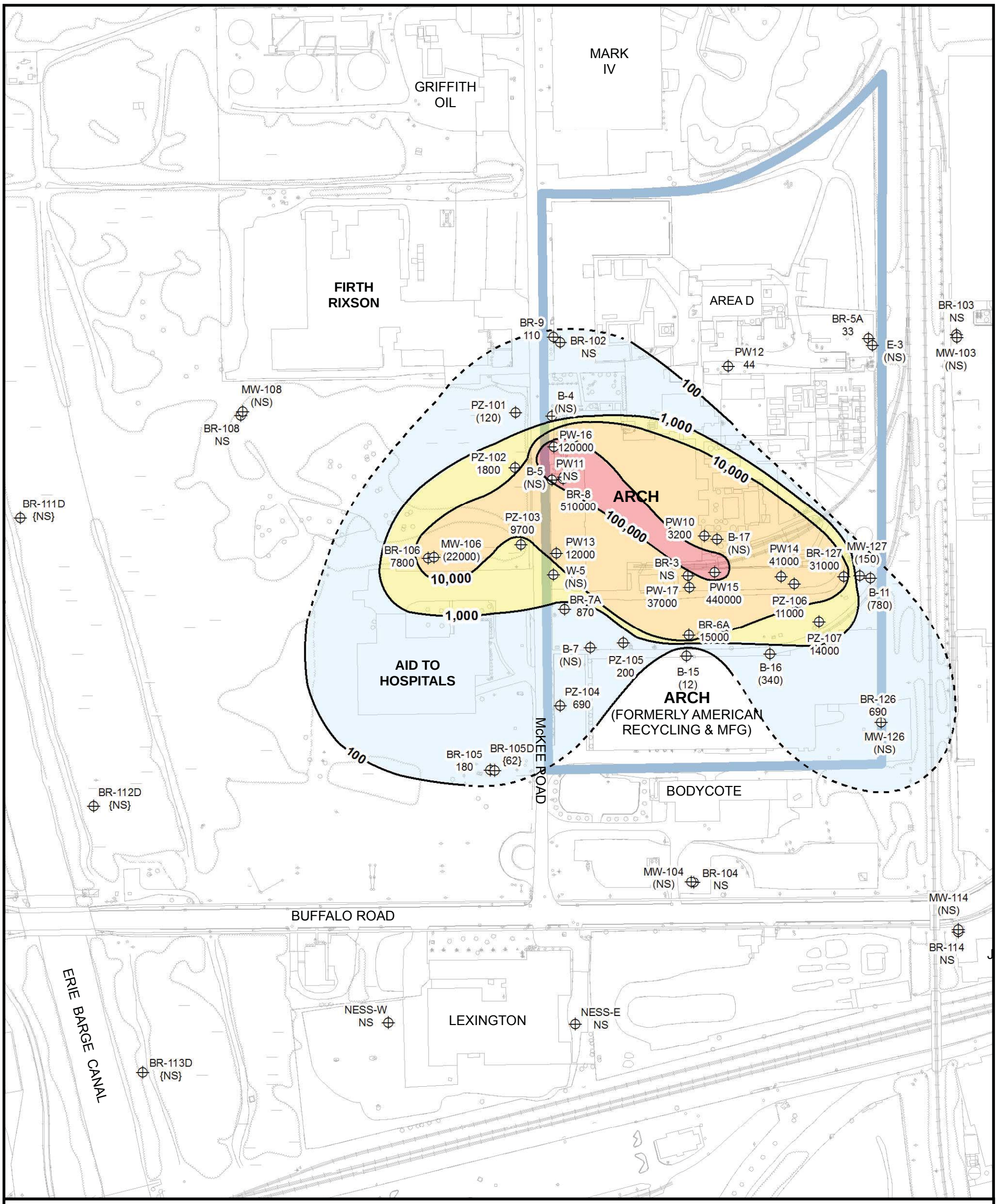
(***Not to Scale***)

FIGURE 7

SAMPLE LOCATIONS
DOLOMITE PRODUCTS
QUARRY

ARCH CHEMICALS
ROCHESTER, NEW YORK

W2004030a.cdr



Legend

- Property Owned by Lonza
- 100 — Chloropyridine Concentration Contour
- MW-106 (22000) — Monitoring Location with Concentration

{1000}	Deep Bedrock Well
(1000)	Overburden Well
1000	Bedrock Well
NS	Not Sampled
ND	Not Detected

0 100 200 Feet

N

Prepared/Date: BRP 02/15/18 | Checked/Date: JAR 02/15/18

NOTES:

1. Samples Collected November 7-13, 2017.
2. Selected chloropyridines consist of 2,6-dichloropyridine, 2-chloropyridine, 3-chloropyridine, 4-chloropyridine, and P-fluoroaniline.
3. Concentration contours represented for Bedrock Wells and selected Overburden and Deep Bedrock Wells.
4. Dashed concentration contours represent inferences from historical analytical results.
5. Concentrations are in µg/L.

Figure 8
Fall 2017
Selected Chloropyridine Concentration Contours

Arch Chemicals
Rochester, NY

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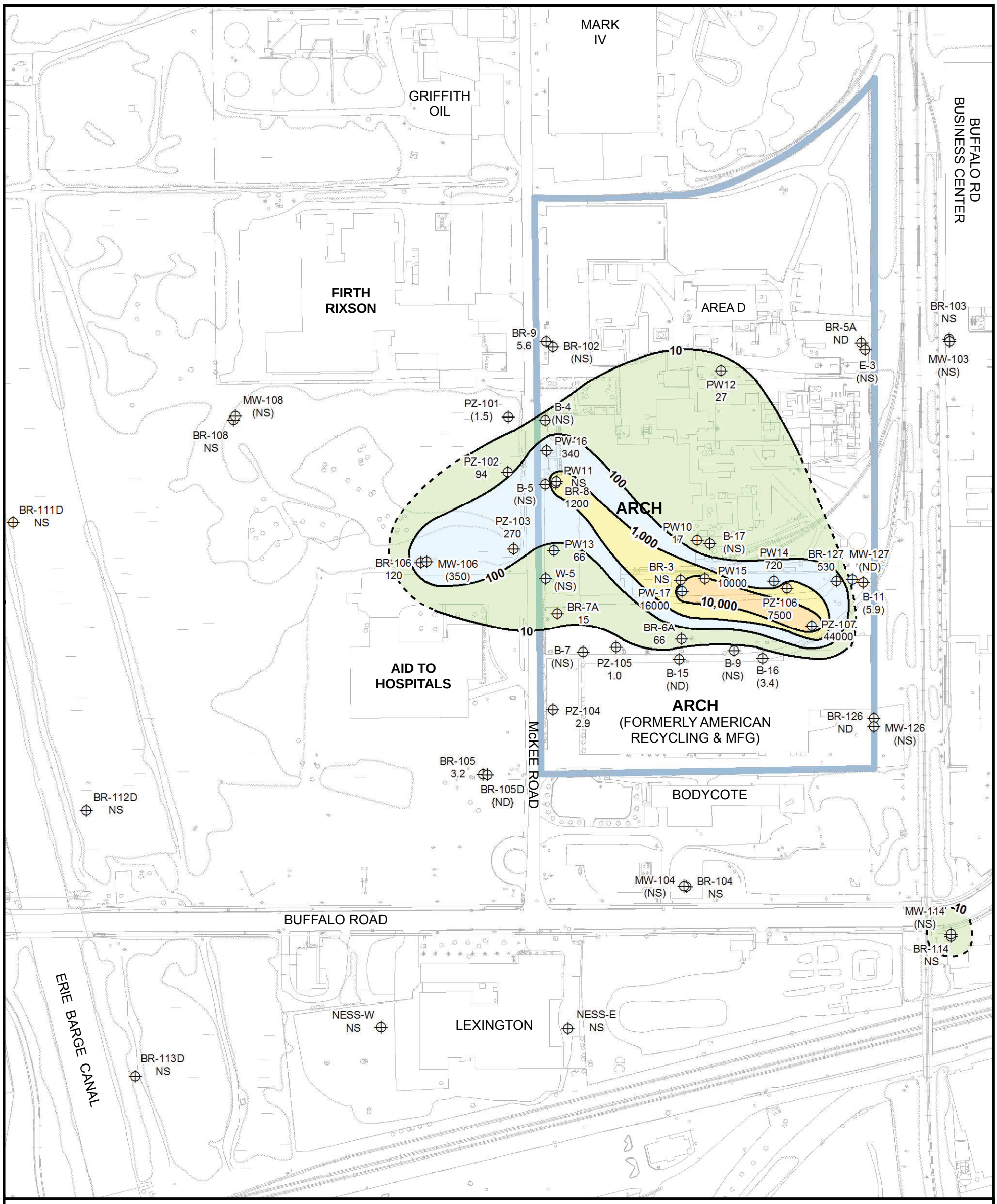

Legend

- Property Owned by Lonza
- 100 — VOC Concentration Contour
- B-16 (3.4) — Monitoring Location with Concentration
- {1000} Deep Bedrock Well
- (1000) Overburden Well
- 1000 Bedrock Well
- NS Not Sampled
- ND Not Detected

0 100 200 Feet

N

Prepared/Date: BRP 02/15/18 | Checked/Date: JAR 02/15/18

NOTES:

1. Samples collected in November 7-13, 2017.
2. Selected VOCs consist of carbon tetrachloride, methylene chloride chloroform, chlorobenzene, TCE, and PCE.
3. Concentration contours represented for Bedrock Wells and selected Overburden and Deep Bedrock Wells.
4. Dashed concentration contours represent inferences from historical analytical results.
5. Concentrations are in µg/L.

Figure 9
Fall 2017
Selected Volatile Organic Compound Concentration Contours

Arch Chemicals
Rochester, NY

amec foster wheeler

Document: P:\Projects\Arch\Rochester\GIS\MapDocuments\Fall 2017\Fig9_VOC_Contours.mxd PDF: P:\Projects\Arch\Rochester\archroch\DataDelv\2017\FALL\Figures\Fig9_VOCs.pdf 02/15/2018 12:06 PM brian.peters

Tables

TABLE 1
FALL 2017 GROUNDWATER SAMPLING AND ANALYTICAL PROGRAM

ARCH CHEMICALS, INC
ROCHESTER, NEW YORK

			ANALYSIS	PYRIDINES	VOCs
SITE / AREA	**WELL / POINT**	**DATE**	**QC TYPE**		
AID TO HOSPITALS	BR-106	11/9/2017	Sample	X	X
	MW-106	11/9/2017	Sample	X	X
	PZ-101	11/13/2017	Sample	X	X
	PZ-102	11/7/2017	Sample	X	X
	PZ-103	11/13/2017	Sample	X	X
ARCH ROCHESTER	B-11	11/7/2017	Sample	X	X
	B-15	11/9/2017	Sample	X	X
	B-16	11/9/2017	Sample	X	X
	BR-126	11/9/2017	Sample	X	X
	BR-127	11/7/2017	Duplicate	X	X
	BR-127	11/7/2017	Sample	X	X
	BR-5A	11/8/2017	Sample	X	X
	BR-6A	11/7/2017	Sample	X	X
	BR-7A	11/10/2017	Duplicate	X	X
	BR-7A	11/10/2017	Sample	X	X
	BR-8	11/10/2017	Sample	X	X
	BR-9	11/7/2017	Sample	X	X
	MW-127	11/7/2017	Sample	X	X
	PW10	11/7/2017	Sample	X	X
	PW12	11/7/2017	Sample	X	X
	PW13	11/9/2017	Sample	X	X
	PW14	11/8/2017	Sample	X	X
	PW15	11/8/2017	Sample	X	X
	PW16	11/10/2017	Sample	X	X
	PW17	11/8/2017	Sample	X	X
	PZ-104	11/8/2017	Sample	X	X
	PZ-105	11/8/2017	Sample	X	X
	PZ-106	11/8/2017	Sample	X	X
	PZ-107	11/8/2017	Sample	X	X
DOLOMITE PRODUCTS, INC.	QD-1	11/13/2017	Sample	X	
(Samples in canal or property along canal)	QO-2	11/13/2017	Sample	X	
	QS-4	11/13/2017	Sample	X	
ERIE BARGE CANAL	QO-2S1	11/13/2017	Sample	X	
RG & E RIGHT OF WAY	BR-105	11/9/2017	Sample	X	X
	BR-105D	11/9/2017	Sample	X	X

TABLE 2
FALL 2017 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	B-11	B-15	B-16	BR-105	BR-105D	BR-106	BR-126	BR-127	BR-127	BR-5A
SAMPLE DATE:	11/7/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/7/2017	11/7/2017	11/8/2017
QC TYPE:	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Duplicate	Sample
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270D (µg/L)										
2,6-Dichloropyridine	406	12.1	212	36.8	15.3 J	1080	134	1220 J	1100 J	27.5
2-Chloropyridine	376	10 U	128	147	37 J	6760	557	28100	25500	5.6 J
3-Chloropyridine	200 U	10 U	20 U	20 U	9.36 J	500 U	80 U	2000 U	2000 U	10 U
4-Chloropyridine	200 U	10 U	20 U	20 U	10 UJ	500 U	80 U	2000 U	2000 U	10 U
p-Fluoroaniline	200 UJ	10 UJ	20 UJ	20 UJ	10 UJ	500 UJ	80 UJ	2000 UJ	2000 UJ	10 UJ
Pyridine	200 UJ	10 UJ	20 UJ	20 UJ	10 UJ	500 UJ	80 UJ	1580 J	1390 J	10 UJ

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 2
FALL 2017 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	BR-6A	BR-7A	BR-7A	BR-8	BR-9	MW-106	MW-127	PW10	PW12	PW13
SAMPLE DATE:	11/7/2017	11/10/2017	11/10/2017	11/10/2017	11/7/2017	11/9/2017	11/7/2017	11/7/2017	11/7/2017	11/9/2017
QC TYPE:	Sample	Sample	Duplicate	Sample	Sample	Sample	Sample	Sample	Sample	Sample
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270D (µg/L)										
2,6-Dichloropyridine	2830	135	146	37200 J	18.7	3080	95.4	1360	7.34 J	2000 U
2-Chloropyridine	12400	732	788	445000	95	19300	50.2	1800	36.6	11600
3-Chloropyridine	2000 U	100 U	100 U	29300 J	10 U	2000 U	40 U	1000 U	10 U	2000 U
4-Chloropyridine	2000 U	100 U	100 U	50000 U	10 UJ	2000 U	40 U	1000 U	10 U	2000 U
p-Fluoroaniline	2000 UJ	100 U	100 U	50000 U	10 UJ	2000 UJ	40 UJ	1000 UJ	10 UJ	2000 UJ
Pyridine	2000 UJ	100 UJ	100 UJ	50000 UJ	10 UJ	2000 UJ	40 UJ	1000 UJ	10 UJ	2000 UJ

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 2
FALL 2017 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	PW14	PW15	PW16	PW17	PZ-101	PZ-102	PZ-103	PZ-104	PZ-105	PZ-106
SAMPLE DATE:	11/8/2017	11/8/2017	11/10/2017	11/8/2017	11/13/2017	11/7/2017	11/13/2017	11/8/2017	11/8/2017	11/8/2017
QC TYPE:	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270D (µg/L)										
2,6-Dichloropyridine	1400 J	50000 U	5090 J	2830 J	48.5	1000 U	2930	126 J	100 U	755 J
2-Chloropyridine	36200	443000	117000	34000	72.1	1840	6800	563	204	10400
3-Chloropyridine	1230 J	50000 U	10000 U	4000 U	10 U	1000 U	2000 U	200 U	100 U	1000 U
4-Chloropyridine	2000 U	50000 U	10000 U	4000 U	10 U	1000 U	2000 U	200 U	100 U	1000 U
p-Fluoroaniline	2000 UJ	50000 UJ	10000 U	4000 UJ	10 U	1000 UJ	2000 U	200 UJ	100 UJ	1000 UJ
Pyridine	1760 J	50000 UJ	10000 UJ	4000 UJ	10 UJ	1000 UJ	2000 UJ	200 UJ	100 UJ	1000 UJ

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 2
FALL 2017 GROUNDWATER MONITORING RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	PZ-107	QD-1	QO-2	QO-2S1	QS-4
SAMPLE DATE:	11/8/2017	11/13/2017	11/13/2017	11/13/2017	11/13/2017
QC TYPE:	Sample	Sample	Sample	Sample	Sample
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270D (µg/L)					
2,6-Dichloropyridine	1250	10 U	10 UJ	10 U	16.6
2-Chloropyridine	12300	10 U	10 UJ	10 U	48.3
3-Chloropyridine	1000 U	10 U	10 UJ	10 U	10 U
4-Chloropyridine	1000 U	10 UJ	10 UJ	10 U	10 U
p-Fluoroaniline	1000 UJ	10 U	10 UJ	10 U	10 U
Pyridine	1000 UJ	10 UJ	10 UJ	10 UJ	10 UJ

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 3
FALL 2017 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	B-11	B-15	B-16	BR-105	BR-105D	BR-106
SAMPLE DATE:	11/7/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017
QC TYPE:	Sample	Sample	Sample	Sample	Sample	Sample
VOCs By SW-846 Method 8260C (µg/L)						
1,1,1-Trichloroethane	2 U	2 U	2 U	2 U	2 U	2 UJ
1,1,2,2-Tetrachloroethane	2 U	2 U	2 U	2 U	2 U	2 UJ
1,1,2-Trichloro-1,2,2-Trifluoroethane	2 U	2 U	2 U	2 U	2 U	2 UJ
1,1,2-Trichloroethane	2 U	2 U	2 U	2 U	2 U	2 UJ
1,1-Dichloroethane	2 U	2 U	2 U	2 U	2 U	2 UJ
1,1-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 UJ
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 UJ
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 UJ
1,2-Dibromo-3-chloropropane	10 U	10 U	10 U	10 U	10 U	10 UJ
1,2-Dibromoethane	2 U	2 U	2 U	2 U	2 U	2 UJ
1,2-Dichlorobenzene	2 U	2 U	2 U	2.15	2 U	36.7 J
1,2-Dichloroethane	2 U	2 U	2 U	2 U	2 U	2 UJ
1,2-Dichloropropane	2 U	2 U	2 U	2 U	2 U	2 UJ
1,3-Dichlorobenzene	2 U	2 U	2 U	2 U	2 U	2.53 J
1,4-Dichlorobenzene	2 U	2 U	2 U	2 U	2 U	3.33 J
1,4-Dioxane	20 U	20 U	20 U	20 U	20 U	20 UJ
2-Butanone	10 U	10 U	10 U	10 U	10 U	10 UJ
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 UJ
4-Methyl-2-pentanone	5 U	5 U	5 U	5 U	5 U	5 UJ
Acetic acid, methyl ester	2 U	2 U	2 U	2 U	2 U	2 UJ
Acetone	10 U	10 U	10 U	10 U	8.05 J	10 UJ
Benzene	1 U	1 U	1 U	0.719 J	4.51	6.91 J
Bromochloromethane	5 U	5 U	5 U	5 U	5 U	5 UJ
Bromodichloromethane	2 U	2 U	2 U	2 U	2 U	2 UJ
Bromoform	5 U	5 U	5 U	5 U	5 U	5 UJ
Bromomethane	2 U	2 U	2 U	2 U	2 U	2 UJ
Carbon disulfide	2 U	2 U	2 U	2 U	2.12	2 UJ
Carbon tetrachloride	2 U	2 U	2 U	2 U	2 U	2 UJ
Chlorobenzene	2 U	2 U	1 J	3.18	2 U	120 J
Chloroethane	2 U	2 U	2 U	2 U	2 U	2 UJ
Chloroform	5.87	2 U	2.39	2 U	2 U	2 UJ
Chloromethane	2 U	2 U	2 U	2 U	2 U	2 UJ
Cis-1,2-Dichloroethene	2 U	2 U	2 U	12.3	5.16	2 UJ
Cis-1,3-Dichloropropene	2 U	2 U	2 U	2 U	2 U	2 UJ
Cyclohexane	10 U	10 U	10 U	10 U	8.05 J	10 UJ
Dibromochloromethane	2 U	2 U	2 U	2 U	2 U	2 UJ
Dichlorodifluoromethane	2 U	2 U	2 U	2 U	2 U	2 UJ
Ethylbenzene	2 U	2 U	2 U	2 U	2 U	2 UJ
Isopropylbenzene	2 U	2 U	2 U	2 U	2 U	2 UJ
Methyl cyclohexane	2 U	2 U	2 U	2 U	3.34	2 UJ
Methyl Tertbutyl Ether	2 U	2 U	2 U	2 U	7.29	2 UJ
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 UJ
Styrene	5 U	5 U	5 U	5 U	5 U	5 UJ
Tetrachloroethene	2 U	2 U	2 U	2 U	2 U	2 UJ
Toluene	2 U	2 U	2 U	2 U	2 U	2 UJ
trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 UJ
trans-1,3-Dichloropropene	2 U	2 U	2 U	2 U	2 U	2 UJ
Trichloroethene	2 U	2 U	2 U	2 U	2 U	2 UJ
Trichlorofluoromethane	2 U	2 U	2 U	2 U	2 U	2 UJ
Vinyl chloride	2 U	2 U	2 U	8.99	2 U	2 UJ
Xylene, o	2 U	2 U	2 U	2 U	2 U	2 UJ
Xylenes (m&p)	2 U	2 U	2 U	2 U	2 U	2 UJ

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 3
FALL 2017 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	BR-126	BR-127	BR-127	BR-5A	BR-6A	BR-7A
SAMPLE DATE:	11/9/2017	11/7/2017	11/7/2017	11/8/2017	11/7/2017	11/10/2017
QC TYPE:	Sample	Duplicate	Sample	Sample	Sample	Duplicate
VOCs By SW-846 Method 8260C (µg/L)						
1,1,1-Trichloroethane	2 U	5 U	10 U	2 U	4 UJ	2 U
1,1,2,2-Tetrachloroethane	2 U	5 U	10 U	2 U	4 UJ	2 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	2 U	5 U	10 U	2 U	4 UJ	2 U
1,1,2-Trichloroethane	2 U	5 U	10 U	2 U	4 UJ	2 U
1,1-Dichloroethane	2 U	5 U	10 U	2 U	4 UJ	2.28
1,1-Dichloroethene	2 U	5 U	10 U	2 U	4 UJ	2 U
1,2,3-Trichlorobenzene	5 U	12.5 U	25 U	5 U	10 UJ	5 U
1,2,4-Trichlorobenzene	5 U	12.5 U	25 U	5 U	10 UJ	5 U
1,2-Dibromo-3-chloropropane	10 U	25 U	50 U	10 U	20 UJ	10 U
1,2-Dibromoethane	2 U	5 U	10 U	2 U	4 UJ	2 U
1,2-Dichlorobenzene	2 U	6.89	6.73 J	2 U	2.6 J	7.19
1,2-Dichloroethane	2 U	5 U	10 U	2 U	2.03 J	2 U
1,2-Dichloropropane	2 U	5 U	10 U	2 U	4 UJ	2 U
1,3-Dichlorobenzene	2 U	5.8	5.59 J	2 U	4 UJ	2.17
1,4-Dichlorobenzene	2 U	9.25	9.14 J	2 U	4 UJ	1.77 J
1,4-Dioxane	20 U	50 U	100 U	20 U	40 UJ	20 U
2-Butanone	10 U	25 U	50 U	10 U	20 UJ	10 U
2-Hexanone	5 U	12.5 U	25 U	5 U	10 UJ	5 U
4-Methyl-2-pentanone	5 U	12.5 U	25 U	5 U	10 UJ	5 U
Acetic acid, methyl ester	2 U	5 U	10 U	2 U	4 UJ	2 U
Acetone	10 U	25 U	50 U	10 U	20 UJ	10 U
Benzene	1.2	4.48	4.54 J	1 U	8.28 J	3.6
Bromochloromethane	5 U	12.5 U	25 U	5 U	10 UJ	5 U
Bromodichloromethane	2 U	5 U	10 U	2 U	4 UJ	2 U
Bromoform	5 U	12.5 U	25 U	5 U	10 UJ	5 U
Bromomethane	2 U	5 U	10 U	2 U	4 UJ	2 U
Carbon disulfide	2 U	32.9	28.9	2 U	4 UJ	2 U
Carbon tetrachloride	2 U	27.9	22	2 U	4 UJ	1.25 J
Chlorobenzene	2 U	8.29	7.83 J	2 U	30.8 J	12.5
Chloroethane	2 U	5 U	10 U	2 U	4 UJ	2 U
Chloroform	2 U	498	467	2 U	2.52 J	1.06 J
Chloromethane	2 U	5 U	10 U	2 U	4 UJ	2 U
Cis-1,2-Dichloroethene	2 U	4.12 J	10 U	2 U	127 J	1.64 J
Cis-1,3-Dichloropropene	2 U	5 U	10 U	2 U	4 UJ	2 U
Cyclohexane	10 U	25 U	50 U	10 U	20 UJ	10 U
Dibromochloromethane	2 U	5 U	10 U	2 U	4 UJ	2 U
Dichlorodifluoromethane	2 U	5 U	10 U	2 U	4 UJ	2 U
Ethylbenzene	2 U	5 U	10 U	2 U	4 UJ	2 U
Isopropylbenzene	2 U	5 U	10 U	2 U	4 UJ	2 U
Methyl cyclohexane	2 U	5 U	10 U	2 U	4 UJ	2 U
Methyl Tertbutyl Ether	2 U	5 U	10 U	2 U	4 UJ	2.05
Methylene chloride	5 U	6.71 J	25 U	5 U	10 UJ	5 U
Styrene	5 U	12.5 U	25 U	5 U	10 UJ	5 U
Tetrachloroethene	2 U	21.8	20.3	2 U	9.27 J	2 U
Toluene	2 U	7.32	7.42 J	2 U	114 J	2 U
trans-1,2-Dichloroethene	2 U	5 U	10 U	2 U	4 UJ	2 U
trans-1,3-Dichloropropene	2 U	5 U	10 U	2 U	4 UJ	2 U
Trichloroethene	2 U	11.2	11.6	2 U	23.5 J	2 U
Trichlorofluoromethane	2 U	5 U	10 U	2 U	4 UJ	2 U
Vinyl chloride	2 U	5.95	5.88 J	2 U	49.1 J	4.45
Xylene, o	2 U	5 U	10 U	2 U	4 UJ	2 U
Xylenes (m&p)	2 U	5 U	10 U	2 U	4 UJ	2 U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 3
FALL 2017 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	BR-7A	BR-8	BR-9	MW-106	MW-127	PW10
SAMPLE DATE:	11/10/2017	11/10/2017	11/7/2017	11/9/2017	11/7/2017	11/7/2017
QC TYPE:	Sample	Sample	Sample	Sample	Sample	Sample
VOCs By SW-846 Method 8260C (µg/L)						
1,1,1-Trichloroethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
1,1,2,2-Tetrachloroethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	2 U	40 UJ	6.31	4 UJ	2 U	2 U
1,1,2-Trichloroethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
1,1-Dichloroethane	2.46	40 UJ	2.77	4 UJ	2 U	2 U
1,1-Dichloroethene	2 U	40 UJ	2 U	4 UJ	2 U	2 U
1,2,3-Trichlorobenzene	5 U	100 UJ	5 U	10 UJ	5 U	20.9
1,2,4-Trichlorobenzene	5 U	100 UJ	5 U	10 UJ	5 U	25.7
1,2-Dibromo-3-chloropropane	10 U	200 UJ	10 U	20 UJ	10 U	10 U
1,2-Dibromoethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
1,2-Dichlorobenzene	7.6	322 J	2.85	101 J	2 U	1.59 J
1,2-Dichloroethane	2 U	40 UJ	2 UJ	4 UJ	2 U	2 U
1,2-Dichloropropane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
1,3-Dichlorobenzene	2.44	183 J	2 U	4.07 J	2 U	2 U
1,4-Dichlorobenzene	1.97 J	237 J	2 U	6.89 J	2 U	2 U
1,4-Dioxane	20 U	400 UJ	20 U	40 UJ	20 U	20 U
2-Butanone	10 U	200 UJ	10 U	20 UJ	10 U	10 U
2-Hexanone	5 U	100 UJ	5 U	10 UJ	5 U	5 U
4-Methyl-2-pentanone	5 U	100 UJ	5 U	10 UJ	5 U	5 U
Acetic acid, methyl ester	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Acetone	10 U	200 UJ	10 U	20 UJ	10 U	9.6 J
Benzene	3.73	25.6 J	49.8 J	16 J	1 U	1 U
Bromochloromethane	5 U	100 UJ	5 U	10 UJ	5 U	5 U
Bromodichloromethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Bromoform	5 U	100 UJ	5 U	10 UJ	5 U	5 U
Bromomethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Carbon disulfide	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Carbon tetrachloride	1.25 J	40 UJ	2 U	4 UJ	2 U	3.44
Chlorobenzene	13	1180 J	5.55	346 J	2 U	2 U
Chloroethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Chloroform	1.19 J	40 UJ	2 U	4 UJ	2 U	3.59
Chloromethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Cis-1,2-Dichloroethene	1.72 J	40 UJ	29.9	4 UJ	2 U	2 U
Cis-1,3-Dichloropropene	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Cyclohexane	10 U	200 UJ	19.4	20 UJ	10 U	10 U
Dibromochloromethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Dichlorodifluoromethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Ethylbenzene	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Isopropylbenzene	2 U	40 UJ	2.32	4 UJ	2 U	2 U
Methyl cyclohexane	2 U	40 UJ	6.29	4 UJ	2 U	2 U
Methyl Tertbutyl Ether	2.08	40 UJ	2 U	4 UJ	2 U	2 U
Methylene chloride	5 U	100 UJ	5 U	10 UJ	5 U	5 U
Styrene	5 U	100 UJ	5 U	10 UJ	5 U	5 U
Tetrachloroethene	2 U	40 UJ	2 U	4 UJ	2 U	7.55
Toluene	2 U	37.2 J	2 U	4 UJ	2 U	2 U
trans-1,2-Dichloroethene	2 U	40 UJ	2 U	4 UJ	2 U	2 U
trans-1,3-Dichloropropene	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Trichloroethene	2 U	40 UJ	2 U	4 UJ	2 U	2.01
Trichlorofluoromethane	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Vinyl chloride	4.68	40 UJ	27.8	4 UJ	2 U	2 U
Xylene, o	2 U	40 UJ	2 U	4 UJ	2 U	2 U
Xylenes (m&p)	2 U	40 UJ	2 U	4 UJ	2 U	2 U

Notes:
U = Compound not detected; value
represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 3
FALL 2017 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	PW12	PW13	PW14	PW15	PW16	PW17
SAMPLE DATE:	11/7/2017	11/9/2017	11/8/2017	11/8/2017	11/10/2017	11/8/2017
QC TYPE:	Sample	Sample	Sample	Sample	Sample	Sample
VOCs By SW-846 Method 8260C (µg/L)						
1,1,1-Trichloroethane	2 U	2 UJ	20 U	400 U	10 U	200 U
1,1,2,2-Tetrachloroethane	2 U	2 UJ	20 U	400 U	10 U	200 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	2 U	2 UJ	20 U	400 U	10 U	200 U
1,1,2-Trichloroethane	2 U	2 UJ	20 U	400 U	10 U	200 U
1,1-Dichloroethane	2 U	2.63 J	20 U	400 U	10 U	200 U
1,1-Dichloroethene	2 U	2 UJ	20 U	400 U	10 U	200 U
1,2,3-Trichlorobenzene	25	5 UJ	50 U	1000 U	25 U	500 U
1,2,4-Trichlorobenzene	47.5	5 UJ	50 U	1000 U	25 U	500 U
1,2-Dibromo-3-chloropropane	10 U	10 UJ	100 U	2000 U	50 U	1000 U
1,2-Dibromoethane	2 U	2 UJ	20 U	400 U	10 U	200 U
1,2-Dichlorobenzene	8.68	34.1 J	20 U	400 U	228	200 U
1,2-Dichloroethane	2 U	2 UJ	20 U	400 U	10 U	200 U
1,2-Dichloropropane	2 U	2 UJ	20 U	400 U	10 U	200 U
1,3-Dichlorobenzene	19.6	7.52 J	20 U	400 U	64.3	200 U
1,4-Dichlorobenzene	17	9.12 J	20 U	400 U	88.6	200 U
1,4-Dioxane	20 U	20 UJ	200 U	4000 U	100 U	2000 U
2-Butanone	10 U	10 UJ	100 U	2000 U	50 U	1000 U
2-Hexanone	5 U	5 UJ	50 U	1000 U	25 U	500 U
4-Methyl-2-pentanone	5 U	5 UJ	50 U	1000 U	25 U	500 U
Acetic acid, methyl ester	2 U	2 UJ	20 U	400 U	10 U	200 U
Acetone	10 U	10 UJ	100 U	2000 U	50 U	1000 U
Benzene	1 U	10.6 J	10 U	200 U	9.95	100 U
Bromochloromethane	5 U	5 UJ	50 U	1000 U	25 U	500 U
Bromodichloromethane	2 U	2 UJ	20 U	400 U	10 U	200 U
Bromoform	5 U	5 UJ	50 U	1000 U	25 U	500 U
Bromomethane	2 U	2 UJ	20 U	400 U	10 U	200 U
Carbon disulfide	2 U	2 UJ	26.5	887	10 U	1720
Carbon tetrachloride	1.21 J	2 UJ	20 U	5010	10 U	2700
Chlorobenzene	11.2	64.2 J	20 U	400 U	342	200 U
Chloroethane	2 U	2 UJ	20 U	400 U	10 U	200 U
Chloroform	2.11	1.74 J	692	4430	10 U	9830
Chloromethane	2 U	2 UJ	20 U	400 U	10 U	200 U
Cis-1,2-Dichloroethene	2 U	1.43 J	20 U	400 U	10 U	200 U
Cis-1,3-Dichloropropene	2 U	2 UJ	20 U	400 U	10 U	200 U
Cyclohexane	10 U	10 UJ	100 U	2000 U	50 U	1000 U
Dibromochloromethane	2 U	2 UJ	20 U	400 U	10 U	200 U
Dichlorodifluoromethane	2 U	2 UJ	20 U	400 U	10 U	200 U
Ethylbenzene	2 U	2 UJ	20 U	400 U	10 U	200 U
Isopropylbenzene	2 U	2 UJ	20 U	400 U	10 U	200 U
Methyl cyclohexane	2 U	2 UJ	20 U	400 U	10 U	200 U
Methyl Tertbutyl Ether	2 U	1.87 J	20 U	400 U	10 U	200 U
Methylene chloride	5 U	5 UJ	50 U	1000 U	25 U	2330
Styrene	5 U	5 UJ	50 U	1000 U	25 U	500 U
Tetrachloroethene	12.5	2 UJ	12.7 J	820	10 U	732
Toluene	2.2	1.74 J	10.8 J	400 U	42.1	200 U
trans-1,2-Dichloroethene	2 U	2 UJ	20 U	400 U	10 U	200 U
trans-1,3-Dichloropropene	2 U	2 UJ	20 U	400 U	10 U	200 U
Trichloroethene	2 U	2 UJ	16.1 J	400 U	10 U	200 U
Trichlorofluoromethane	2 U	2 UJ	20 U	400 U	10 U	200 U
Vinyl chloride	2 U	6.56 J	20 U	400 U	10 U	115 J
Xylene, o	1.58 J	2 UJ	20 U	400 U	10 U	200 U
Xylenes (m&p)	1.35 J	2 UJ	20 U	400 U	10 U	200 U

Notes:
U = Compound not detected; value
represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 3
FALL 2017 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	PZ-101	PZ-102	PZ-103	PZ-104	PZ-105	PZ-106
SAMPLE DATE:	11/13/2017	11/7/2017	11/13/2017	11/8/2017	11/8/2017	11/8/2017
QC TYPE:	Sample	Sample	Sample	Sample	Sample	Sample
VOCs By SW-846 Method 8260C (µg/L)						
1,1,1-Trichloroethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,1,2,2-Tetrachloroethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,1,2-Trichloroethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,1-Dichloroethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,1-Dichloroethene	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,2,3-Trichlorobenzene	5 U	10 UJ	25 UJ	5 U	5 U	100 U
1,2,4-Trichlorobenzene	5 U	10 UJ	25 UJ	5 U	5 U	100 U
1,2-Dibromo-3-chloropropane	10 U	20 UJ	50 UJ	10 U	10 U	200 U
1,2-Dibromoethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,2-Dichlorobenzene	2 U	33.5 J	144 J	2 U	2 U	40 U
1,2-Dichloroethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,2-Dichloropropane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
1,3-Dichlorobenzene	2 U	4.9 J	43.5 J	2 U	2 U	40 U
1,4-Dichlorobenzene	2 U	5.21 J	31.4 J	2 U	2 U	40 U
1,4-Dioxane	20 U	40 UJ	100 UJ	20 U	20 U	400 U
2-Butanone	10 U	20 UJ	50 UJ	10 U	10 U	200 U
2-Hexanone	5 U	10 UJ	25 UJ	5 U	5 U	100 U
4-Methyl-2-pentanone	5 U	10 UJ	25 UJ	5 U	5 U	100 U
Acetic acid, methyl ester	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Acetone	10 U	20 UJ	50 UJ	10 U	25.5	200 U
Benzene	1 U	5.09 J	6.39 J	0.758 J	1 U	11.5 J
Bromochloromethane	5 U	10 UJ	25 UJ	5 U	5 U	100 U
Bromodichloromethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Bromoform	5 U	10 UJ	25 UJ	5 U	5 U	322
Bromomethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Carbon disulfide	2 U	4 UJ	10 UJ	2 U	2 U	20.9 J
Carbon tetrachloride	2 U	4 UJ	10 UJ	2 U	2 U	3280
Chlorobenzene	1.52 J	94.4 J	269 J	2.86	1.04 J	40 U
Chloroethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Chloroform	2 U	4 UJ	10 UJ	2 U	2 U	3800
Chloromethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Cis-1,2-Dichloroethene	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Cis-1,3-Dichloropropene	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Cyclohexane	10 U	20 UJ	50 UJ	10 U	10 U	200 U
Dibromochloromethane	2 U	4 UJ	10 UJ	2 U	2 U	36.9 J
Dichlorodifluoromethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Ethylbenzene	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Isopropylbenzene	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Methyl cyclohexane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Methyl Tertbutyl Ether	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Methylene chloride	5 U	10 UJ	25 UJ	5 U	5 U	272
Styrene	5 U	10 UJ	25 UJ	5 U	5 U	100 U
Tetrachloroethene	2 U	4 UJ	10 UJ	2 U	2 U	148
Toluene	2 U	4 UJ	10 UJ	2 U	2 U	63.6
trans-1,2-Dichloroethene	2 U	4 UJ	10 UJ	2 U	2 U	40 U
trans-1,3-Dichloropropene	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Trichloroethene	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Trichlorofluoromethane	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Vinyl chloride	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Xylene, o	2 U	4 UJ	10 UJ	2 U	2 U	40 U
Xylenes (m&p)	2 U	4 UJ	10 UJ	2 U	2 U	40 U

Notes:
U = Compound not detected; value
represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 3
FALL 2017 GROUNDWATER MONITORING RESULTS
VOLATILE ORGANIC COMPOUNDS

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	PZ-107
SAMPLE DATE:	11/8/2017
QC TYPE:	Sample
VOCs By SW-846 Method 8260C (µg/L)	
1,1,1-Trichloroethane	400 U
1,1,2,2-Tetrachloroethane	400 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	400 U
1,1,2-Trichloroethane	400 U
1,1-Dichloroethane	400 U
1,1-Dichloroethene	400 U
1,2,3-Trichlorobenzene	1000 U
1,2,4-Trichlorobenzene	1000 U
1,2-Dibromo-3-chloropropane	2000 U
1,2-Dibromoethane	400 U
1,2-Dichlorobenzene	400 U
1,2-Dichloroethane	400 U
1,2-Dichloropropane	400 U
1,3-Dichlorobenzene	400 U
1,4-Dichlorobenzene	400 U
1,4-Dioxane	4000 U
2-Butanone	2000 U
2-Hexanone	1000 U
4-Methyl-2-pentanone	1000 U
Acetic acid, methyl ester	400 U
Acetone	2000 U
Benzene	200 U
Bromochloromethane	1000 U
Bromodichloromethane	400 U
Bromoform	1000 U
Bromomethane	400 U
Carbon disulfide	645
Carbon tetrachloride	8750
Chlorobenzene	400 U
Chloroethane	400 U
Chloroform	28000
Chloromethane	400 U
Cis-1,2-Dichloroethene	400 U
Cis-1,3-Dichloropropene	400 U
Cyclohexane	2000 U
Dibromochloromethane	400 U
Dichlorodifluoromethane	400 U
Ethylbenzene	400 U
Isopropylbenzene	400 U
Methyl cyclohexane	400 U
Methyl Tertbutyl Ether	400 U
Methylene chloride	6330
Styrene	1000 U
Tetrachloroethene	834
Toluene	400 U
trans-1,2-Dichloroethene	400 U
trans-1,3-Dichloropropene	400 U
Trichloroethene	400 U
Trichlorofluoromethane	400 U
Vinyl chloride	400 U
Xylene, o	400 U
Xylenes (m&p)	400 U

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 4
COMPARISON OF FALL 2017
CHLOROPYRIDINES AND VOLATILE ORGANICS CONCENTRATIONS
IN GROUNDWATER TO PREVIOUS RESULTS (ug/L)

ARCH ROCHESTER
SEMI-ANNUAL GROUNDWATER MONITORING REPORT

WELL	SELECTED CHLOROPYRIDINES				SELECTED VOCs			
	# EVENTS IN PRIOR 5 YRS	HISTORIC MAXIMUM	5-YEAR MEAN	NOV 2017 RESULT	# EVENTS IN PRIOR 5 YRS	HISTORIC MAXIMUM	5-YEAR MEAN	NOV 2017 RESULT
ON-SITE WELLS/LOCATIONS								
B-11	7	4,800	1900	780	7	570	21	6
B-15	9	13,000	100	12	9	1,600	0.097	ND
B-16	10	33,000	690	340	10	4,500	5.1	3.4
B-17	8	28,000,000	370,000		8	350,000	3,800	
B-4	3	740	21		3	42	7	
B-5	6	360,000	140,000		8	670	210	
B-7	5	9,100	180		5	270	6.6	
BR-126	9	12,000	1,300	690	9	240	0.66	ND
BR-127	11	44,000	13,000	**31,000**	11	1,300	180	**530**
BR-3	5	6,500,000	16,000		5	930,000	11,000	
BR-5A	10	1,700	76	33	10	9,400	6.4	ND
BR-6A	11	140,000	19,000	15,000	11	69,000	4,500	66
BR-7A	10	510,000	8,600	870	10	5,600	260	15
BR-8	9	550,000	260,000	**510,000**	9	7,800	830	**1,200**
BR-9	10	1,300	220	110	10	210	12	6
E-3	5	600	17		5	15,000	0.16	
MW-127	11	15,000	1,500	150	11	7,500	56	ND
PW10	11	500,000	190,000	3,200	11	120,000	1,200	17
PW12	10	15,000	220	44	10	120,000	970	27
PW13	10	94,000	20,000	12,000	10	1,800	400	66
PW14	11	44,000	8,000	**41,000**	11	160,000	5,900	720
PW15	10	390,000	160,000	**440,000**	10	57,000	15,000	10,000
PW16	10	100,000	57,000	**120,000**	10	1,200	620	340
PW17	10	75,000	26,000	**37,000**	10	66,000	33,000	16,000
PZ-104	10	9,100	630	**690**	10	52	2.5	**2.9**
PZ-105	10	190,000	5,100	200	10	9,900	34	1
PZ-106	11	290,000	10,000	**11,000**	11	1,400,000	92,000	7,500
PZ-107	11	31,000	3,800	**14,000**	11	130,000	13,000	**44,000**
W-5	2	450,000	ND		2	2,500	8.7	
OFF-SITE WELLS/LOCATIONS								
BR-103	3	400	2.5		3	46	ND	
BR-104	2	3,100	2.9			11		
BR-105	10	24,000	900	180	10	350	9.0	3.2
BR-105D	10	17,000	310	62	10	230	1.9	ND
BR-106	11	46,000	18,000	7,800	11	12,000	210	120
BR-108	3	1,700	2.6			2		
BR-112D	5	310	22			4.3		
BR-113D	5	490	5.1			2.8		
BR-114	5	520	5.4		5	12	0.2	
BR-116	2	12	ND			86		
BR-116D	2	710	14			130		
BR-117D	5	80	1.8			1.9		
BR-118D	5	330	19			6.6		
BR-122D	5	650	18			ND		

TABLE 4
COMPARISON OF FALL 2017
CHLOROPYRIDINES AND VOLATILE ORGANICS CONCENTRATIONS
IN GROUNDWATER TO PREVIOUS RESULTS (ug/L)

ARCH ROCHESTER
SEMI-ANNUAL GROUNDWATER MONITORING REPORT

WELL	SELECTED CHLOROPYRIDINES				SELECTED VOCs			
	# EVENTS IN PRIOR 5 YRS	HISTORIC MAXIMUM	5-YEAR MEAN	NOV 2017 RESULT	# EVENTS IN PRIOR 5 YRS	HISTORIC MAXIMUM	5-YEAR MEAN	NOV 2017 RESULT
BR-123D	5	860	47			7		
MW-103	3	97	ND		3	750	ND	
MW-104	2	180	3			5.8		
MW-106	11	130,000	33,000	22,000	11	4,000	370	350
MW-114	5	18	1		5	27	21	
MW-16	3	360	12			10		
NESS-E	2	5,000	25			710		
NESS-W	2	6,300	ND			94		
PZ-101	10	27,000	140	120	10	620	2.3	1.5
PZ-102	11	210,000	58,000	1,800	11	11,000	530	94
PZ-103	10	230,000	70,000	9,700	10	46,000	860	270
QD-1	10	11	2.4	ND		ND		
QO-2	1	380	3.8	ND		ND		
QO-2S1	9	27	ND	ND		ND		
QS-4	10	13,000	95	65		ND		

Note:
1) Number of samples and mean reflect 5-year sampling period from November 2012 through May 2017. Historic maximum based on all available results from March 1990 through May 2017.
2) Chloropyridines represented by: 2-Chloropyridine, 2,6-Dichloropyridine, 3-Chloropyridine, 4-Chloropyridine, p-Fluoroaniline, and Pyridine.
3) Selected VOCs represented by Carbon Tetrachloride, Chlorobenzene, Chloroform, Methylene Chloride, Tetrachloroethene, and Trichloroethene.
4) **Bold and shade** - November 2017 exceeds 5-year mean.
5) ND = Not detected
BLANK = Not sampled

TABLE 5
FALL 2017 QUARRY SEEP AND OUTFALL WATER SAMPLE RESULTS
CHLOROPYRIDINES

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

LOCATION:	QS-4	QO-2	QO-2S1	QD-1
SAMPLE DATE:	11/13/2017	11/13/2017	11/13/2017	11/13/2017
QC TYPE:	Sample	Sample	Sample	Sample
SELECTED CHLOROPYRIDINES BY SW-846 Method 8270D (µg/L)				
2,6-Dichloropyridine	16.6	10 UJ	10 U	10 U
2-Chloropyridine	48.3	10 UJ	10 U	10 U
3-Chloropyridine	10 U	10 UJ	10 U	10 U
4-Chloropyridine	10 U	10 UJ	10 U	10 UJ
p-Fluoroaniline	10 U	10 UJ	10 U	10 U
Pyridine	10 UJ	10 UJ	10 UJ	10 UJ

Notes:
U = Compound not detected; value represents sample quantitation limit.
J = Estimated value
µg/L = micrograms per Liter

TABLE 6
EXTRACTION WELL WEEKLY FLOW MEASUREMENTS - JUNE 2017 THROUGH NOVEMBER 2017

ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

Week Ending	BR-7A [Gal./Wk.]	BR-9 [Gal./Wk.]	PW-13 [Gal./Wk.]	PW-15 [Gal./Wk.]	PW-16 [Gal./Wk.]	PW-17 [Gal./Wk.]	BR-127 [Gal./Wk.]	Total [Gal.]
Jun '17								
06/04/17	131,672	62,278	82,735	15,330	113,841	0	52,279	458,135
06/11/17	133,352	60,238	78,752	6,650	109,878	0	44,621	433,491
06/18/17	134,164	61,329	77,569	513	110,504	0	53,160	437,239
06/25/17	135,259	62,461	74,581	528	110,230	397	58,937	442,393
								1,771,258
Jul '17								
07/02/17	133,131	62,455	71,422	7,040	108,941	623	60,247	443,859
07/09/17	41,472	67,446	84,447	13,961	109,591	598	63,533	381,048
07/16/17	1	74,404	94,515	13,493	107,595	599	70,610	361,217
07/23/17	93,685	63,196	81,240	13,657	103,305	571	73,309	428,963
07/30/17	100,738	64,200	77,797	13,492	106,976	521	71,970	435,694
							Total [Gal.]	2,050,781
Aug '17								
08/06/17	84,035	62,354	80,088	12,840	105,550	507	57,432	402,806
08/13/17	89,761	64,433	80,655	12,593	107,762	514	72,917	428,635
08/20/17	86,643	63,080	78,858	12,478	105,803	463	77,163	424,488
08/27/17	86,824	63,975	78,545	12,282	102,586	408	73,503	418,123
							Total [Gal.]	1,674,052
Sep '17								
09/03/17	90,616	68,447	87,649	11,996	28,788	403	76,494	364,393
09/10/17	88,267	14,060	87,779	12,005	137,272	361	84,973	424,717
09/17/17	75,564	7,526	78,785	10,093	122,071	343	55,843	350,225
09/24/17	91,699	0	98,311	7,628	132,574	439	82,997	413,648
							Total [Gal.]	1,552,983
Oct '17								
10/01/17	84,946	35,885	85,981	4,679	102,268	416	62,774	376,949
10/08/17	86,147	68,918	83,948	11,126	102,117	285	71,230	423,771
10/15/17	85,788	65,704	85,091	6,707	108,111	303	72,207	423,911
10/22/17	85,291	61,903	83,564	5,392	138,500	277	76,185	451,112
10/29/17	83,180	57,725	83,082	3,317	128,548	281	66,442	422,575
							Total [Gal.]	2,098,318
Nov '17								
11/05/17	85,824	56,884	89,972	1,744	115,106	304	71,189	421,023
11/12/17	85,494	59,413	88,982	10,070	102,112	340	42,354	388,765
11/19/17	87,549	53,601	73,579	36,358	111,781	316	74,868	438,052
11/26/17	92,239	52,119	23,535	36,618	92,264	217	81,092	378,084
							Total [Gal.]	1,625,924
Total 6 Mo. Removal (Gal.)	2,373,341	1,434,034	2,091,462	292,590	2,824,074	9,486	1,748,329	10,773,316

TABLE 7

MASS REMOVAL SUMMARY
PERIOD: JUNE 2017 THROUGH NOVEMBER 2017

ARCH ROCHESTER
FALL 2017 GROUNDWATER MONITORING REPORT

Well	Total Vol. Pumped (gallons)	Avg. VOC Conc. (ppm)	Avg. PYR. Conc. (ppm)	VOCs Removed (pounds)	PYR. Removed (pounds)
BR-7A	2,373,000	0.02	2	0.4	36
BR-9	1,434,000	0.007	0.09	0.09	1.1
PW-13	2,091,000	0.19	35	3.24	611
PW-15	293,000	33.8	372	82	907
PW-16	2,824,000	0.38	119	8.9	2809
PW-17	9,000	19	55.8	1	4
BR-127	1,748,000	0.39	25.2	5.7	366
Totals:	10,772,000			102	4,735

Notes: VOC and pyridine concentrations used in this table are an average of the analytical results from the Spring 2017 and Fall 2017 sampling events for each well;
Total select VOCs include chlorobenzene, PCE, TCE, methylene chloride, carbon tetrachloride, and chloroform

TABLE 8
2018 SAMPLING SCHEDULE
ARCH CHEMICALS, INC.
ROCHESTER, NEW YORK

ARCH ROCHESTER						**2018**					
MONITORING PROGRAM						**SPRING**		**FALL**		**TOTAL**	
	Well	***zone***	***area***	***Frequency/Parameters***	***Purpose***	***Pyridines***	***VOCs***	***Pyridines***	***VOCs***	***Pyridines***	***VOCs***
OFF-SITE	BR-105	BR	AID-HOSP	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
MONITORING	BR-105D	BR deep	AID-HOSP	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
	MW-106	OB	AID-HOSP	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
	BR-106	BR	AID-HOSP	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
	BR-112D	BR deep	NYSDOT	annual monitoring, PYR	trend monitoring	1				1	0
	BR-113D	BR deep	NYSDOT	annual monitoring, PYR	trend monitoring	1				1	0
	MW-114	OB	JACKSON	annual monitoring, VOCs & PYR	trend monitoring	1	1			1	1
	BR-114	BR	JACKSON	annual monitoring, VOCs & PYR	trend monitoring	1	1			1	1
	BR-117D	BR deep	QUARRY	annual monitoring, PYR	trend monitoring	1				1	0
	BR-118D	BR deep	QUARRY	annual monitoring, PYR	trend monitoring	1				1	0
	BR-122D	BR deep	QUARRY	annual monitoring, PYR	trend monitoring	1				1	0
	BR-123D	BR deep	QUARRY	annual monitoring, PYR	trend monitoring	1				1	0
	PZ-101	BR	McKee Rd	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
	PZ-102	BR	McKee Rd	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
	PZ-103	BR	McKee Rd	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
ON-SITE	PZ-104	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
MONITORING	PZ-105	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	2	2
	PZ-106	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	2	2
	PZ-107	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
	BR-126	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	2	2
	BR-127	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
	BR-3	BR	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring	1	1			1	1
	BR-8	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	2	2
	BR-9	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
	BR-5A	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
	BR-6A	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	2	2
	BR-7A	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
	B-16	OB	ON-SITE	semi-annual monitoring, VOCs & PYR	continue until replaced by trench	1	1	1	1	2	2
	B-17	OB	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring	1	1			1	1
	B-7	OB	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring	1	1			1	1
	B-11	OB	ON-SITE	semi-annual monitoring, VOCs & PYR	continue until replaced by trench	1	1	1	1	2	2
	B-15	OB	ON-SITE	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
	E-3	OB	ON-SITE	annual monitoring, VOCs & PYR	trend monitoring	1	1			1	1
	MW-127	OB	ON-SITE	semi-annual monitoring, VOCs & PYR	perimeter sentinel/trend monitoring	1	1	1	1	2	2
	PW10	OB/BR	ON-SITE	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	2	2
	PW12	BR	ON-SITE	semi-annual monitoring, VOCs & PYR	trend monitoring	1	1	1	1	2	2
	PW13	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
	PW14	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
	PW15	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
	PW16	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
	PW17	pumping well	ON-SITE	semi-annual monitoring, VOCs & PYR	mass removal/trend monitoring	1	1	1	1	2	2
QUARRY/CANAL	QS-4	quarry seep	QUARRY	semi-annual monitoring, PYR	trend monitoring	1		1		2	0
MONITORING	QD-1	quarry ditch	DITCH	semi-annual monitoring, PYR	trend monitoring	1		1		2	0
	QO-2	quarry outfall	DITCH	semi-annual monitoring, PYR	trend monitoring	1		1		2	0
	QO-2S1	canal at outfall	CANAL	semi-annual monitoring, PYR	surface water monitoring	1		1		2	0
TOTAL SAMPLES						45	35	33	29	78	64

Appendix A

Groundwater Field Sampling Data Sheets

FIELD REPORT

REMEDIAL INVESTIGATION SAMPLING
LONZA CHEMICAL
ROCHESTER, NEW YORK

Fall 2017 Event

Matrix Environmental Project #04-029

PREPARED FOR:

Lonza
100 McKee Road
Rochester, NY 14611

PREPARED BY:

MATRIX
ENVIRONMENTAL TECHNOLOGIES INC.
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Orchard Park, New York 14127

Written by: David Kreinheder

Reviewed by: Steven L. Marchetti

Date: January 9, 2018

TABLE OF CONTENTS

1.0 INTRODUCTION

This report describes the sampling of the following points:

- 29 groundwater samples
- Two quarry outfall samples
- One quarry seep sample
- One canal at outfall sample

These activities were in support of the Phase II Remediation Investigation being conducted at the Lonza Chemical facility in Rochester, New York. Static water levels in the groundwater wells were recorded on November 6, 2017 by Matrix Environmental Technologies Inc. (METI) field personnel. The samples were collected from November 7 through November 13, 2017.

2.0 METHODOLOGIES

2.1 Water Level Measurements

Static water levels in all groundwater wells were measured from the top of the well casing/riser with an electronic water level indicator. Well bottoms were sounded with the weighted steel measuring tape. Measurements were recorded to the nearest hundredth of a foot (0.01 feet). The length of the measuring device which contacted the water was cleaned between the wells with a deionized water rinse and paper towel wipe. These data are presented on Sampling Summary Table and Field Observation forms attached.

2.2 Well Purging

Monitoring wells were evacuated prior to sampling employing one of the following methods:

1. Purging three times the standing water volume using precleaned or dedicated 1.25" x 5' stainless steel bailers, 2" x 5' polyvinyl chloride bailers, peristaltic pump or QED low-flow bladder pumps.

2. Evacuated with the low flow/low stress purging technique using either QED low-flow bladder pumps or a variable rate peristaltic pump.

Wells that were purged of three standing volumes were mainly wells located on or very near the Erie Canal and historically purged with this method prior to sampling. The remaining wells were evacuated with a low flow/low stress purging technique. This technique involves the use of a variable flow rate bladder or peristaltic pump. The pumps were employed to purge the monitoring wells at a flow rate such that drawdown of the water column from static conditions is minimal. Field measurements of pH, specific conductance, temperature, ORP, dissolved oxygen and turbidity are monitored

every 3-5 minutes until stabilization of parameters is realized. Once stabilized has occurred, sampling can be conducted. All purges water was collected into 55-gallon drums for disposal at the on-site wastewater treatment facility. Data pertaining to each evacuation are presented on the Sampling Summary Table and Field Observations forms attached.

2.3 Property Utilities

Surface water samples were collected from one location on the Erie Barge Canal, two outfall samples and one seep location. Sample locations were noted on the Field Forms.

3.0 SAMPLING

3.1 Monitoring Wells

All groundwater wells were sampled using precleaned or dedicated 1.25" x 1.25" x 5' stainless steel bailers, peristaltic pumps or bladder (SamplePro) pumps when low flow purging techniques were used. Each bailer was constructed with Teflon, bottom-filling check valve and was assembled without glues or welds. New ¼" poly rope was attached to each bailer. The bailer was slowly lowered into the water column, minimizing agitation and devolatilization. Low density polyethylene (LDPE) tubing was used with both the bladder (QED) and the peristaltic pumps. The bladder pumps were decontaminated between sample locations in accordance with the work plan. Personnel exercised care in all aspects of the sampling to ensure the collection of a representative sample. An additional sample container was collected from each well in order to facilitate the measurement of field analytical parameters. Data pertaining to sampling are presented on the Sampling Summary Table and the Field Observations Forms.

3.2 Canal Sampling

When possible, samples were collected directly from the canal into appropriate sample containers. Otherwise, samples were collected with the use of a unique, laboratory cleaned stainless steel bailer. The bailers were immersed just below the surface and removed. Sample was poured directly into the appropriate container. An additional container was collected to facilitate the measurement of field parameters. Additional data pertaining to these samples is presented in the Sampling Summary Table and Field Observation Forms.

3.3 Seep Sampling

Groundwater samples were collected from seeps at the quarry (QS4) located on Buffalo Road. The samples were collected with the use of a laboratory cleaned stainless steel bucket and was then poured directly into the appropriate containers. An additional container was collected to facilitate the measurement of field parameters. Data pertaining to this sampling is present in the Sampling Summary Table and Field Observation Forms.

4.0 SAMPLE CONTAINERS

Monitoring wells and surface water samples requiring analysis for volatile organic compounds were collected into 40 ml glass vials with Teflon septa. Samples for semi-volatile and pyridine analysis were collected into one liter amber glass bottles with teflo-lined caps. All bottles were purchased new and cleaned (Protocol A, 300 series) from Paradigm Environmental Services. Each container was labeled with the following information:

- Sample Identification (Well/Point I.D.)
- Date
- Project Number
- Sampler's Initials

5.0 FIELD MEASUREMENTS

On-site field measurements were made of each sample's pH, specific conductance and temperature. Measurements were made in accordance with protocols outlined in Methods for Chemical Analysis of Water and Wastes (EPA – 600/4-79-9020). These data were presented on the Sampling Summary Table and Field Observation Forms.

6.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC

6.1 Trip Blanks

Trip blanks were collected with each sample shipment requiring volatile organic compound analysis. Each trip blank consisted of two40 ml glass vials with Teflon septa which were filled with deionized water provided by Paradigm Environmental Services. These blanks were transported to the site, stored with field collected samples and submitted to the Paradigm Environmental Services for analysis.

6.2 Equipment Rinse Blank

Equipment rinse blanks were collected.

7.0 CHAIN OF CUSTODY

Chain of custody was initiated at the time of sample collection and maintained through delivery to Paradigm Environmental Services in Rochester, New York. Copies of these documents are included in the analytical report package.

TABLES

Table 1
Sampling Summary Table
Lonza, Rochester, NY

Sample Location		Zone	Sample Date	Sample Time	Water Level (ft)	Bottom of Well (ft)	pH (STD Units)	Spec. Cond. (mS/cm)	Temp ©	Turb (NTU)	ORP (mv)	DO (ppm)
B-11	On-Site	OB	11/7/2017	14:00	8.89	NM	7.52	2.39	10.33	0	12	8.41
B-15	On-Site	OB	11/9/2017	9:45	5.72	NM	7.17	0.49	11.21	0.0	89	7.36
B-16	Off-Site	OB	11/9/2017	9:00	7.66	NM	7.25	2.08	11.61	0.0	79	4.05
BR-105	Off-Site	BR	11/9/2017	13:27	21.29	NM	7.27	2.14	11.65	0.0	-130	7.30
BR-105D	Off-Site	BR deep	11/9/2017	11:45	27.32	NM	6.70	59.70	11.44	0.0	-327	7.53
BR-106	Off-Site	BR	11/9/2017	15:00	22.71	NM	7.05	5.04	11.79	0.0	-183	5.78
BR-126	Off-Site	BR	11/9/2017	10:45	8.24	NM	7.49	0.72	11.10	0.0	-132	7.76
BR-127	On-Site	BR	11/7/2017	12:05	13.38	NM	7.56	4.09	12.61	0.0	-64	13.00
BR-5A	On-Site	pumping well	11/8/2017	14:30	3.10	NM	6.85	3.22	14.34	0.0	50	5.61
BR-6A	On-Site	BR	11/7/2017	14:50	13.51	NM	8.27	6.42	12.55	0.0	-275	8.18
BR-7A	On-Site	pumping well	11/10/2017	10:20	NM	NM	8.64	2.12	10.62	0.0	-123	17.00
BR-8	On-Site	BR	11/10/2017	9:28	14.51	NM	8.10	9.95	3.40	0.0	-197	10.28
BR-9	On-Site	pumping well	11/7/2017	13:05	33.21	NM	7.56	2.72	14.01	182.0	-74	7.55
MW-106	Off-Site	OB	11/9/2017	14:25	13.17	NM	6.02	4.95	12.49	0.0	-174	6.01
MW-127	On-Site	OB	11/7/2017	11:40	7.81	NM	8.51	1.59	10.49	0.0	-38	5.05
PW-10	On-Site	pumping well	11/7/2017	10:35	8.29	NM	8.11	2.4	12.82	0.0	-2	5.02
PW-12	On-Site	BR	11/7/2017	9:53	4.96	NM	8.17	0.13	13.35	0.0	-55	6.51
PW-13	On-Site	pumping well	11/9/2017	15:35	27.21	NM	7.23	3.50	14.59	0.0	-137	9.41
PW-14	On-Site	pumping well	11/8/2017	10:10	10.79	NM	8.40	8.59	9.29	0.0	-136	4.51
PW-15	On-Site	pumping well	11/8/2017	9:15	11.14	NM	10.48	16.00	12.40	170.0	-187	7.61
PW-16	On-Site	pumping well	11/10/2017	8:30	20.68	NM	9.27	7.46	9.21	0.0	-110	18.00
PW-17	On-Site	pumping well	11/8/2017	8:45	30.48	NM	7.66	4.69	8.51	43.6	-89	12.00
PZ-101	Off-Site	BR	11/13/2017	9:03	20.70	NM	7.46	5.70	6.48	0.0	-8	9.56
PZ-102	Off-Site	BR	11/7/2017	9:15	16.76	NM	6.91	9.50	7.20	0.0	-70	6.65
PZ-103	Off-Site	BR	11/13/2017	9:55	15.15	NM	7.21	5.77	6.95	0.0	-190	9.22
PZ-104	Off-Site	BR	11/8/2017	15:25	13.75	NM	6.94	2.96	12.74	0.0	-84	4.13
PZ-105	On-Site	BR	11/8/2017	13:40	12.29	NM	6.66	0.73	13.49	0.0	12	3.94
PZ-106	On-Site	BR	11/8/2017	11:05	11.49	NM	7.72	1.88	10.09	0.0	-33	4.49
PZ-107	On-Site	BR	11/8/2017	11:55	12.05	NM	7.89	0.98	12.48	0.0	-90	6.90
QD-1	Quarry/Canal	quarry ditch	11/13/2017	11:05	NM	NA	8.89	0.65	5.32	0.0	-40	17.00
QO-2	Quarry/Canal	quarry outfall	11/13/2017	11:35	NM	NA	8.68	0.63	5.93	0.0	12	18.00
QO-2S1	Quarry/Canal	canal at outfall	11/13/2017	11:45	NM	NA	9.00	0.30	6.42	19.9	10	15.00
QS-4	Quarry/Canal	quarry seep	11/13/2017	10:35	NM	NA	8.52	1.58	8.17	0.0	-68	16.71

Table 2
Groundwater Elevation Report
Lonza, Rochester, NY

Sample Location		Zone	Date	Depth to water	Casing Elevation	GW Elevation	Time	Comments
B-1	On-Site	OB	11/6/2017	5.72	537.75	532.03	11:18 AM	
B-10	On-Site	OB	11/6/2017	8.65	538.80	530.15	10:39 AM	
B-11	On-Site	OB	11/6/2017	4.13	536.00	531.87	10:37 AM	
B-15	On-Site	OB	11/6/2017	5.03	535.29	530.26	11:49 AM	
B-16	Off-Site	OB	11/6/2017	6.92	536.21	529.29	11:51 AM	
B-17	On-Site	OB	11/6/2017	8.74	538.74	530.00	10:16 AM	
B-2	On-Site	OB	11/6/2017	8.06	539.02	530.96	11:16 AM	
B-4	On-Site	OB	11/6/2017	20.12	542.87	522.75	10:48 AM	
B-5	On-Site	OB	11/6/2017	15.26	540.21	524.95	10:52 AM	
B-7	On-Site	OB	11/6/2017	13.51	541.11	527.60	11:41 AM	
B-8	On-Site	OB	11/6/2017	8.91	538.88	529.97	10:42 AM	
BR-1	On-Site	BR	11/6/2017	5.38	537.28	531.90	10:05 AM	
BR-102	On-Site	BR	11/6/2017	21.96	539.43	517.47	11:14 AM	
BR-103	Off-Site	BR	11/6/2017	1.56	533.19	531.63	1:51 PM	
BR-104	Off-Site	BR	11/6/2017	9.78	537.56	527.78	1:35 PM	
BR-105	Off-Site	BR	11/6/2017	21.18	536.90	515.72	12:36 PM	
BR-105D	Off-Site	BR deep	11/6/2017	25.71	536.49	510.78	12:35 PM	
BR-106	Off-Site	BR	11/6/2017	22.41	535.74	513.33	12:31 PM	
BR-108	Off-Site	BR	11/6/2017	27.03	540.58	513.55	1:21 PM	
BR-111	Off-Site	BR	11/6/2017	28.02	540.42	512.40	1:09 PM	
BR-111D	Off-Site	BR	11/6/2017	27.78	540.34	512.56	1:08 PM	
BR-112D	Off-Site	BR deep	11/6/2017	35.29	547.91	512.62	1:05 PM	
BR-113	Off-Site	BR	11/6/2017	30.23	543.02	512.79	2:19 PM	
BR-113D	Off-Site	BR deep	11/6/2017	30.35	542.93	512.58	2:18 PM	
BR-114	Off-Site	BR	11/6/2017	11.43	539.77	528.34	1:40 PM	
BR-116	Off-Site	BR	11/6/2017	28.66	545.38	516.72	3:21 PM	
BR-116D	Off-Site	BR deep	11/6/2017	33.55	545.22	511.67	3:23 PM	
BR-117	Off-Site	BR	11/6/2017	20.35	547.61	527.26	2:03 PM	
BR-117D	Off-Site	BR deep	11/6/2017	45.06	547.16	502.10	2:01 PM	
BR-118	Off-Site	BR	11/6/2017	44.06	547.79	503.73	2:06 PM	
BR-118D	Off-Site	BR deep	11/6/2017	16.85	547.93	531.08	2:05 PM	
BR-122D	Off-Site	BR deep	11/6/2017	42.52	552.34	509.82	2:25 PM	
BR-123D	Off-Site	BR deep	11/6/2017	43.07	553.62	510.55	2:30 PM	
BR-124D	Off-Site	BR deep	11/6/2017	31.11	537.45	506.34	3:30 PM	
BR-126	Off-Site	BR	11/6/2017	8.35	537.90	529.55	11:54 AM	
BR-127	On-Site	BR	11/6/2017	13.32	536.05	522.73	10:35 AM	
BR-2	On-Site	BR	11/6/2017	Dry	538.97	Dry	10:21 AM	
BR-2A	On-Site	BR	11/6/2017	10.21	540.36	530.15	10:19 AM	
BR-2D	On-Site	BR deep	11/6/2017	9.27	537.26	527.99	10:20 AM	
BR-3	On-Site	BR	11/6/2017	NM	538.20	NM	10:31 AM	Inaccessible
BR-3D	On-Site	BR deep	11/6/2017	51.39	537.67	486.28	10:30 AM	
BR-4	On-Site	BR	11/6/2017	12.33	539.03	526.70	10:22 AM	
BR-5	On-Site	BR	11/6/2017	2.97	536.30	533.33	10:11 AM	
BR-5A	On-Site	pumping well	11/6/2017	2.61	536.35	533.74	10:13 AM	
BR-6A	On-Site	BR	11/6/2017	12.44	540.90	528.46	10:41 AM	
BR-7	On-Site	BR	11/6/2017	15.66	539.10	523.44	11:40 AM	
BR-7A	On-Site	pumping well	11/6/2017	29.85	539.12	509.27	11:39 AM	
BR-8	On-Site	BR	11/6/2017	14.26	539.72	525.46	10:51 AM	
BR-9	On-Site	pumping well	11/6/2017	33.12	542.17	509.05	8:30 AM	
C-2A	On-Site	OB	11/6/2017	10.45	539.66	529.21	10:20 AM	
C-5	On-Site	OB	11/6/2017	10.10	539.63	529.53	10:31 AM	
CANAL	Off-Site	SW	11/6/2017	36.00	544.79	508.79	1:32 PM	
E-2	On-Site	OB	11/6/2017	2.97	538.32	535.35	10:23 AM	
E-3	On-Site	OB	11/6/2017	4.39	536.59	532.20	10:12 AM	
E-5	On-Site	OB	11/6/2017	4.99	539.31	534.32	10:09 AM	
EC-2	Off-Site	BR	11/6/2017	Dry	542.00	Dry		
MW-103	Off-Site	OB	11/6/2017	1.08	533.25	532.17	1:50 PM	
MW-104	Off-Site	OB	11/6/2017	0.94	537.54	536.60	1:36 PM	
MW-105	Off-Site	OB	11/6/2017	NM	536.91	NM		Inaccessible
MW-106	Off-Site	OB	11/6/2017	12.57	535.44	522.87	12:57 PM	
MW-114	Off-Site	OB	11/6/2017	7.56	539.69	532.13	1:39 PM	
MW-127	On-Site	OB	11/6/2017	6.67	536.87	530.20	10:36 AM	
MW-16	Off-Site	BR	11/6/2017	9.99	536.79	526.80	1:44 PM	
MW-3	Off-Site	OB	11/6/2017	NM	535.89	NM		Inaccessible
MW-G6	Off-Site	OB	11/6/2017	3.53	534.65	531.12	11:27 AM	
MW-G8	Off-Site	OB	11/6/2017	NM	534.25	NM		Inaccessible
MW-G9	Off-Site	OB	11/6/2017	NM	536.60	NM		Inaccessible
N-2	On-Site	OB	11/6/2017	2.84	537.33	534.49	10:07 AM	

Table 2
Groundwater Elevation Report
Lonza, Rochester, NY

Sample Location		Zone	Date	Depth to water	Casing Elevation	GW Elevation	Time	Comments
N-3	On-Site	OB	11/6/2017	3.16	537.38	534.22	11:20 AM	
NESS-E	Off-Site	BR deep	11/6/2017	29.89	540.31	510.42	12:41 PM	
NESS-W	Off-Site	BR deep	11/6/2017	24.19	543.04	518.85	12:44 PM	
PW-10	On-Site	pumping well	11/6/2017	7.08	538.76	531.68	10:17 AM	
PW-12	On-Site	BR	11/6/2017	4.63	537.49	532.86	9:58 AM	
PW-13	On-Site	pumping well	11/6/2017	28.96	536.13	507.17	11:37 AM	
PW-14	On-Site	pumping well	11/6/2017	10.51	537.03	526.52	10:26 AM	
PW-15	On-Site	pumping well	11/6/2017	8.95	538.32	529.37	10:28 AM	
PW-16	On-Site	pumping well	11/6/2017	20.64	539.32	518.68	10:49 AM	
PW-17	On-Site	pumping well	11/6/2017	30.47	NA	NA	10:32 AM	
PZ-101	Off-Site	BR	11/6/2017	19.78	542.95	523.17	8:24 AM	
PZ-102	Off-Site	BR	11/6/2017	16.66	540.89	524.23	8:18 AM	
PZ-103	Off-Site	BR	11/6/2017	14.81	540.20	525.39	8:01 AM	
PZ-104	Off-Site	BR	11/6/2017	13.90	536.85	522.95	11:46 AM	
PZ-105	On-Site	BR	11/6/2017	NM	536.93	NM		Inaccessible
PZ-106	On-Site	BR	11/6/2017	8.59	537.24	528.65	10:25 AM	
PZ-107	On-Site	BR	11/6/2017	11.05	538.39	527.34	10:40 AM	
PZ-109	On-Site	BR	11/6/2017	8.67	538.59	529.92	10:29 AM	
PZ-110	On-Site	BR	11/6/2017	16.03	NA	NA	10:33 AM	
PZ-111	On-Site	BR	11/6/2017	NM	NA	NM		Could Not Locate Well
W-5	On-Site	OB	11/6/2017	NM	538.53	NM		Inaccessible

APPENDIX A
FIELD OBSERVATION FORMS

Table 2
Groundwater Elevation Report
Lonza, Rochester, NY

11-6-17

Sample Location		Zone	Date	Depth to water	Casing Elevation	GW Elevation	Time	Comments
B-1	On-Site	OB				5.72	11:18	
B-10	On-Site	OB				8.65	10:39	
B-11	On-Site	OB				4.13	10:37	~~Dry~~
B-15	On-Site	OB				5.83	11:00	
B-16	Off-Site	OB				6.93	11:56	
B-17	On-Site	OB				8.74	10:16	
B-2	On-Site	OB				8.06	8.06	10:16
B-4	On-Site	OB				3.01	10:48	
B-5	On-Site	OB				15.22	10:52	
B-7	On-Site	OB				13.51	11:41	
B-8	On-Site	OB				8.91	10:45	
BR-1	On-Site	BR				5.38	10.05	
BR-101	On-Site	BR				3.96	11:14	
BR-103	Off-Site	BR				1.56	13:51	
BR-104	Off-Site	BR				9.78	13:35	
BR-105	Off-Site	BR				21.18	12:36	
BR-105D	Off-Site	BR deep				25.71	12:35	
BR-106	Off-Site	BR				33.41	~~13:41~~	12:31
BR-108	Off-Site	BR				37.03	13:21	
BR-109	Off-Site	BR				28.02	13:09	
BR-109D	Off-Site	BR				27.78	13:08	
BR-112D	Off-Site	BR deep				35.39	13:05	
BR-113	Off-Site	BR				30.23	14:19	
BR-113D	Off-Site	BR deep				50.35	14:18	
BR-114	Off-Site	BR				11.43	13:40	
BR-116	Off-Site	BR			28.66	15:21	15:21	
BR-116D	Off-Site	BR deep			33.55	15:23	15:23	
BR-117	Off-Site	BR				30.38	14:03	
BR-117D	Off-Site	BR deep				45.06	14:01	
BR-118	Off-Site	BR				49.06	14:08	
BR-118D	Off-Site	BR deep				16.05	14:05	
BR-122D	Off-Site	BR deep				43.52	14:35	
BR-123D	Off-Site	BR deep				43.01	14:30	
BR-125	Off-Site	BR				31.11	15:30	
BR-126	Off-Site	BR				8.35	11:54	well under debris
BR-127	On-Site	BR				13.32	10:35	
BR-2	On-Site	BR				DRY	10:21	
BR-2A	On-Site	BR				10.21	10:24	19
BR-2D	On-Site	BR deep				9.27	10:20	
BR-3	On-Site	BR					~~10:34~~	10:31 debris in well
BR-3D	On-Site	BR deep				5.39	10:30	
BR-4	On-Site	BR				12.33	10:33	
BR-5	On-Site	BR				3.97	10:11	
BR-5A	On-Site	pumping well				2.61	10:13	
BR-6A	On-Site	BR				17.44	10:41	
BR-7	On-Site	BR				15.66	11:48	
BR-7A	On-Site	pumping well				39.85	11:39	
BR-8	On-Site	BR				14.36	10:57	
BR-9	On-Site	pumping well				33.12	8:30	
C-2A	On-Site	OB				10.45	10:50	
C-3	On-Site	OB				10.16	10:31	
CANAL	Off-Site	SW				36.00	13:32	
E-2	On-Site	OB				3.47	10:23	
E-3	On-Site	OB				4.34	10:12	
E-5	On-Site	OB				4.99	10:09	
E-6	On-Site	OB				DRY		
MW-103	Off-Site	OB				1.08	~~13:36~~	13:50
MW-104	Off-Site	OB				0.94	13:36	
MW-105	Off-Site	OB				NS		
MW-106	Off-Site	OB				~~7.19~~	~~13:30~~	12:57 ~~12:30~~
MW-114	Off-Site	OB				7.56	13:39	
MW-127	On-Site	OB				6.67	10:36	
MW-16	Off-Site	BR				9.99	13:44	
MW-3	Off-Site	OB				NS		
MW-4A	Off-Site	OB				3.53	11:27	

27.78 ~~30.47 BR-17~~

11-6-17

Table 2
Groundwater Elevation Report
Lonza, Rochester, NY

Sample Location		Zone	Date	Depth to water	Casing Elevation	GW Elevation	Time	Comments
MW-6R	Off-Site	OB					NS-I	
MW-8R	Off-Site	OB					NS-I	
W-2	On-Site	OB				2.84	10:07	
W-3	On-Site	OB				3.16	11:24	
NESS-E	Off-Site	BR deep				24.89	12:41	
NESS-W	Off-Site	BR deep				24.19	12:44	
PW-10	On-Site	pumping well				7.08	10:17	
PW-12	On-Site	BR				4.63	9:58	
PW-13	On-Site	pumping well				38.96	11:37	
PW-14	On-Site	pumping well				10.5	10:26	
PW-15	On-Site	pumping well			(8)	8.45	10:38	
PW-16	On-Site	pumping well				20.69	10:49	
PW-17	On-Site	pumping well				30.47	10:3-	
PZ-101	Off-Site	BR				19.78	8:34	
PZ-102	Off-Site	BR				16.66	8:18	
PZ-103	Off-Site	BR				14.81	8:01	
PZ-104	Off-Site	BR				13.90	11:46	
PZ-105	On-Site	BR						Mini puddle
PZ-106	On-Site	BR				8.59	10:25	
PZ-107	On-Site	BR				16.05	10:40	
PZ-108	On-Site	BR				8.67	10:29	
PZ-110	On-Site	BR				16.03	10:33	
PZ-111	On-Site	BR						NS-I Locked/Buried
W-5	On-Site	OB					NS-I	

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: PZ102

Field Personnel: DK + RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-7-17 8:30

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-7 8:48

Date/Time Completed: 9:25

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 16.59

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N

Total Volume Purged (gal): 1.75L

Purged to Dryness: Y / (N)

Purge Observations: Clear

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (gpm/htz)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
8:55	16.76	250 mL/min		6.22	7.29	4.52	0.10	-20	4.5	
9:00	16.76	125		6.42	6.98	7.20	0.0	-55	9.37	
9:05	16.76			6.96	6.85	9.33	0.0	-63	7.23	
9:10		67.5		6.82	6.92	9.55	0.0	-68	6.83	
9:15				7.20	6.91	9.50	0.0	-70	6.65	
↳	SAMPLE									

37°F, Cloudy

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: PW12

Field Personnel: DK + RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-7-17 9:28

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-7 9:35

Date/Time Completed: 10:00

Surf. Meas. Point: (✓) Pro Casing ( ) Riser

Riser Diameter (inches) 4" 6" Steel

Initial Water Level (ft): 4.89

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N

Total Volume Purged (gal): 2.25L

Purged to Dryness: Y (N)

Purge Observations: Clear, slight yellow tint

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm~~/htz)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
9:38	4.95	250		10.81	7.85	0.34	0.0	-46	15	
9:43	4.96	125		12.94	8.21	0.169	0.0	-56	7.07	
9:48	4.96			13.01	8.16	0.146	0.0	-53	6.74	
9:53	4.96			13.35	8.17	0.131	0.0	-55	6.51	
	→ SAMPLE									

38°F, Cloudy

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: PW10

Field Personnel: DK + RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-7-17 10:08

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good

( ) loose ( ) flush mount

( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-7 10:11

Date/Time Completed: 10:43

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 6" Steel

Initial Water Level (ft): 7.55

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N

Total Volume Purged (gal): 2.25 L

Purged to Dryness: Y / (N)

Purge Observations: Brown tint

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm/hz~~)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
10:15	7.72	250 mL/min		10.70	6.82	2.54	0.0	64	18	
10:20	7.91	125		11.39	7.64	2.51	0.0	15	8.14	
10:25	8.09			12.14	7.90	2.45	0.0	6	5.85	
10:30	8.24			12.59	7.96	2.41	0.0	4	5.14	
10:35	8.29			12.82	8.11	2.41	0.0	-2	5.02	
↳	SAMPLE									

38°F, Cloudy

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: MW127

Field Personnel: DK + RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-7-17 11:10

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-7-17 11:18

Date/Time Completed: 11:50

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches): 2" PVC

Initial Water Level (ft): 7.02

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge: Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N New tubing

Total Volume Purged (gal): 2.1 L

Purged to Dryness: Y (N)

Purge Observations: light brown tint

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm/htz~~ mL/min)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
11:20	7.46	250		10.61	10.5	7.66	0.10	-160	2.0	
11:25	7.65	125		10.75	10.21	3.80	0.0	-147	6.95	
11:30	7.74	67.5		10.62	9.49	2.03	0.0	-101	5.55	
11:35	7.80			10.54	8.96	1.73	0.0	-62	5.21	
11:40	7.81			10.49	8.57	1.59	0.0	-38	5.05	
↳	SAMPLE									

42°F, Cloudy

FIELD OBSERVATIONS

Facility: Conoco Sample Point ID: BR157

SAMPLING INFORMATION

Date/Time 1/7/17 12:10 Water Level at Sampling (ft) 13.38

Method of Sampling pumping well Dedicated: Y / N

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity (~~umhos/cm~~)	Turb. (NTU)	ORP	DO	Other
12:05	12.61	7.56	4.09 mS/cm	0.0	-64	13	

INSTRUMENT CALIFBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 42°F Cloudy

Sample characteristics: clear slight yellow tint

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 1/7/17 by: DK + RC Company: Matrix

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: BR9

SAMPLING INFORMATION

Date/Time 11-7-17 13:00 Water Level at Sampling (ft) 33.21

Method of Sampling Pumping Well Dedicated: Y / N

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy Pumping Well

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity (~~umhos/cm~~)	Turb. (NTU)	ORP	DO	Other
13:05	14.01	7.56	2.72 mS/cm	182	-74	7.55	

INSTRUMENT CALIBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 42° F, Cloudy

Sample characteristics: Cloudy gray

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11-7-17 by: DK & RG Company: Matrix

FIELD OBSERVATIONS

Facility: DK+RG

Sample Point ID: ~~B-12~~ B11

Field Personnel: Lonza

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-7-17 13:28

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) ~~Unlocked~~ (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-7-17 13:38

Date/Time Completed: 14:10

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 2"

Initial Water Level (ft): 5.51

Elevation G/W MSL: ____

Well Total Depth (ft): 11.50

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N New tubing

Total Volume Purged (gal): 1.25L

Purged to Dryness: (Y) / N

Purge Observations: Cloudy, light Brown

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm/htz~~)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
13:45	6.14	250		10.17	8.21	2.69	3.0	17	18	
13:50	7.32	125		10.08	8.19	2.68	3.5	16	15	
13:55	8.18			10.53	7.74	2.57	5.7	17	7.88	
14:00	8.89			10.33	7.52	2.39	0.3	12	8.41	
~~14:05~~	DRY									
	→ SAMPLE									

42°F, cloudy

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: BR6A

Field Personnel: MKTRG Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-7-17 14:20 Condition of seal: (✓) ~~Good~~ ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____ Condition of Prot. Casing/Riser: ( ) unlocked ( ) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-7-17 ~~12:33~~ 14:23 Date/Time Completed: 15:00

Surf. Meas. Point: ( ) Pro Casing (✓) ~~Riser~~ Riser Diameter (inches) 4" Steel

Initial Water Level (ft): 12.33 Elevation G/W MSL: ____

Well Total Depth (ft): ____ Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____ Dedicated: (Y) / N)

Total Volume Purged (gal): 2L Purged to Dryness: Y / (N)

Purge Observations: Clear, light yellow tint Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm/btz~~)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
14:30	12.60	125 mL/min		11.97	7.30	6.50	0.0	-132	14	
14:35	12.89	~~67.5~~ 125		12.33	8.00	6.40	0.16	-210	8.16	
14:40	13.16	67.5		12.46	8.18	6.41	0.0	-248	8.45	
14:45	13.39			12.47	8.25	6.41	0.10	-268	8.26	
14:50	13.51			12.55	8.27	6.42	0.10	-275	8.18	
↳	SAMPLE									

43°F, Cloudy

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: PW17

SAMPLING INFORMATION

Date/Time 11-8-17 8:30 Water Level at Sampling (ft) 30.48

Method of Sampling Pumping Dedicated: (Y) / N

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
8:45	8.51	7.66	4.69	43.6	-89	12	

INSTRUMENT CALIFBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 30°F Sunny

Sample characteristics: Cloudy, gray/black, sulfur odor

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11-8-17 by: DK + RG Company: Matrix

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: PW15

SAMPLING INFORMATION

Date/Time 11-8-17 9:10 Water Level at Sampling (ft) 11.14

Method of Sampling Pumping well Dedicated: Y / N

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity (~~umhos/cm~~)	Turb. (NTU)	ORP	DO	Other
9:15	12.40	10.48	16 mS/cm	170	-187	7.61	

INSTRUMENT CALIFBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 40°F, Sunny

Sample characteristics: Dark Brown tint, pyridine odor

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11-8-17 by: DK+RG Company: Matrix

FIELD OBSERVATIONS

Facility: Logan

Sample Point ID: PW-14

Field Personnel: DK + RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-8-17 9:35

Condition of seal: (X) Good ( ) Cracked Garrilla tape

( ) None ( ) Buried

Prot. Casing/Riser Height: _____

Condition of Prot. Casing/Riser: ( ) unlocked (X) Good ( ) loose ( ) flush mount ( ) Damaged _____

if prot casing; depth to riser below: _____

Gas Meter Calibration/Reading: % Gas _____ % LEL: _____

Vol. Organic Matter (Calibration/Reading): _____ Volatiles (ppm): _____

PURGE INFORMATION

Date/Time Initiated: 10-8-17 9:42

Date/Time Completed: 10-8-17 10:31

Surf. Meas. Point: ( ) Pro Casing (X) Riser

Riser Diameter (inches) 6" Steel

Initial Water Level (ft): 10.59

Elevation G/W MSL: _____

Well Total Depth (ft): _____

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): _____

Dedicated: (Y) / N

Total Volume Purged (gal): 1.3L

Purged to Dryness: Y / (N)

Purge Observations: Clear, light brown w/ tint yellowish

Start _____ Finish _____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate ~~(gpm/htz)~~	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
9:50	10.65	125 mL/min		7.45	9.64	8.94	0.0	-100	14	
9:55	10.69	125		8.38	8.80	8.71	0.0	-111	6.29	
10:00	10.71	<67.5		8.55	8.59	8.66	0.0	-119	5.33	
10:05	10.77	<67.5		8.87	8.45	8.58	0.0	-129	4.77	
10:10	10.79			9.29	8.40	8.59	0.0	-136	4.51	
↳ SAMPLE										

40°F, Sunny

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: PZ106

Field Personnel: DK+RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 1-8-17 10:33

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 1-8 10:36

Date/Time Completed: 11:28

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 9.64

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: Y / N

Total Volume Purged (gal): Clear, tan/yellow tint

Purged to Dryness: Y (N)

Purge Observations: 1.5 L

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (ppm/htz)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
10:45	10.30	125 mL/min		9.95	8.69	2.01	0.0	-56	19	
10:50	10.68	67.5		9.92	8.10	1.95	0.0	-38	5.96	
10:55	11.21	67.5		10.10	7.95	1.91	0.0	-33	4.66	
11:00	11.42	"		10.18	7.90	1.90	0.0	-32	4.54	
11:05	11.49	"		10.09	7.72	1.88	0.0	-33	4.49	
→ SAMPLE										

Sunny 42°F

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: PZ107

Field Personnel: DK+RG Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-8-17 11:32 Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____ Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-8 11:35 Date/Time Completed: 12:12

Surf. Meas. Point: ( ) Pro Casing (✓) Riser Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 11.14 Elevation G/W MSL: ____

Well Total Depth (ft): ____ Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____ Dedicated: (Y) / N

Total Volume Purged (gal): 3L Purged to Dryness: Y / N

Purge Observations: Clear/slight chemical odor Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (gpm/htz)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
11:40	11.79	125mL/min		11.61	8.29	0.973	0.0	-88	1.8	
11:45	11.92			12.37	8.9	0.984	0.0	-87	1.2	
11:50	11.97			12.41	7.85	0.981	0.0	-85	7.4	
11:55	12.05			12.48	7.89	0.982	0.0	-90	6.9	
↳ SAMPLE										

48°F, Sunny

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: PZ105

Field Personnel: DK+RG Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-8-17 13:10 Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____ Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-8-17 13:15 Date/Time Completed: 14:00

Surf. Meas. Point: ( ) Pro Casing (✓) Riser Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 9.15 Elevation G/W MSL: ____

Well Total Depth (ft): ____ Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____ Dedicated: Y / N

Total Volume Purged (gal): >2L Purged to Dryness: Y / N

Purge Observations: Clear Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm/htz~~)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
13:20	9.99	125 ml/min		14.58	7.66	0.783	4.2	-57	19	
13:25	10.82	~~67.5~~		13.89	7.17	0.759	0.0	-21	10.7	
13:30	11.47			13.51	6.91	0.727	0.0	-5	4.20	
13:35	11.93			13.58	6.87	0.723	0.0	-1	4.13	
13:40	12.29			13.49	6.66	0.733	0.0	12	3.94	
↳ SAMPLE										

48°F Sunny

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: BR5A

Field Personnel: DK+PB

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-8-17 14:04

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-8-17 14:06

Date/Time Completed: 14:41

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 6" Steel

Initial Water Level (ft): 2.97

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (✓) Y N

Total Volume Purged (gal): 1.5 L

Purged to Dryness: Y (✓) N

Purge Observations: Yellowish brown tint, slightly cloudy

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~ppm/htz~~)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
14:10	2.99	125 mL/min		16.36	7.05	2.52	0.0	36	10	
14:15	3.02	67.5		15.82	6.89	2.82	0.0	41	5.98	
14:20	3.04			15.06	6.83	3.02	0.6	46	5.66	
14:25	3.07			14.66	6.84	3.15	0.0	48	5.60	
14:30	3.10			14.34	6.85	3.22	0.0	50	5.61	
↳	SAMPLE									

49F Sunny

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: PZ104

Field Personnel: DK + RB

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-8-17 14:48

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-8 15:00

Date/Time Completed: 15:40

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 13.69

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge ____

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N

Total Volume Purged (gal): 1.9L

Purged to Dryness: Y / (N)

Purge Observations: Clear

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (gpm/htz)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
15:05	13.77	125 mL/min		12.44	7.46	2.92	0.0	-47	14	
15:10	13.78			12.82	7.17	3.00	0.0	-65	5.45	
15:15	13.75	67.5		12.82	7.07	3.00	0.0	-74	4.70	
15:20	13.75			12.87	7.01	2.98	0.0	-81	4.34	
15:25	13.75			12.79	6.94	2.96	0.0	-89	4.13	
↳ SAMPLE										

48°F, Sunny

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: B16

Field Personnel: DK + RO

Sample Matrix:

MONITORING WELL INSPECTION

Date/Time: 11-9-17 8:20

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-9 8:35

Date/Time Completed: 11-9-15 9:10

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 5.65

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge ____

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N New tube

Total Volume Purged (gal): 2L

Purged to Dryness: Y / (N)

Purge Observations: Clear

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm/htz~~ mL/min)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
8:40	7.04	125mL/min		9.81	9.51	2.10	0.0	72	21	
8:45	7.35			10.96	7.96	2.16	0.0	94	5.42	
8:50	7.46			11.17	7.70	2.09	0.0	92	4.73	
8:55	7.61			11.54	7.39	2.09	0.0	87	4.24	
9:00	7.66			11.61	7.25	2.05	0.0	79	4.05	
→ SAMPLE										

38°F, Cloudy

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: B15

Field Personnel: DK + RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-9-17 9:15

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-9-17 9:20

Date/Time Completed: 9:56

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 2" PVC

Initial Water Level (ft): ____

Elevation G/W MSL: ____

Well Total Depth (ft): 5.12

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N

Total Volume Purged (gal): 2.2L

Purged to Dryness: Y / (N)

Purge Observations: Clear

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm~~/mL/min)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO 16	Other
9:05	5.36	250 mL/min		10.93	7.43	0.511	0.0	95	~~3+~~	
9:30	5.44	125		11.04	7.37	0.497	0.0	94	8.38	
9:35	5.50			11.01	7.29	0.493	0.0	93	7.87	
9:40	5.64			11.13	7.20	0.493	0.0	91	7.44	
9:45	5.72			11.21	7.17	0.494	0.0	89	7.36	
4										

38°F. Cloudy

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: BP126

Field Personnel: DK + RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-9-17 10:15

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-9-17 10:19

Date/Time Completed: 10:54

Surf. Meas. Point: ( ) Pro Casing (✓) Riser

Riser Diameter (inches) 4" SS Steel

Initial Water Level (ft): 8.18

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N

Total Volume Purged (gal): 2.3L

Purged to Dryness: Y / (N)

Purge Observations: Black particles in clear water

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm/hr~~)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP -140	DO	Other
10:25	8.20	250 ml/min		11.69	7.58	0.565	0.0	~~23~~	2.3	
10:30	8.22	250		11.61	7.60	0.638	0.0	-139	9.2	
10:35	8.24	125		11.63	7.61	0.681	0.0	-144	8.9	
10:40	8.24			11.51	7.55	0.709	0.0	-137	8.36	
10:45	8.24			11.10	7.49	0.721	0.0	-133	7.76	
↳	SAMPLE									

38°F, Cloudy

FIELD OBSERVATIONS

Facility: Lonza | Sample Point ID: BR105D

Field Personnel: DKtRB | Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 1-9-17 11:10 | Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____ | Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 1-9 11:20 | Date/Time Completed: 11:58

Surf. Meas. Point: ( ) Pro Casing ( ) Riser | Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 25.90 | Elevation G/W MSL: ____

Well Total Depth (ft): ____ | Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____ | Dedicated: (Y) / N

Total Volume Purged (gal): 2L | Purged to Dryness: Y / (N)

Purge Observations: Black Tint, Sediment | Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (~~gpm/htz~~)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
11:25	26.55	125 mL/min		9.82	5.90	51.7	0.0	-206	2.1	
11:30	26.88			10.83	6.42	55.5	0.0	-284	8.60	
11:35	27.09			11.44	6.59	56.8	0.0	-317	7.86	
11:40	27.22			11.51	6.65	58.3	0.0	-321	7.65	
11:45	27.32			11.44	6.70	59.7	0.0	-327	7.53	
→	SAMPLE									

38°F, Cloudy

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: BR105

Field Personnel: DK + RG Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-9-17 12:55 Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____ Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-9-17 13:03 Date/Time Completed: 13:40

Surf. Meas. Point: ( ) Pro Casing (✓) Riser Riser Diameter (inches) 6" Steel

Initial Water Level (ft): 21.29 Elevation G/W MSL: ____

Well Total Depth (ft): ____ Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____ Dedicated: (Y) / N

Total Volume Purged (gal): 2L Purged to Dryness: Y / (N)

Purge Observations: Clear water Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (gpm/htz)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
13:07	21.29	125 ml/min		10.94	8.53	2.18	0.0	-139	2.6	
13:12	21.29			11.47	7.74	2.18	0.0	-139	9.76	
13:17	21.29			11.49	7.48	2.15	0.0	-136	8.25	
13:22	21.29			11.54	7.41	2.14	0.0	-135	7.91	
13:27				11.65	7.27	2.14	0.0	-130	7.30	
→ SAMPLE										

40°F Sun + clouds

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: MW106

Field Personnel: DK+RG

Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-9-17 13:50

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-9-17 13:56

Date/Time Completed: ~~X~~ 14:32

Surf. Meas. Point: ( ) Pro Casing (✓) ~~Riser~~

Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 12.39

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N

Total Volume Purged (gal): 21.3L

Purged to Dryness: Y / (N)

Purge Observations: light brown tint

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate ~~(gpm/btz)~~	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
14:05	12.93	250		12.04	6.97	5.32	0.0	-106	13	
14:10	13.09	125		12.31	6.84	5.34	0.0	-120	7.14	
14:15	13.09			12.41	6.81	5.29	0.0	-135	6.35	
14:20	13.13			12.41	6.84	5.09	0.0	-159	6.14	
14:25	13.17			12.49	6.02	4.95	0.0	-174	6.01	
→ SAMPLE										

44°F, Sunny, Some breeze

FIELD OBSERVATIONS

Facility: Lonza

Sample Point ID: BR106

Field Personnel: DK+RG

Sample Matrix: Gw

MONITORING WELL INSPECTION

Date/Time: 11-9-17 14:33

Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____

Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good

( ) loose ( ) flush mount

( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-9 14:34

Date/Time Completed: 15:10

Surf. Meas. Point: ( ) Pro Casing ( ) Riser

Riser Diameter (inches) 6" steel

Initial Water Level (ft): 22.66

Elevation G/W MSL: ____

Well Total Depth (ft): ____

Method of Well Purge ____

One (1) Riser Vol (gal): ____

Dedicated: (Y) / N

Total Volume Purged (gal): 1.75L

Purged to Dryness: Y / (N)

Purge Observations: Clear

Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate ~~(gpm/htz)~~	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
14:40	22.68	125		12.63	7.00	5.10	0.0	-154	11.7	
14:45	22.71	67.5		12.40	7.06	5.07	0.0	-173	6.68	
14:50	22.71	<67.5		12.20	7.07	5.05	0.0	-176	6.35	
14:55	22.71			11.75	7.05	5.04	0.0	-182	5.92	
15:00	22.71			11.79	7.05	5.04	0.0	-183	5.78	
→ SAMPLE										

46°F Sunny, light breeze, delightful

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: PW13

SAMPLING INFORMATION

Date/Time 11-9-17 15:30 Water Level at Sampling (ft) 27.21

Method of Sampling pumping well Dedicated: (Y) N

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity ~~(umhos/cm)~~	Turb. (NTU)	ORP	DO	Other
15:35	14.59	7.23	3.50 ms/cm	0.0	+137	9.41	

INSTRUMENT CALIBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 47°F, Cloudy.

Sample characteristics: Clear

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11-9-17 by: DK+RG+PB Company: Matrix

FIELD OBSERVATIONS

Facility: Lonza | Sample Point ID: BG8

Field Personnel: DK + RG | Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-10-17 8:45 | Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____ | Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ | % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ | Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-10-17 ~~8:55~~ 9:03 | Date/Time Completed: 9:38

Surf. Meas. Point: ( ) Pro Casing (✓) Riser | Riser Diameter (inches) 6" Steel

Initial Water Level (ft): 14.35 | Elevation G/W MSL: ____

Well Total Depth (ft): ____ | Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____ | Dedicated: (Y) / N Complete new tubing

Total Volume Purged (gal): 2.2L | Purged to Dryness: Y / (N)

Purge Observations: Clear, Yellow tint, pyridine odor | Start ____ Finish ____

PURGE DATA (*if applicable*)

Time	Water Level	Purge Rate (~~gpm/htz~~)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
9:08	14.41	250		3.75	8.54	9.76	0.0	-142	30	
9:13	14.44	125		5.10	8.23	9.73	0.0	-175	14	
9:18	14.48			3.79	8.16	9.70	0.0	-191	11.8	
9:23	14.50			2.48	8.14	9.90	0.0	-195	11.12	
9:28	14.51			3.40	8.10	9.95	0.0	-197	10.28	
LS	SAMPLE									

23°F, Real Feel 3°F, cloudy, windy

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: PW16

SAMPLING INFORMATION

Date/Time 11-10-17 8:15 Water Level at Sampling (ft) 20.68

Method of Sampling Pumping Well Dedicated: (Y) / N

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
8:30	9.21	9.27	7.46	0.0	410	1.8	

INSTRUMENT CALIFBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: Windy, 23°F, Freaking Cold

Sample characteristics: mildly cloudy Real Feel 3°F=

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11-10-17 by: DK + RG Company: Matrix

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: BR 7A

SAMPLING INFORMATION

Date/Time 11-10-17 10:15 Water Level at Sampling (ft) could not get measurement due to hose on well and sludge on sides of well

Method of Sampling Pumping well Dedicated: (Y) / N

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
10:20	10.62	8.64	2.12	0.0-12.17			

INSTRUMENT CALIFBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 23°F, 3°F w/ windchill

Sample characteristics: Clear, slight cloudiness

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11-10-17 by: DK+RG Company: Matrix

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: PZ101

Field Personnel: AK + RB Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-13-17 8:25 Condition of seal: (✓) Good ( ) Cracked ____ %

( ) None ( ) Buried

Prot. Casing/Riser Height: ____ Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged ____

if prot casing; depth to riser below: ____

Gas Meter Calibration/Reading: % Gas ____ % LEL: ____

Vol. Organic Matter (Calibration/Reading): ____ Volatiles (ppm): ____

PURGE INFORMATION

Date/Time Initiated: 11-13 8:30 Date/Time Completed: 9:18

Surf. Meas. Point: ( ) Pro Casing (✓) Riser Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 19.46 Elevation G/W MSL: ____

Well Total Depth (ft): ____ Method of Well Purge Peristaltic

One (1) Riser Vol (gal): ____ Dedicated: (Y) / N

Total Volume Purged (gal): 1.5 L Purged to Dryness: Y / (N)

Purge Observations: Clear Start ____ Finish ____

PURGE DATA (if applicable)

Time	Water Level	Purge Rate (gpm/htz)	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
8:43	20.01	75 mL/min		5.33	8.62	5.28	0.0	86	4.0	
8:48	20.30			5.61	8.11	5.63	0.0	-37	12.5	
8:53	20.47			5.79	7.96	5.67	0.0	-44	11.7	
8:58	20.45			6.27	7.64	5.69	0.0	-7	10.2	
9:03	20.74			6.48	7.46	5.70	0.0	-8	9.5	
↳										

36°F Cloudy

FIELD OBSERVATIONS

Facility: Conoco Sample Point ID: PZ103

Field Personnel: DK+PB Sample Matrix: GW

MONITORING WELL INSPECTION

Date/Time: 11-13-17 9:25 Condition of seal: (✓) Good ( ) Cracked %

( ) None ( ) Buried

Prot. Casing/Riser Height: Condition of Prot. Casing/Riser: ( ) unlocked (✓) Good ( ) loose ( ) flush mount ( ) Damaged

if prot casing; depth to riser below:

Gas Meter Calibration/Reading: % Gas % LEL:

Vol. Organic Matter (Calibration/Reading): Volatiles (ppm):

PURGE INFORMATION

Date/Time Initiated: 11-13-17 9:27 Date/Time Completed: 10:15

Surf. Meas. Point: ( ) Pro Casing (✓) Riser Riser Diameter (inches) 2" PVC

Initial Water Level (ft): 14.65 Elevation G/W MSL:

Well Total Depth (ft): Method of Well Purge

One (1) Riser Vol (gal): 1.5L Dedicated: (Y) / N

Total Volume Purged (gal): Purged to Dryness: Y / (N)

Purge Observations: Clear, slight sulfur odor Start Finish

PURGE DATA (if applicable)

Time	Water Level	Purge Rate ~~(gpm/blz)~~	Cumulative Volume	Temp (C)	pH (SU)	Conductivity (mS/cm)	Turb. (NTU)	ORP	DO	Other
9:35	15.13	75 ml/min		5.66	7.46	4.04	0.0	-85	19.6	
9:40	15.14			5.72	7.21	5.17	0.0	-134	8.68	
9:45	15.15			5.86	7.04	5.66	0.0	-143	8.71	
9:50	15.14			6.67	7.17	5.77	0.0	-176	9.00	
9:55	15.15			6.95	7.21	5.77	0.0	-190	9.22	
Ly	SAMPLE									

37°F, cloudy

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: QS-4

SAMPLING INFORMATION

Date/Time 11-13-17 10:30 Water Level at Sampling (ft) —

Method of Sampling Seep Dedicated: Y / N

Multi-phased/layered: Y / ~~N~~ if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity ~~(umhos/cm)~~	Turb. (NTU)	ORP	DO	Other
10:35	8.17	8.52	1588 mS/cm	0.0-68	1617		

INSTRUMENT CALIFBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 37°F, Cloudy

Sample characteristics: Clear, wet

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11-13-17 by: DC + DB Company: Matrix

FIELD OBSERVATIONS

Facility: Loaza Sample Point ID: QD-1

SAMPLING INFORMATION

Date/Time 11/3/17 11:00 Water Level at Sampling (ft) —

Method of Sampling Ditch, Bucket Dedicated: Y (N)

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity (~~umhos/cm~~)	Turb. (NTU)	ORP	DO	Other
11:05	5.32	8.89	0.646	0.0	40	17	

INSTRUMENT CALIFBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 38°F, Cloudy

Sample characteristics: Clear, slight yellow tint

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11/3/17 by: DK + PB Company: Matrix

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: MW-2

SAMPLING INFORMATION

Date/Time 11-13-17 11:30 Water Level at Sampling (ft)

Method of Sampling Peristaltic pump Dedicated: Y / (N)

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity (~~umhos/cm~~)	Turb. (NTU)	ORP	DO	Other
11:35	5.93	8.68	0.629 mS/cm	0.0	12	18	

INSTRUMENT CALIBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 38°F Cloudy

Sample characteristics: Clear, slight yellow tint

Comments and Observations:

I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11/13/17 by: DK+PB Company: Matrix

FIELD OBSERVATIONS

Facility: Lonza Sample Point ID: QO-251 / QO-252

SAMPLING INFORMATION

Date/Time 11-13-17 11:40 Water Level at Sampling (ft)

Method of Sampling Canal, bucket Dedicated: Y / ~~N~~

Multi-phased/layered: Y / N if yes: ( ) Light ( ) Heavy

SAMPLING DATA

Time	Temp (C)	pH (SU)	Conductivity ~~(umhos/cm)~~ mS/cm	Turb. (NTU)	ORP	DO	Other
11:45	6.42	9.00	0.296	19.9	10	15	

INSTRUMENT CALIFBRATION/CHECK DATA

Meter ID#	Cal Std 7.0 SU	Cal Std 4.0 SU	Cal Std. 10.0 SU	Check Std 7.0 SU (+/- 10%)	Cal.Std. 1413 umhos/cm	Check Std 1413 umhos/cm (+/- 10%)	Cal Std. 10 NTU	Check Std 10 NTU (+/- 10%)
Solution ID#								

GENERAL INFORMATION

Weather conditions at time of sampling: 38°F, Cloudy

Sample characteristics: Cloudy

Comments and Observations:

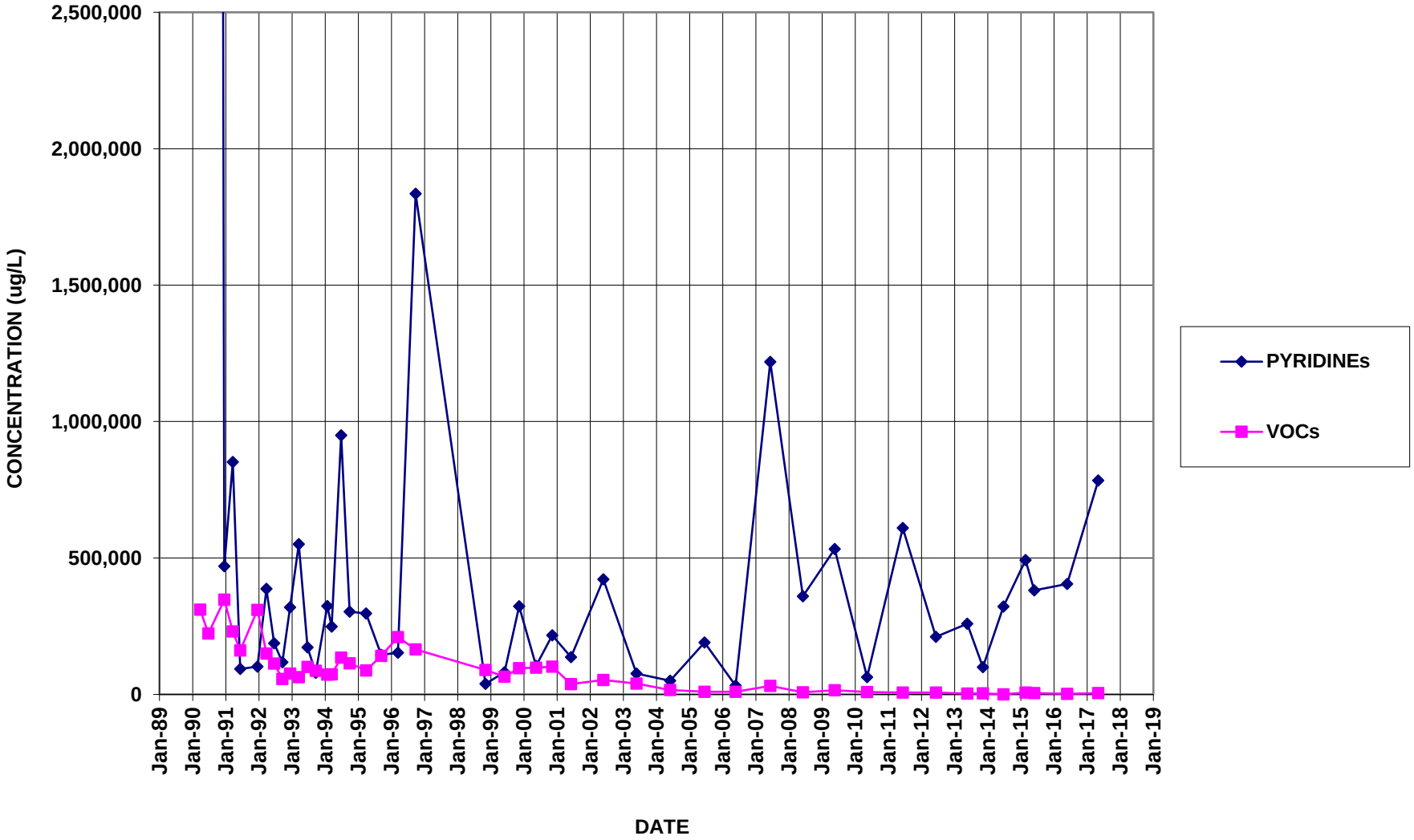
I certify that sampling procedures were in accordance with all applicable EPA, State and Site-Specific protocols:

Date: 11-13-17 by: DK+PB Company: Matrix

Appendix B

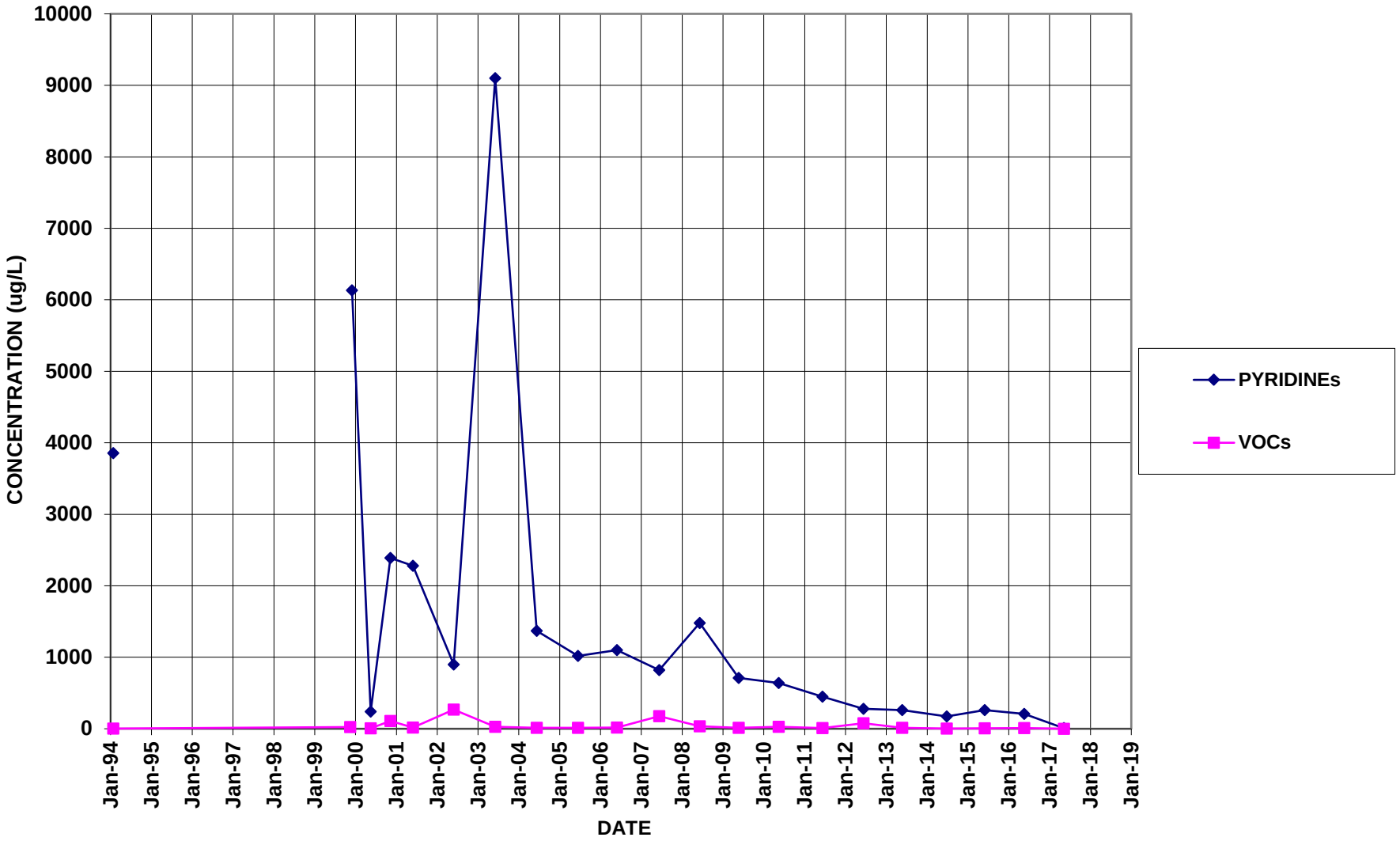
Well Trend Data

B-17



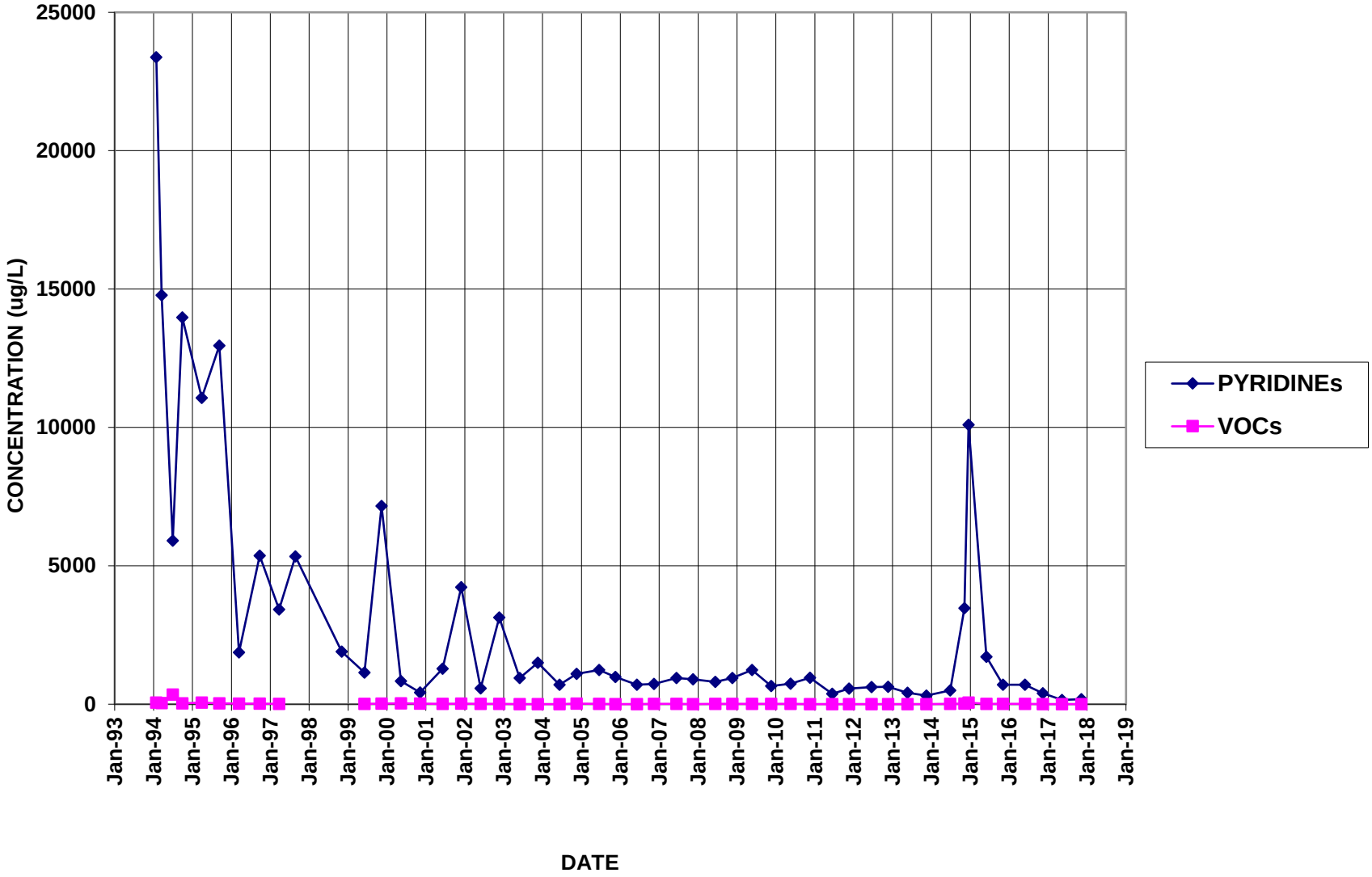
Prepared by: jeb
Reviewed by: nmb

B-7



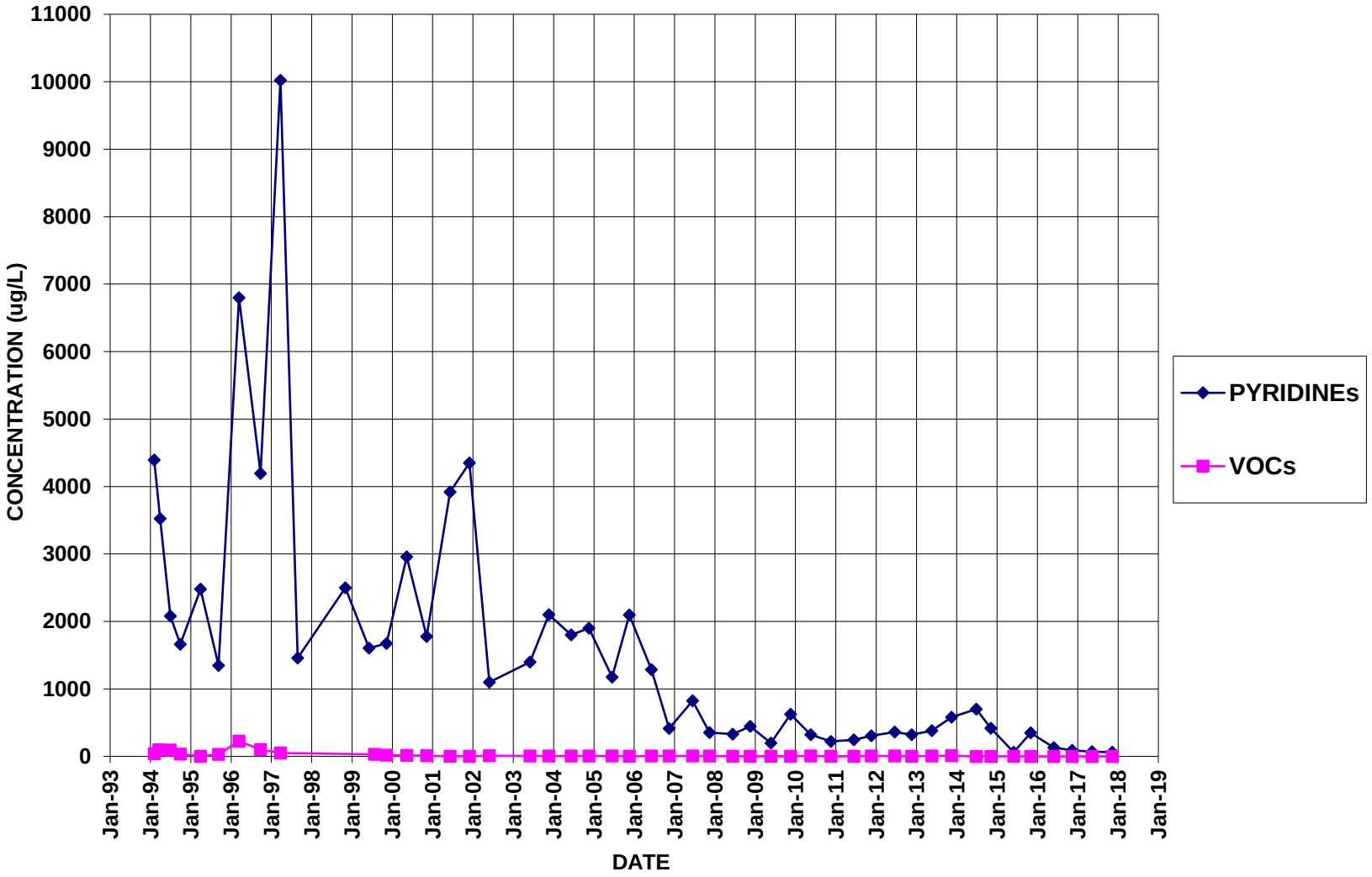
Prepared by: nmb
Reviewed by: jeb

BR-105



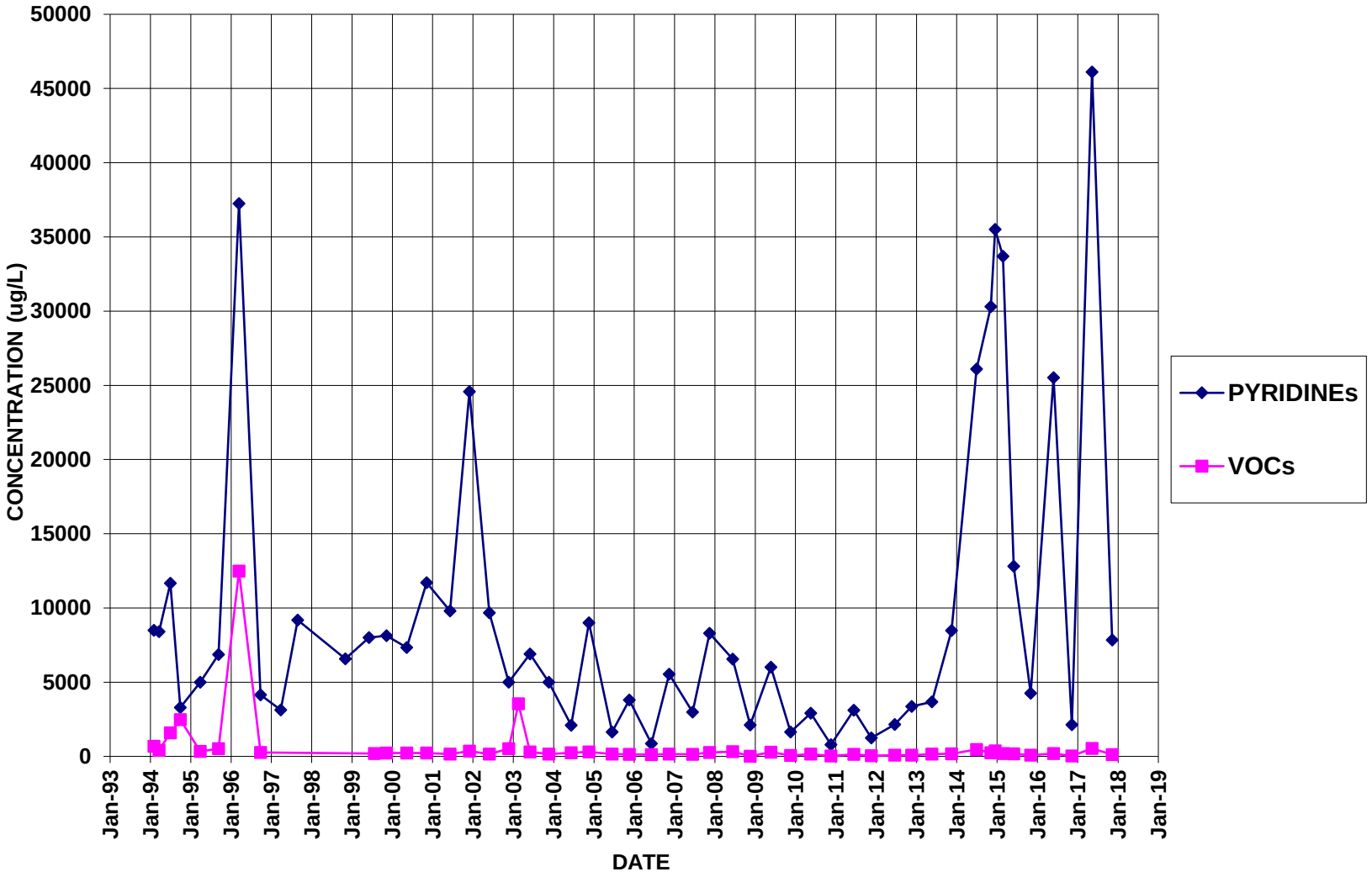
Prepared by: nmb
Reviewed by: jeb

BR-105D



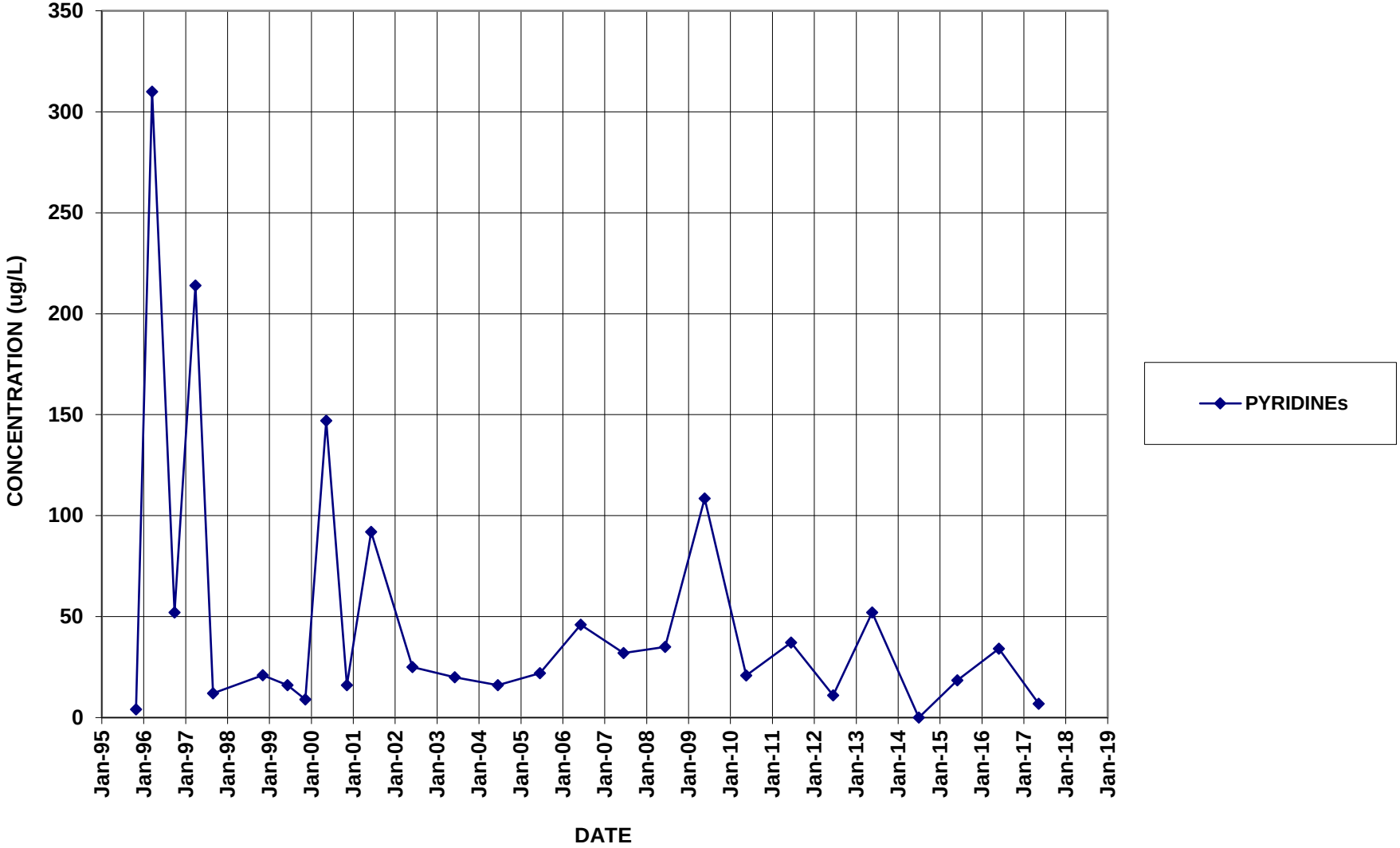
Prepared by: nmb
Reviewed by: jeb

BR-106



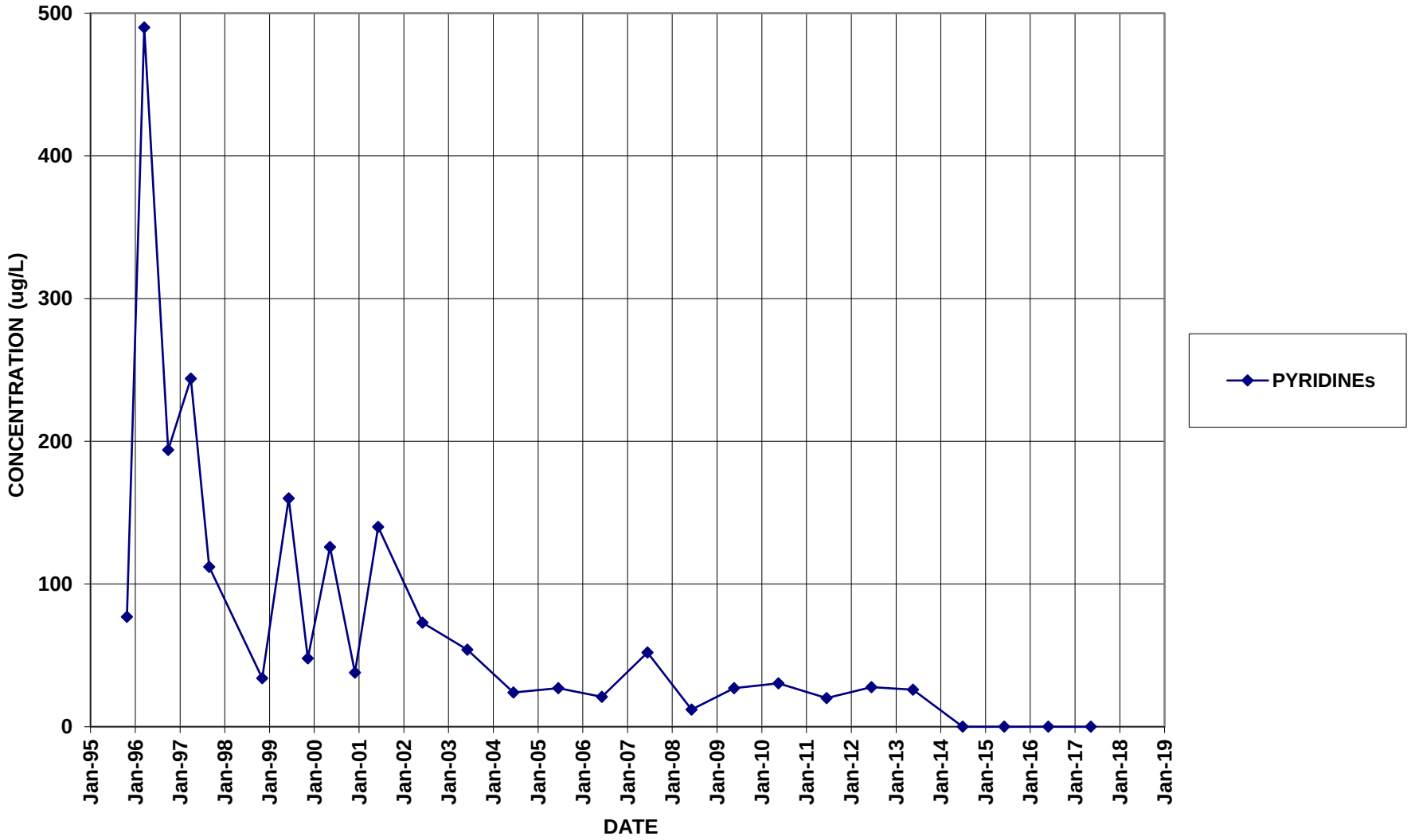
Prepared by: nmb
Reviewed by: jeb

BR-112D



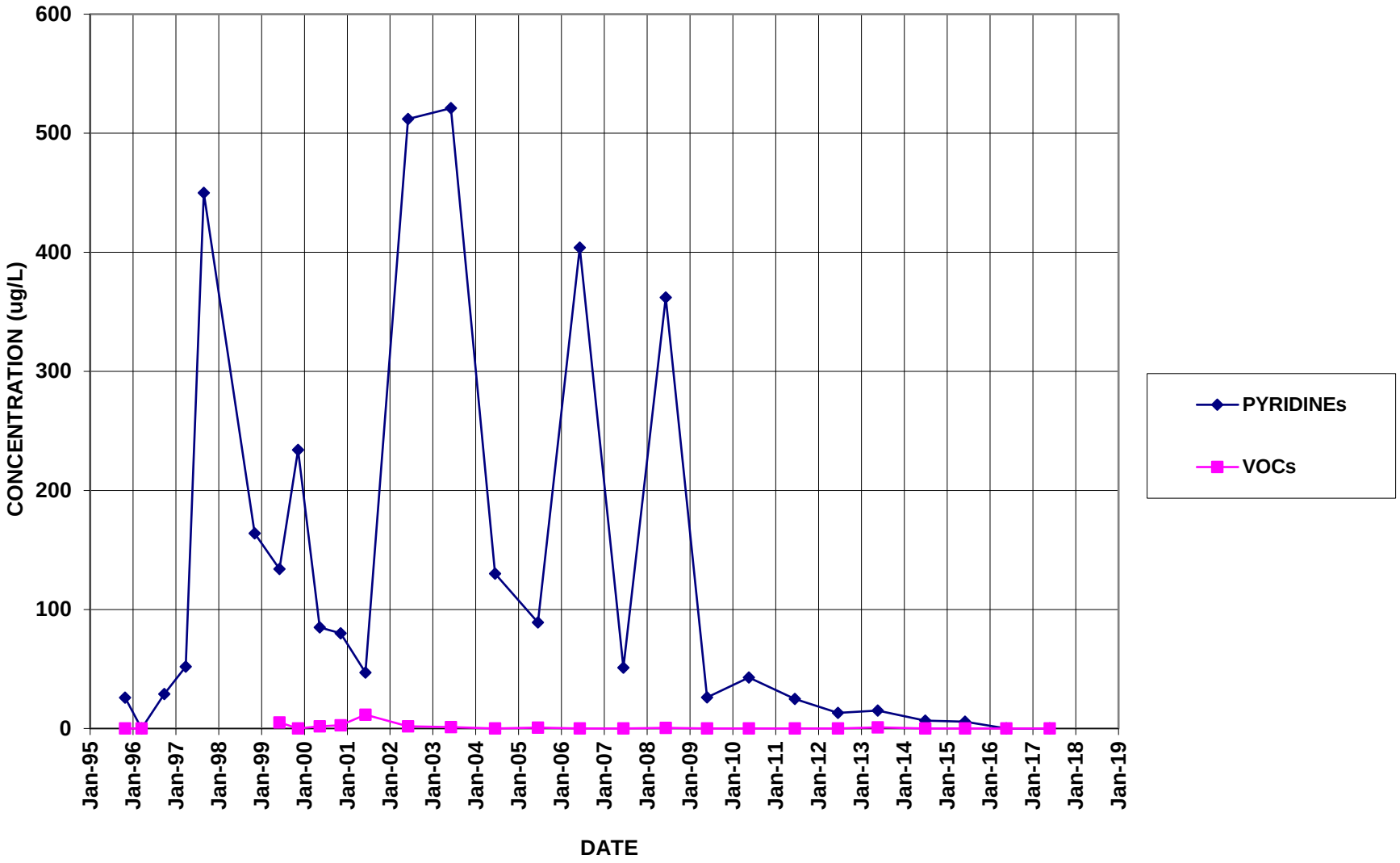
Prepared by: nmb
Reviewed by: jeb

BR-113D



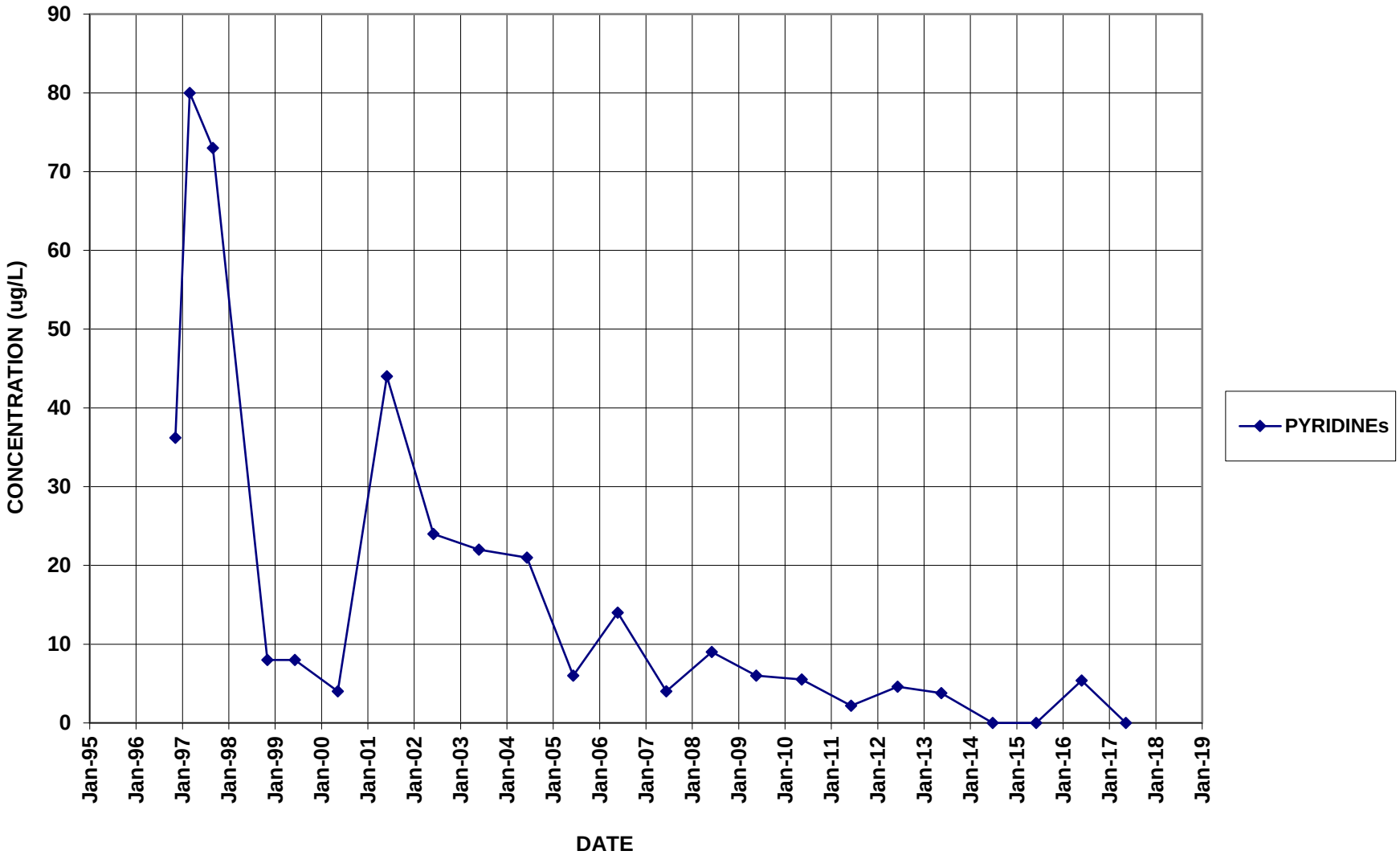
Prepared by: nmb
Reviewed by: jeb

BR-114



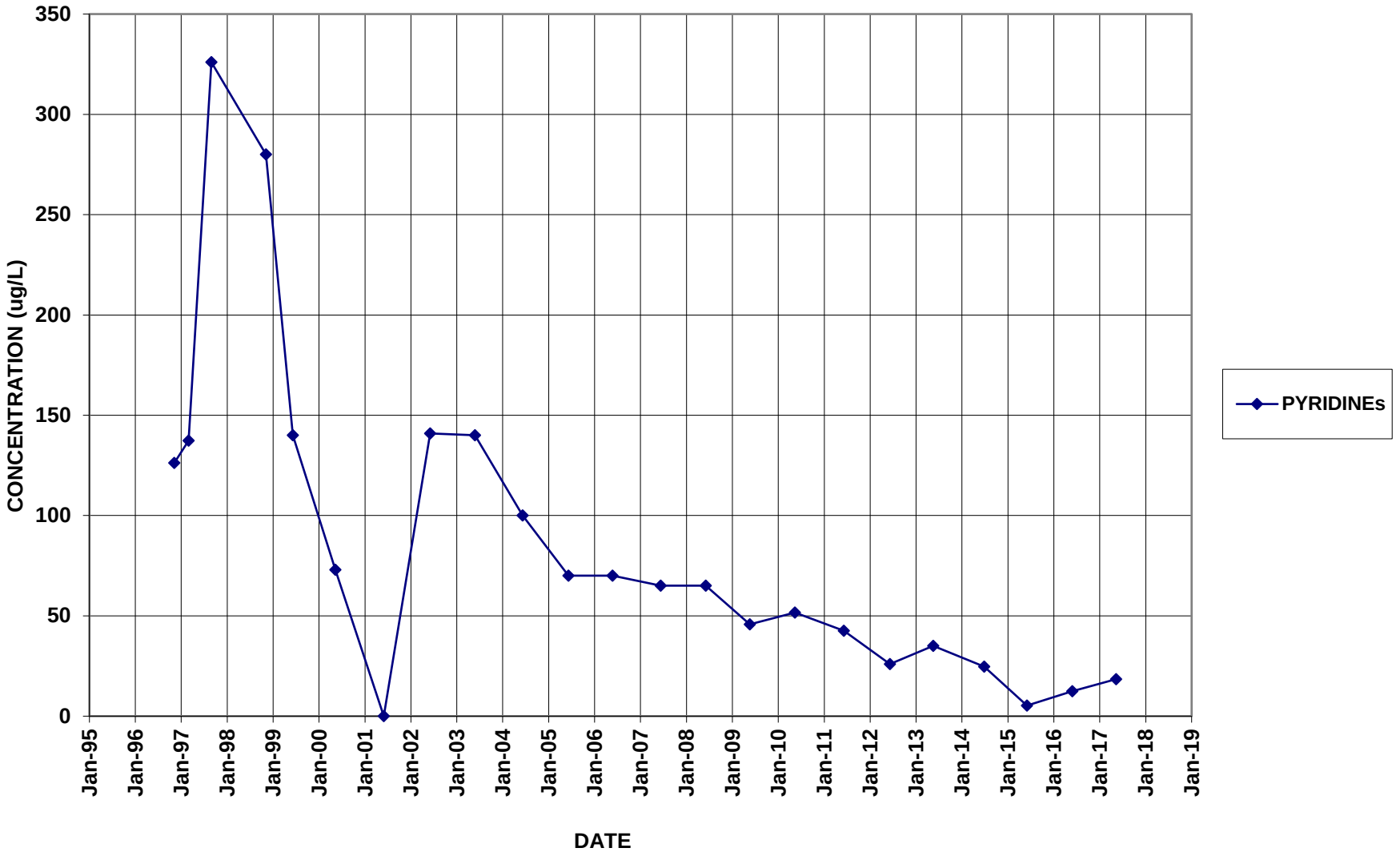
Prepared by: nmb
Reviewed by: jeb

BR-117D



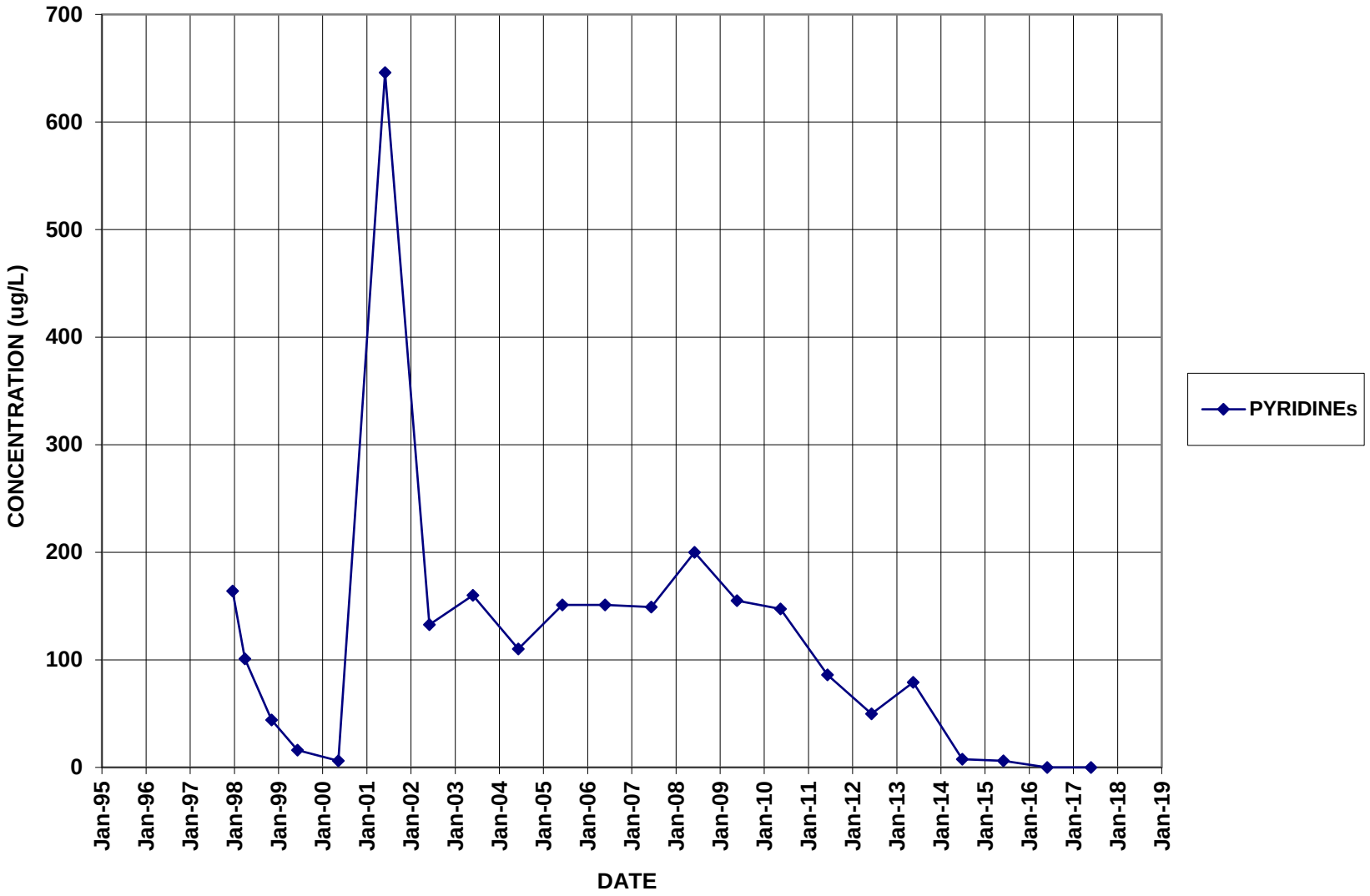
Prepared by: nmb
Reviewed by: jeb

BR-118D



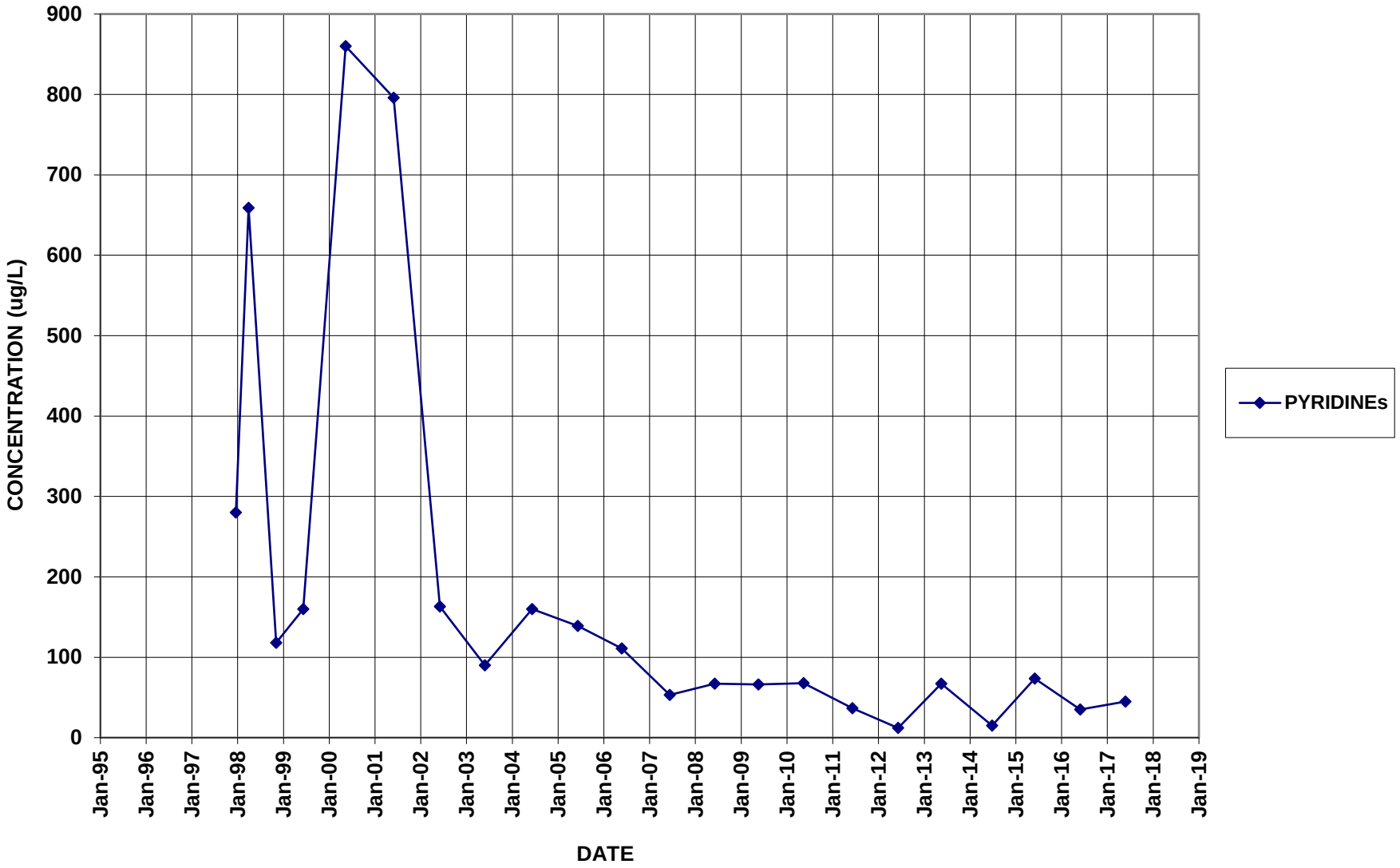
Prepared by: nmb
Reviewed by: jeb

BR-122D



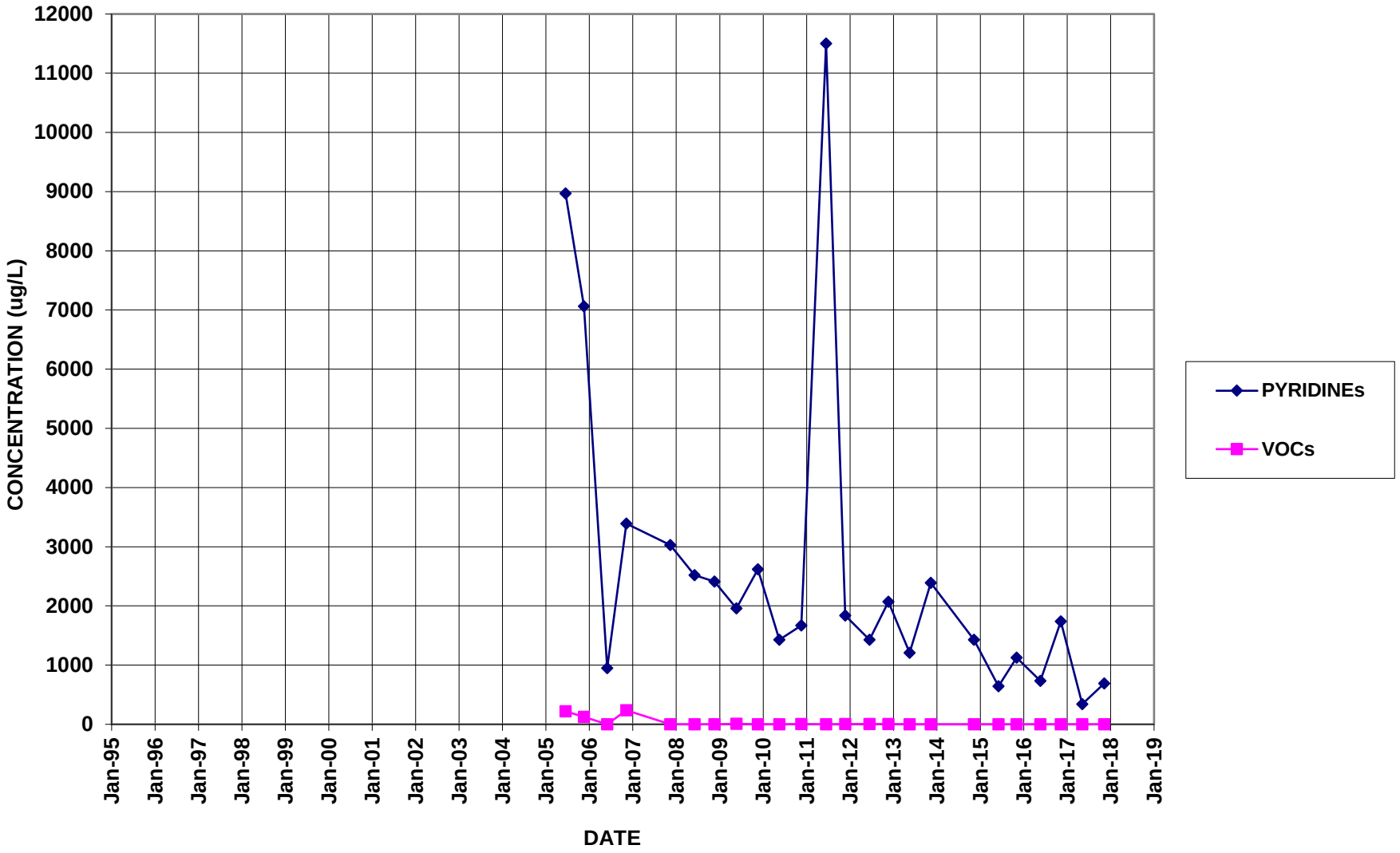
Prepared by: nmb
Reviewed by: jeb

BR-123D



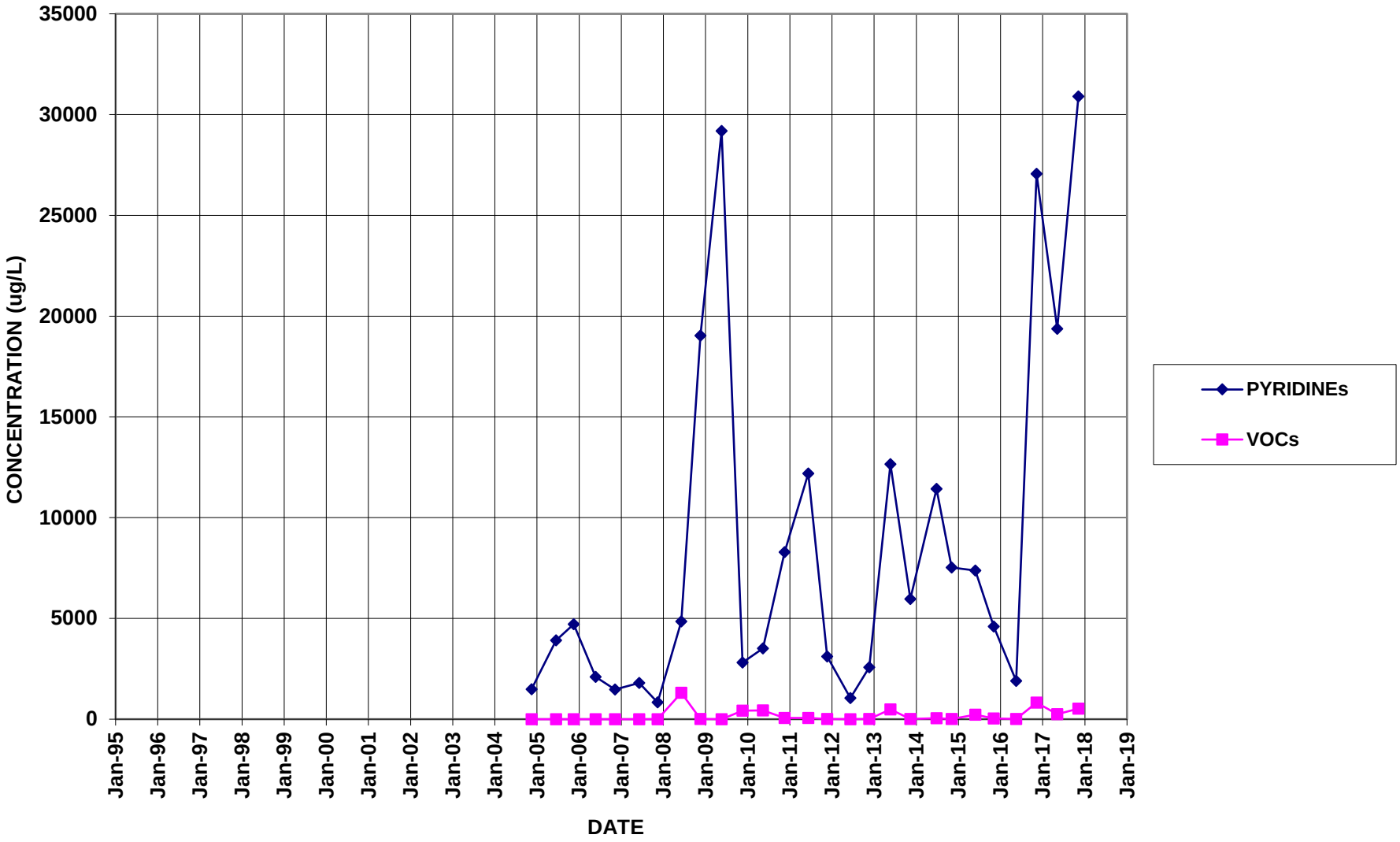
Prepared by: nmb
Reviewed by: jeb

BR-126

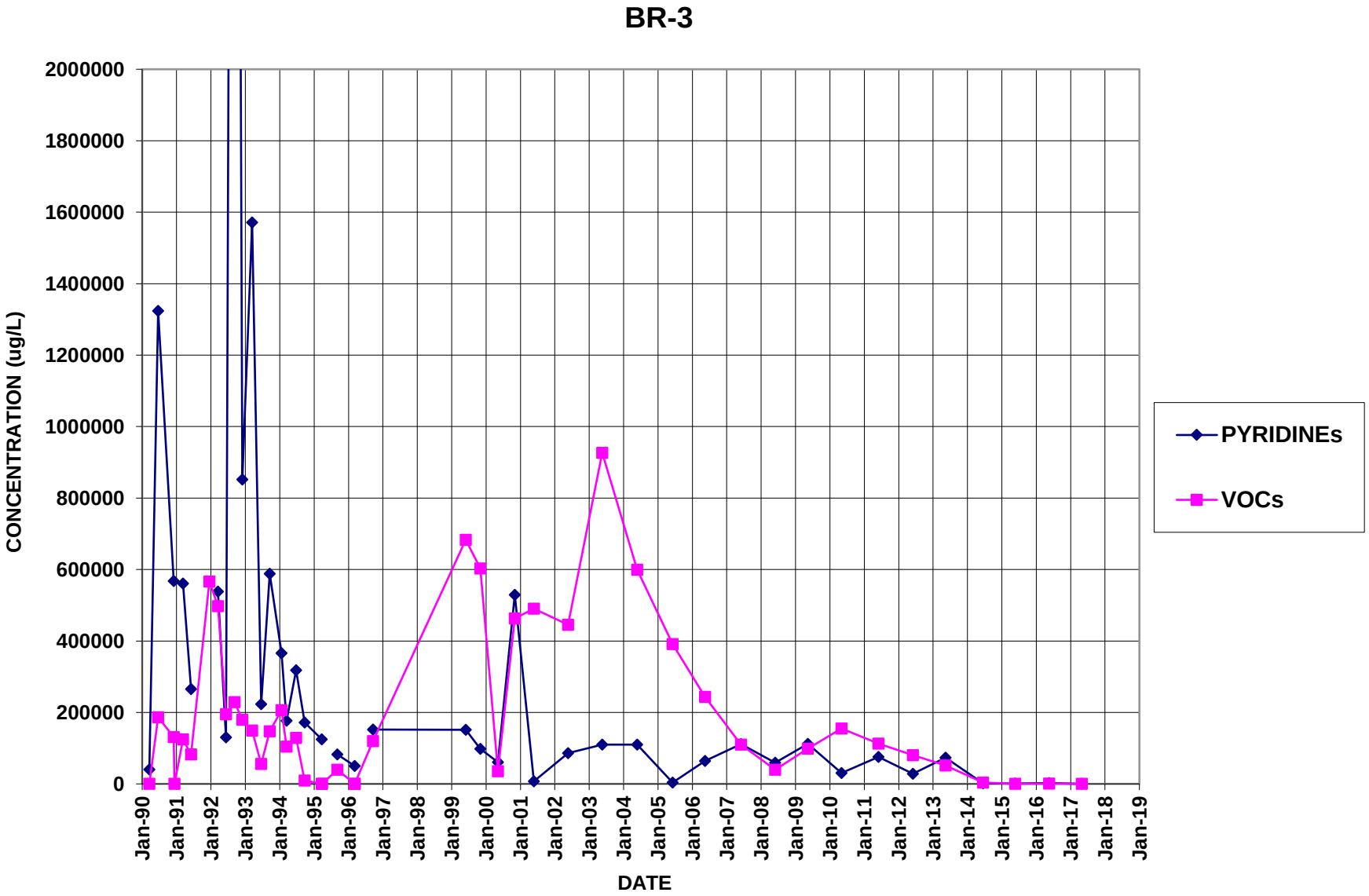


Prepared by: nmb
Reviewed by: jeb

BR-127

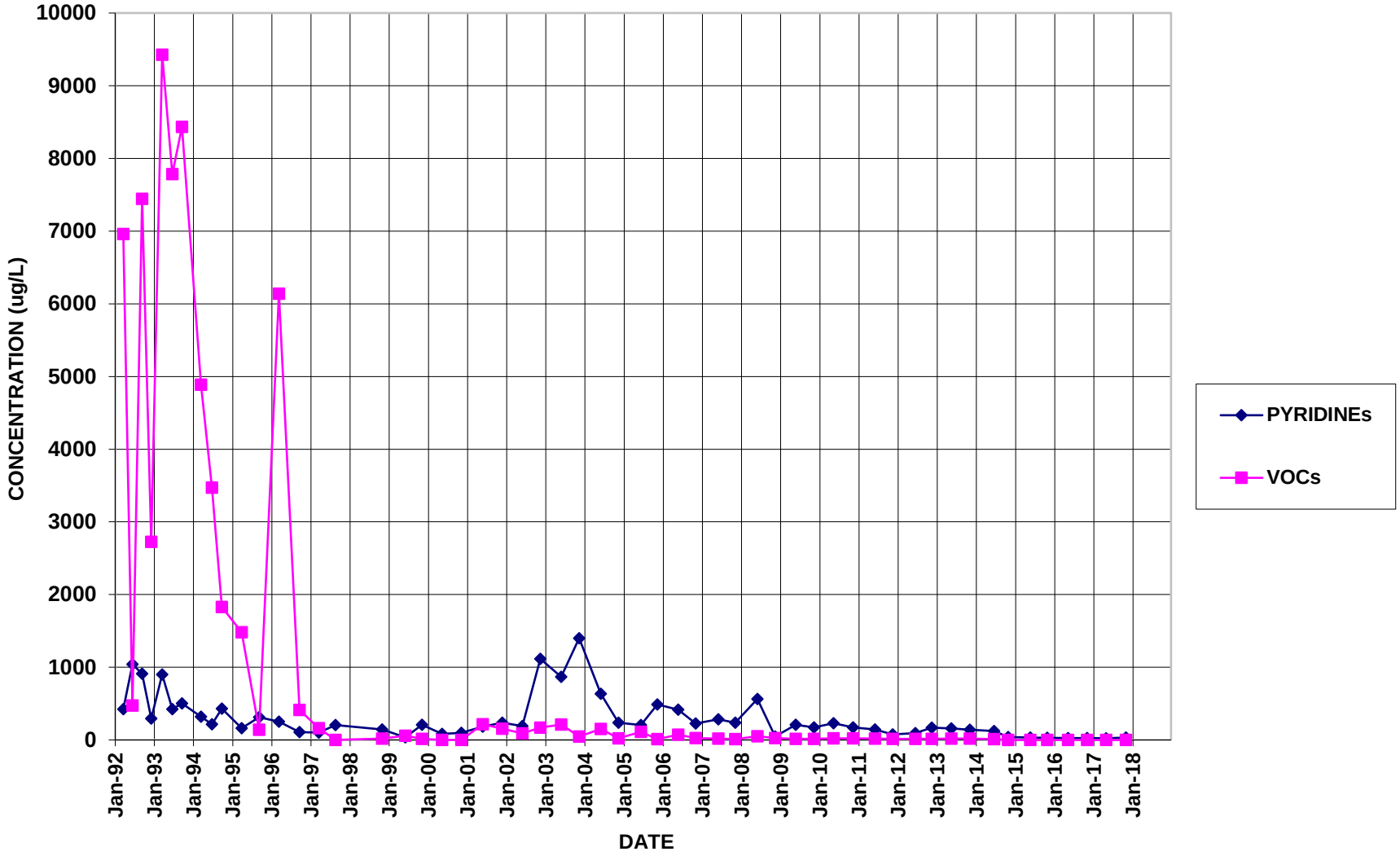


Prepared by: nmb
Reviewed by: jeb



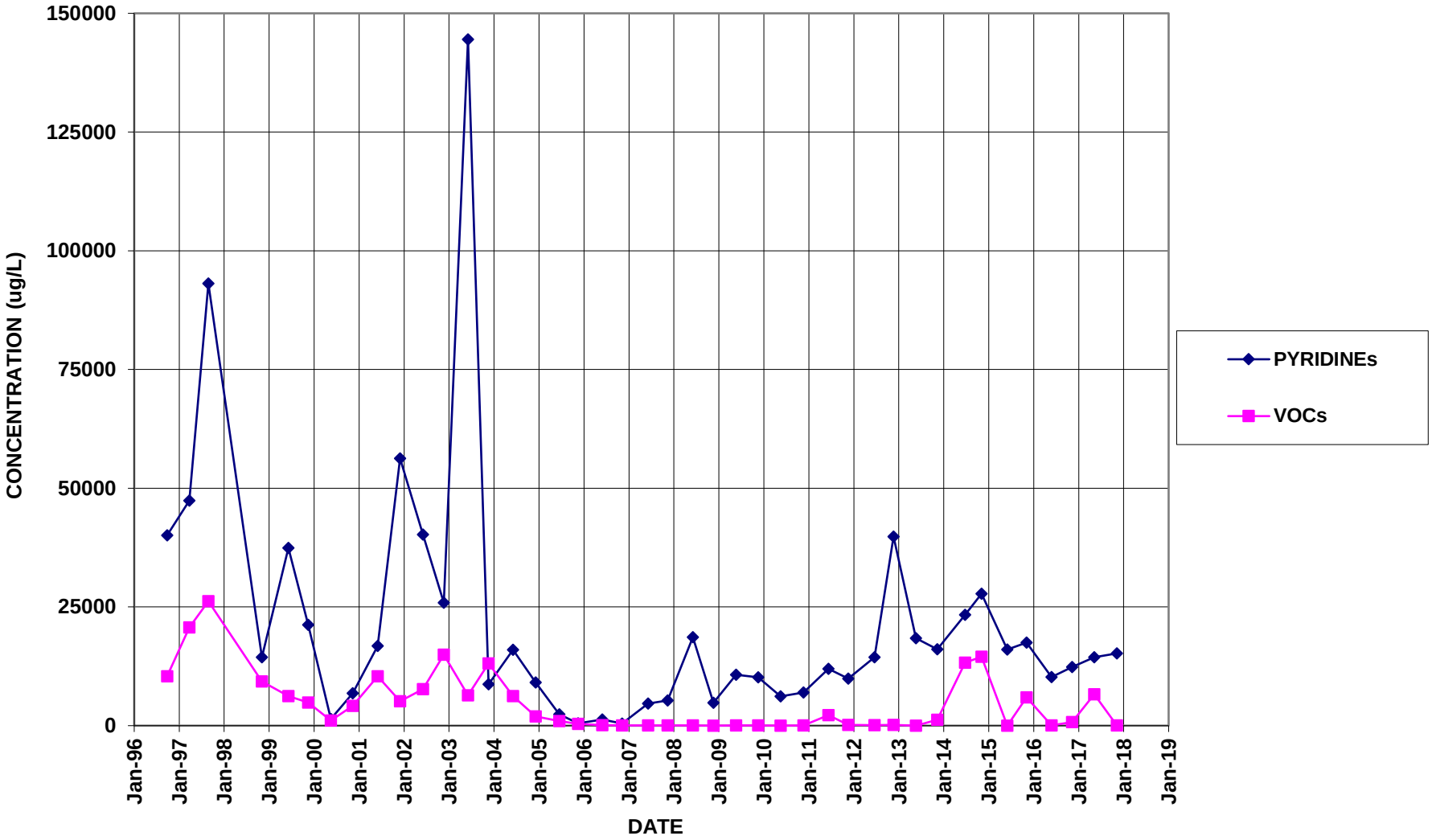
Prepared by: nmb
Reviewed by: jeb

BR-5A



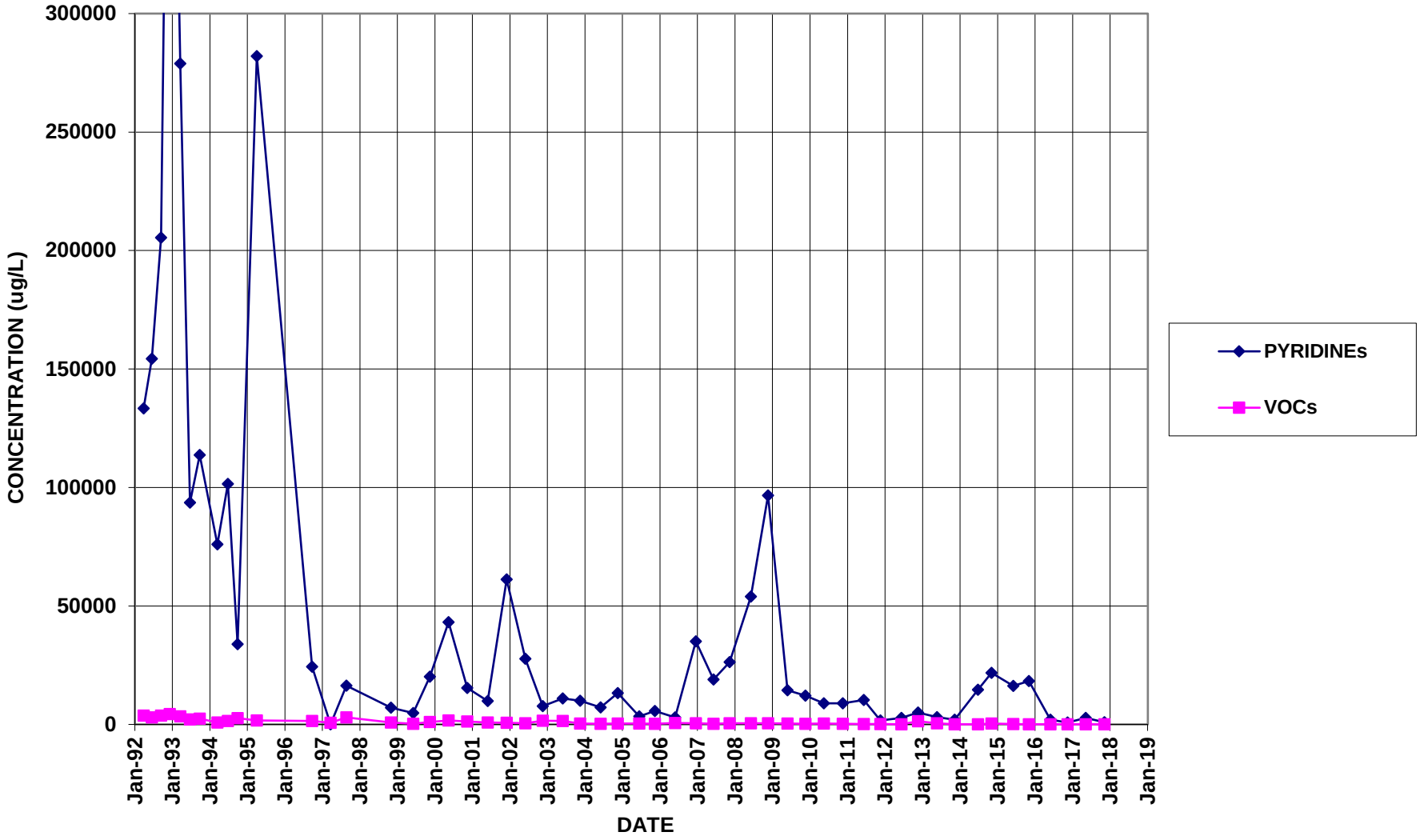
Prepared by: nmb
Reviewed by: jeb

BR-6A



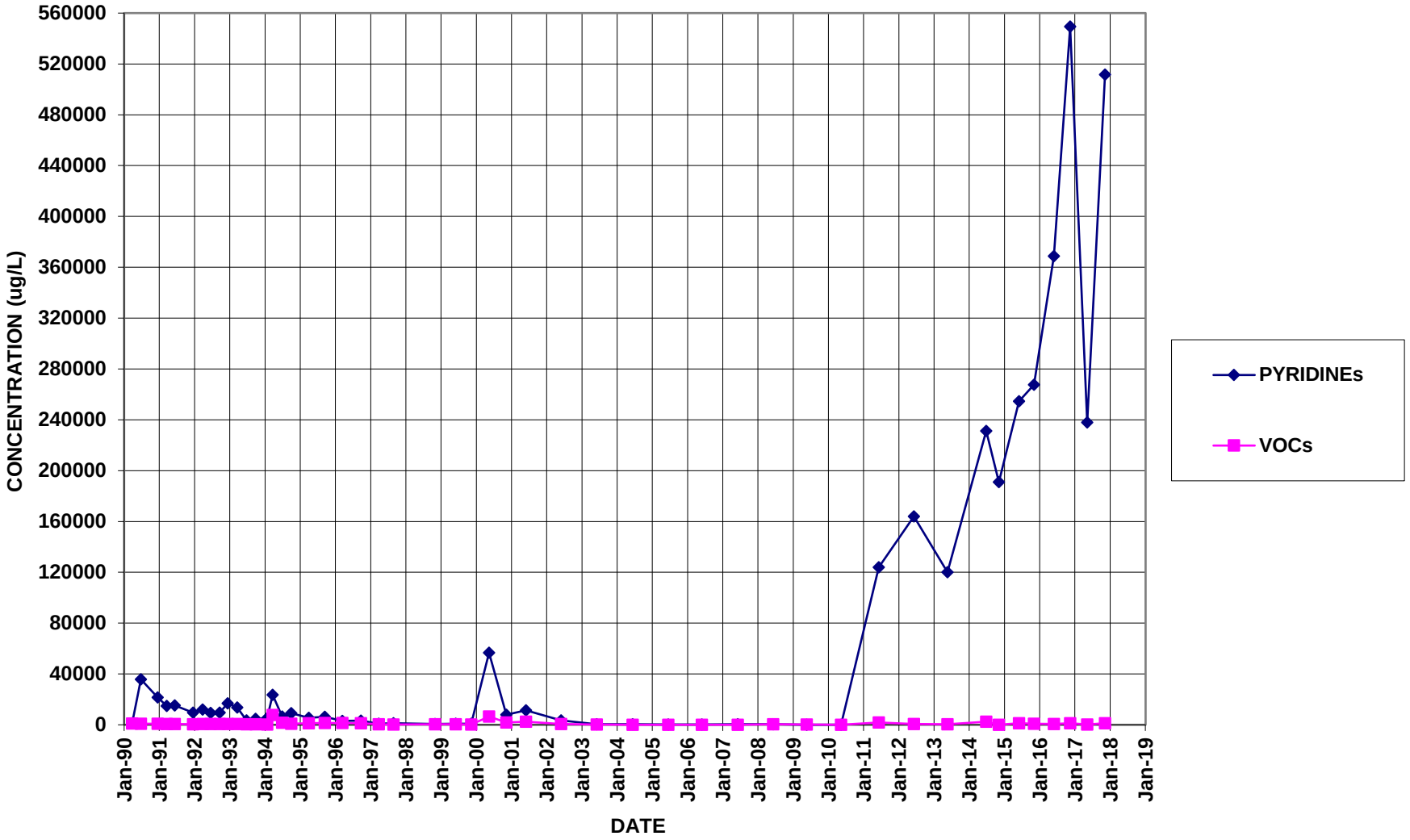
Prepared by: nmb
Reviewed by: jeb

BR-7A



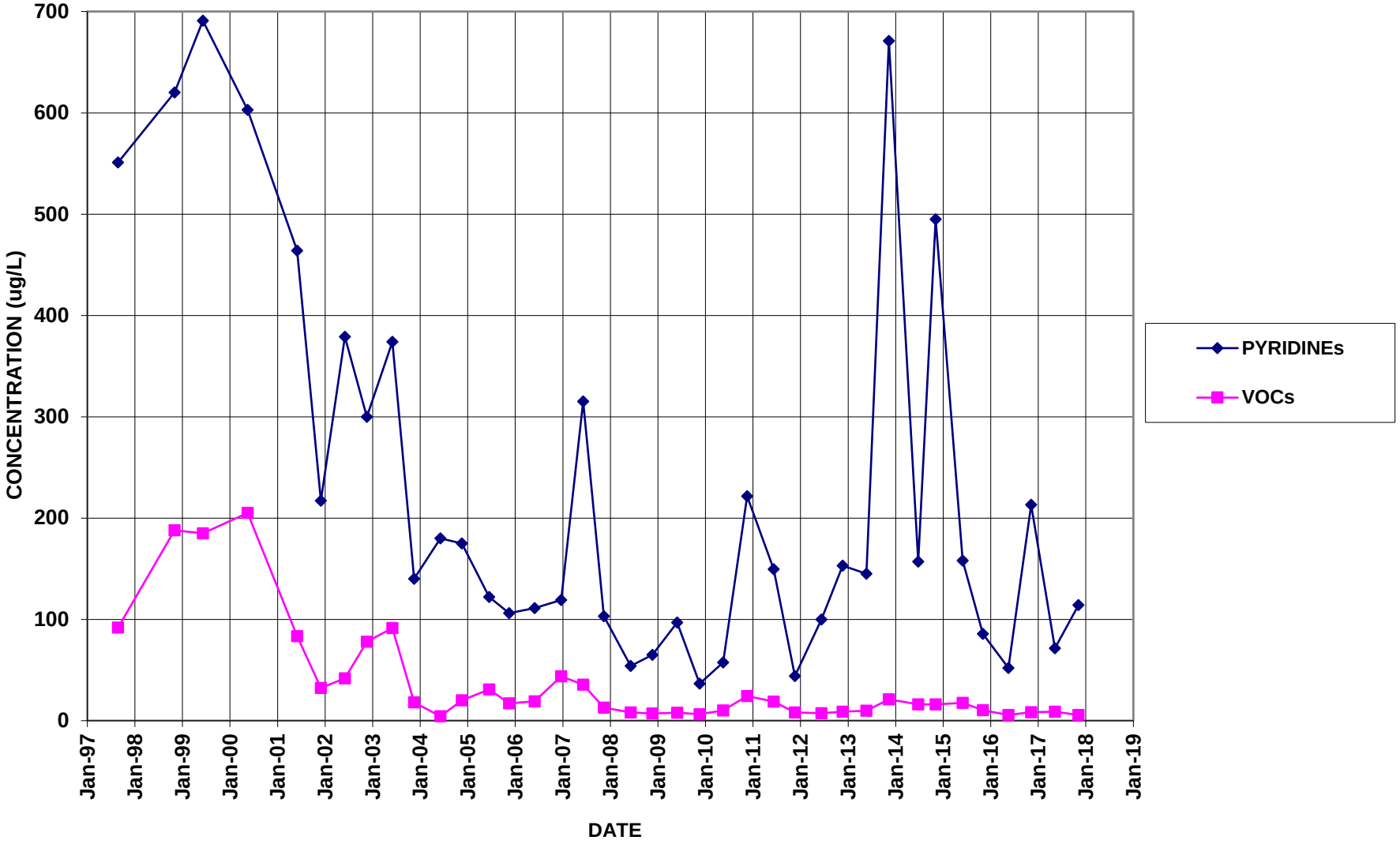
Prepared by: nmb
Reviewed by: jeb

BR-8

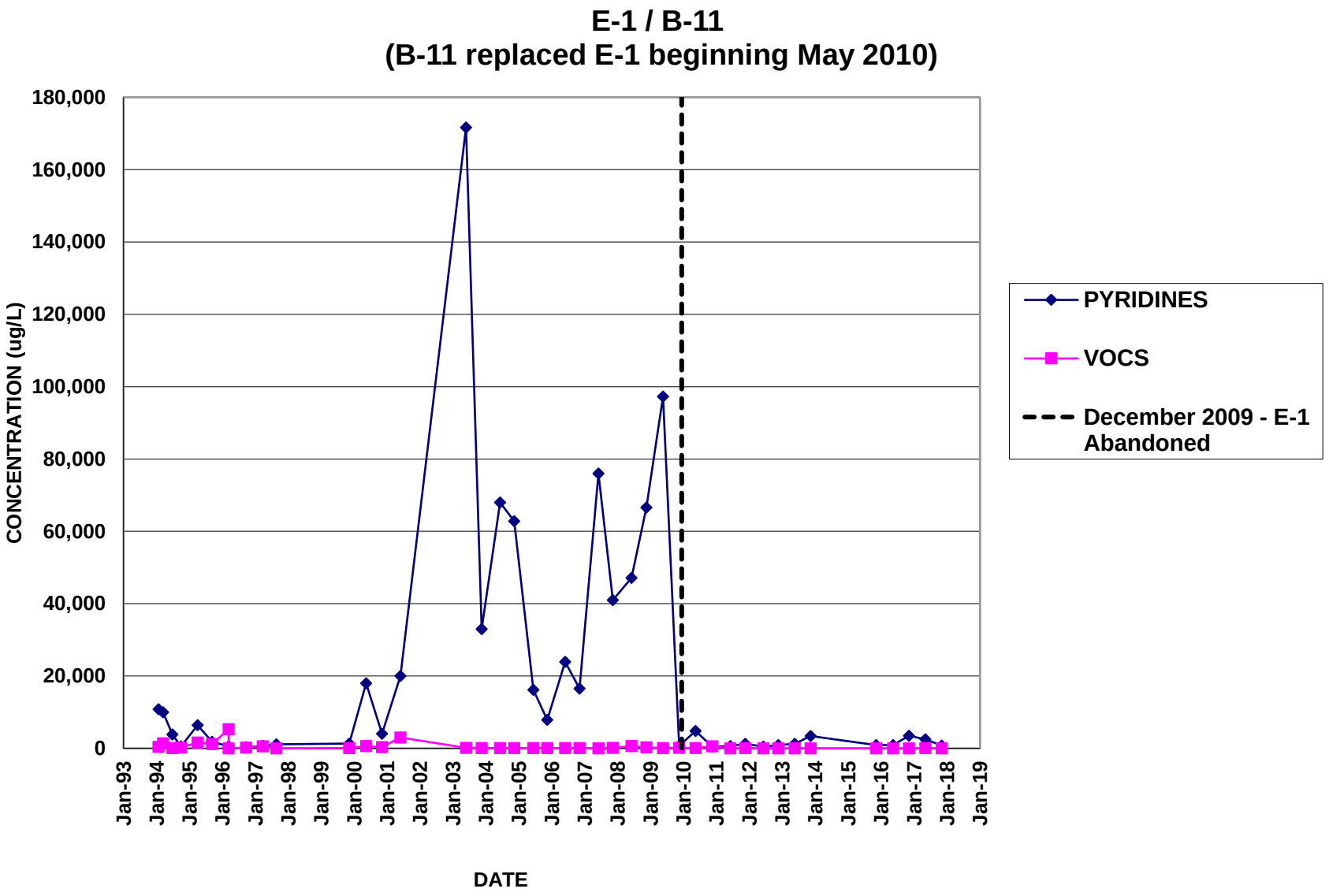


Prepared by: nmb
Reviewed by: jeb

BR-9

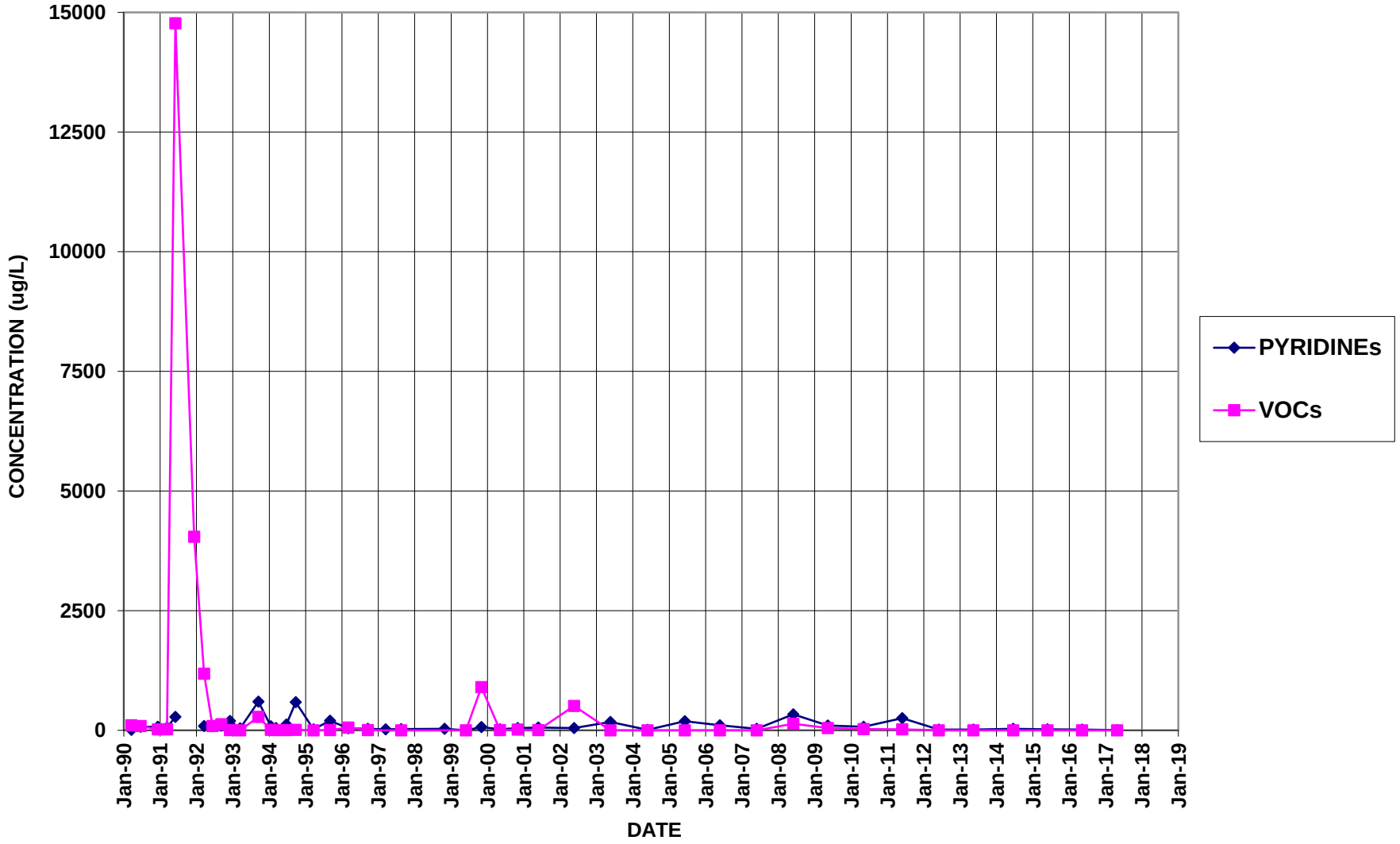


Prepared by: nmb
Reviewed by: jeb



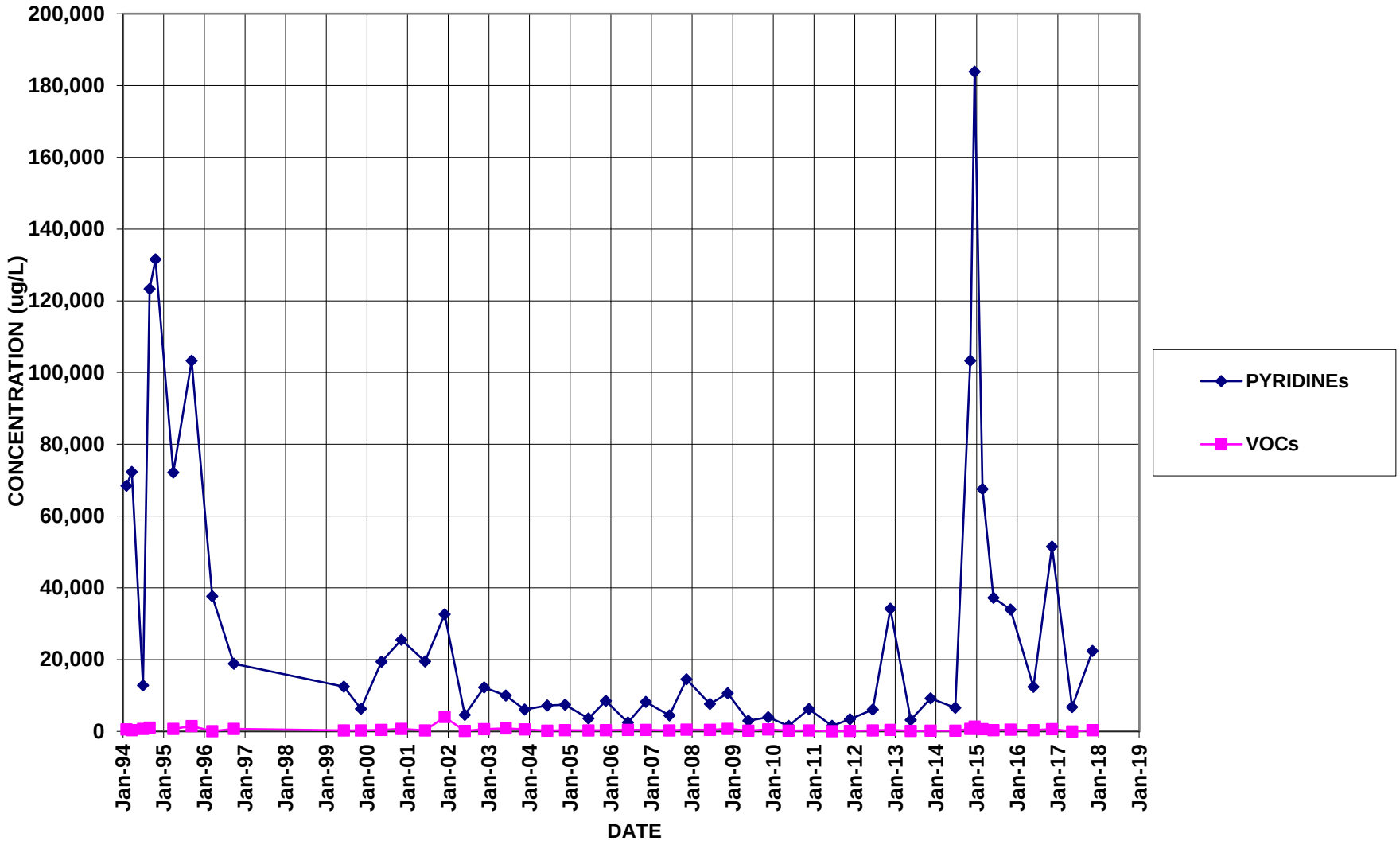
Prepared by: nmb
Reviewed by: jeb

E-3



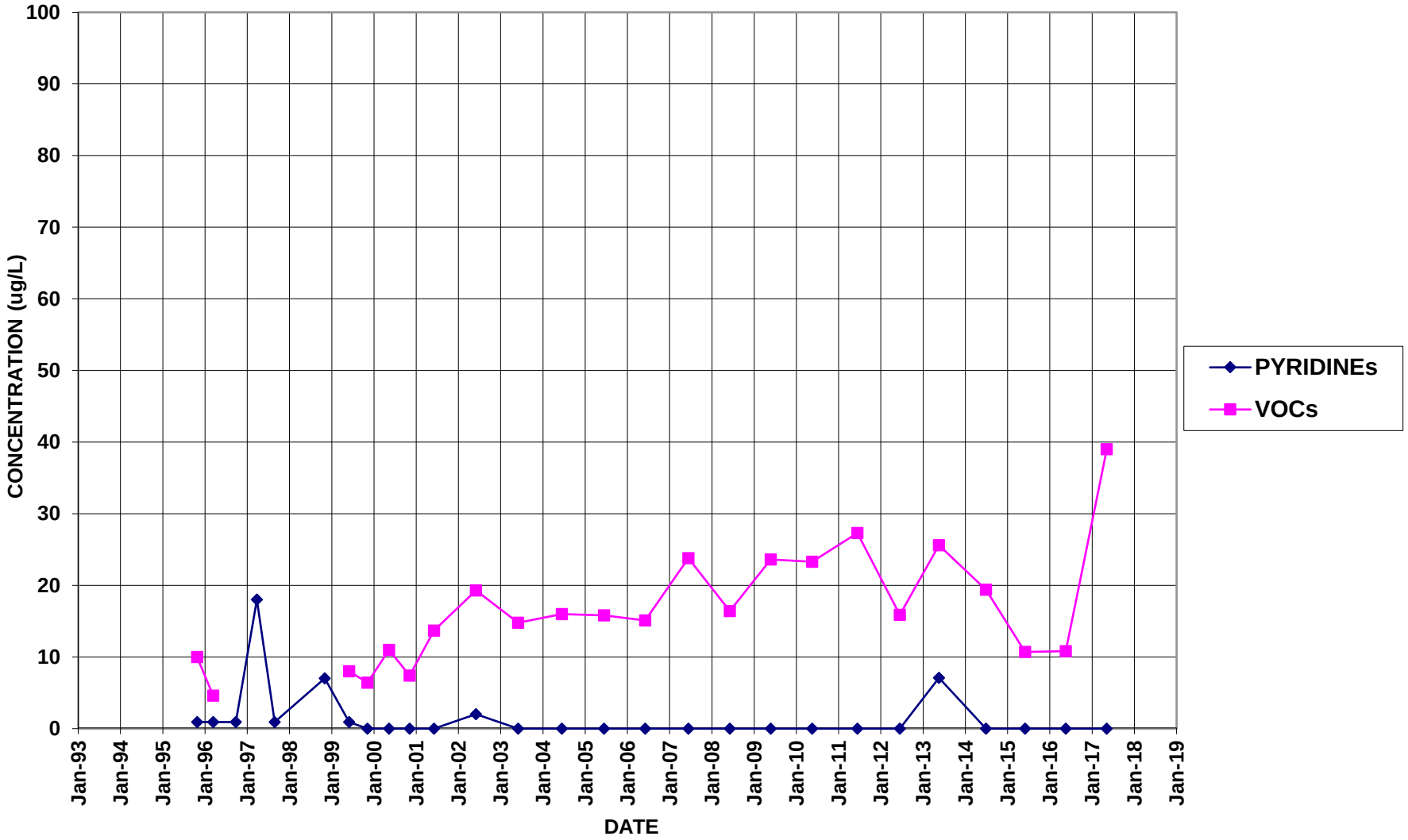
Prepared by: nmb
Reviewed by: jeb

MW-106



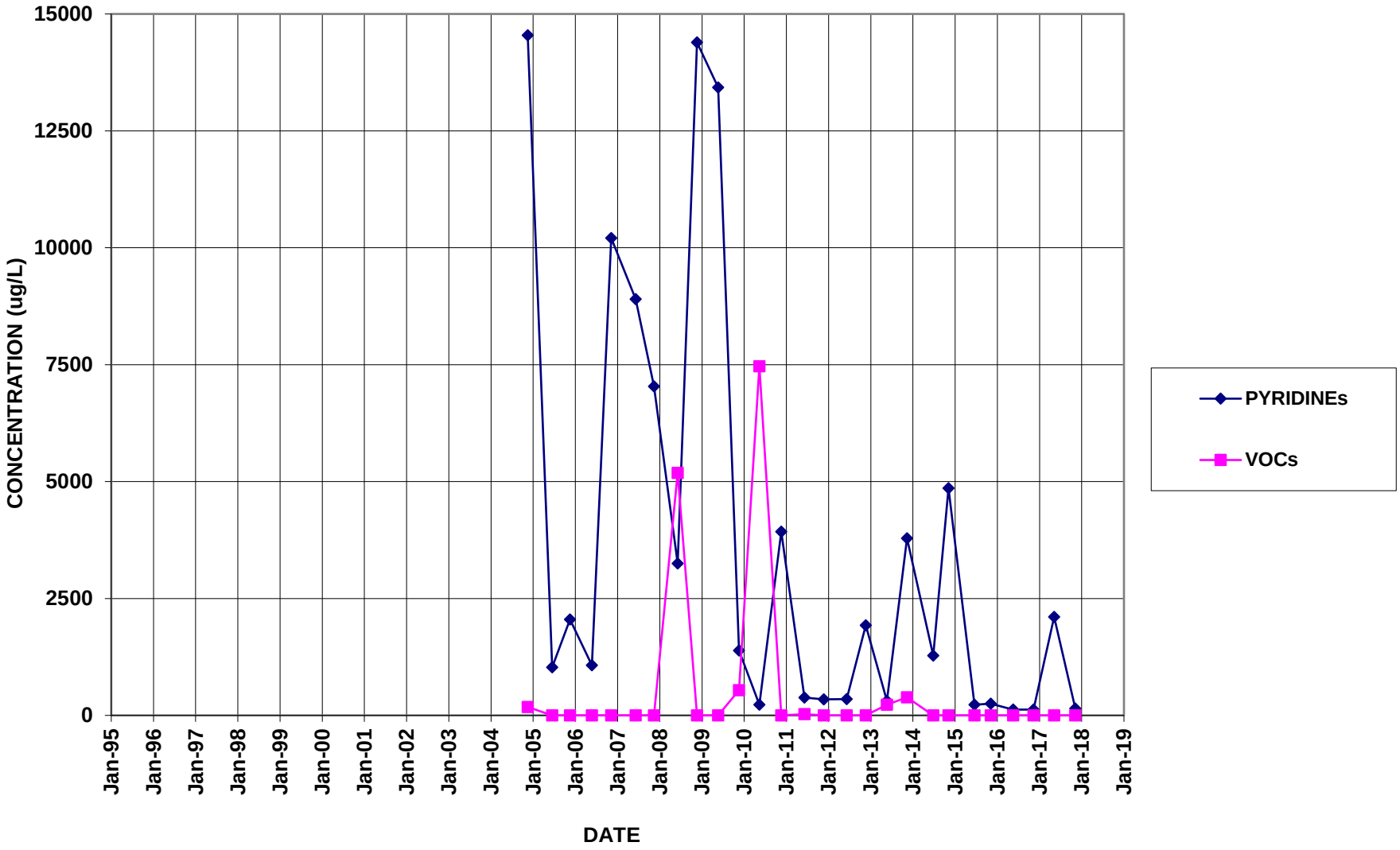
Prepared by: nmb
Reviewed by: jeb

MW-114



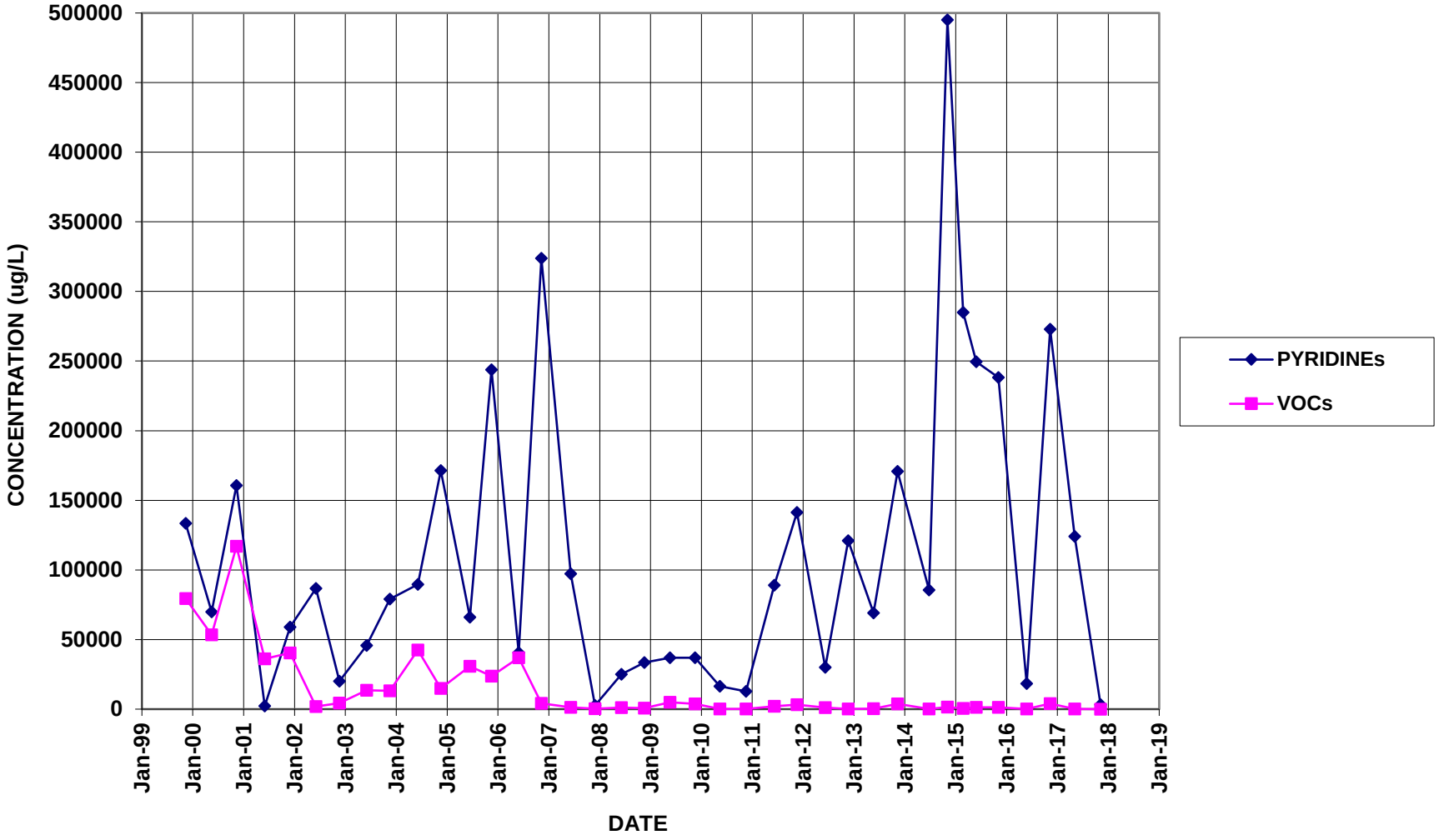
Prepared by: nmb
Reviewed by: jeb

MW-127



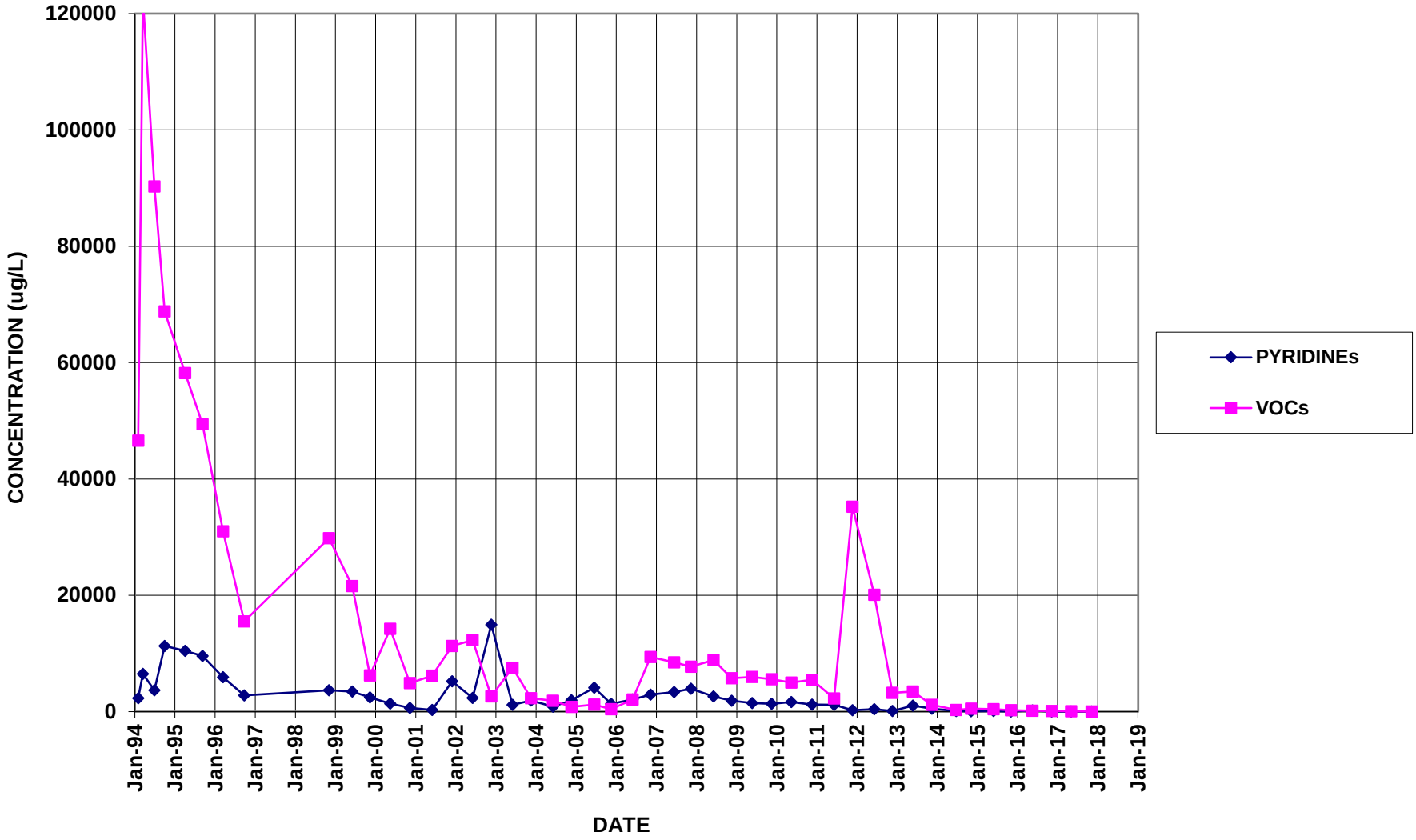
Prepared by: nmb
Reviewed by: jeb

PW10



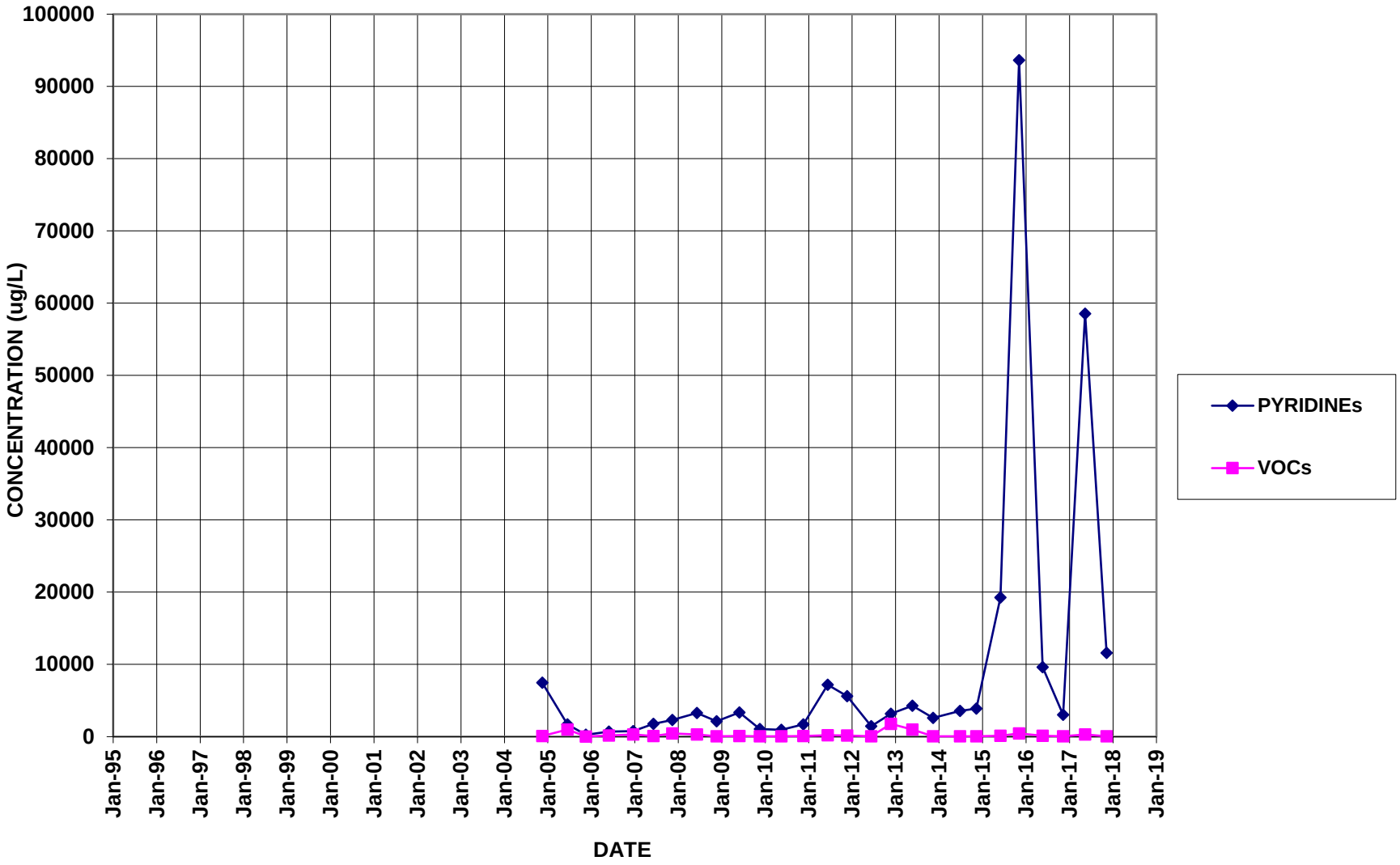
Prepared by: nmb
Reviewed by: jeb

PW12 (Formerly BR-101)



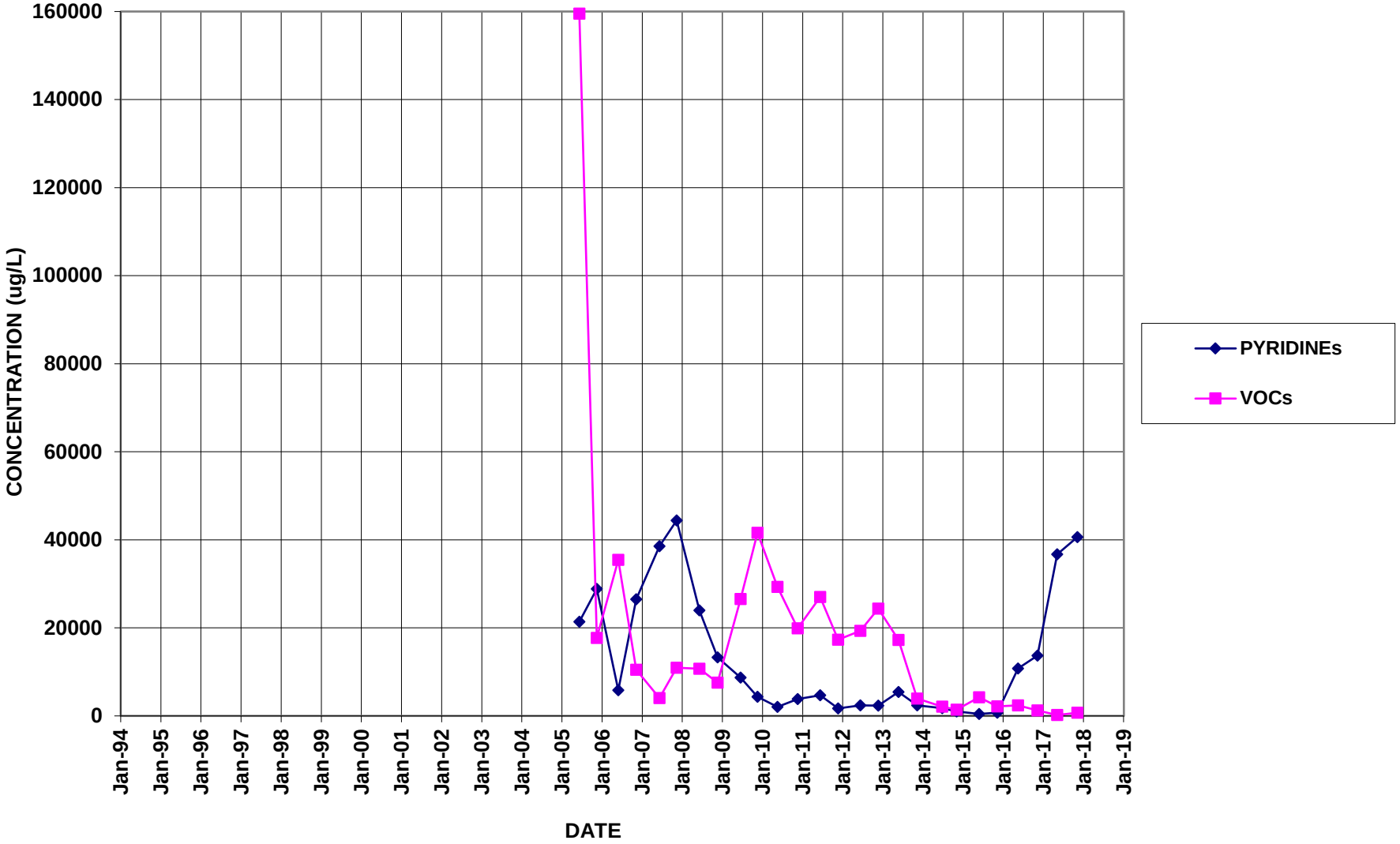
Prepared by: nmb
Reviewed by: jeb

PW13



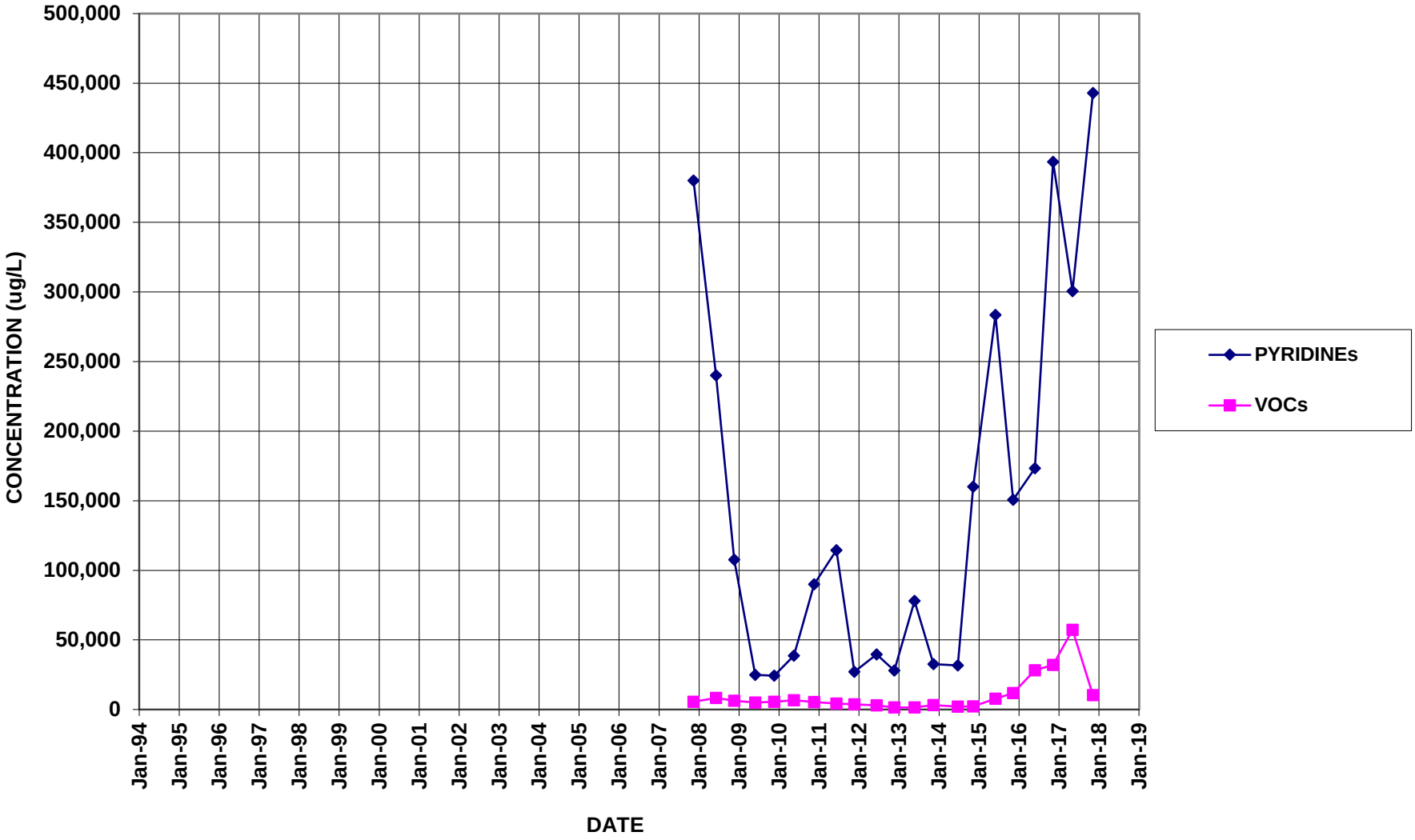
Prepared by: nmb
Reviewed by: jeb

PW14



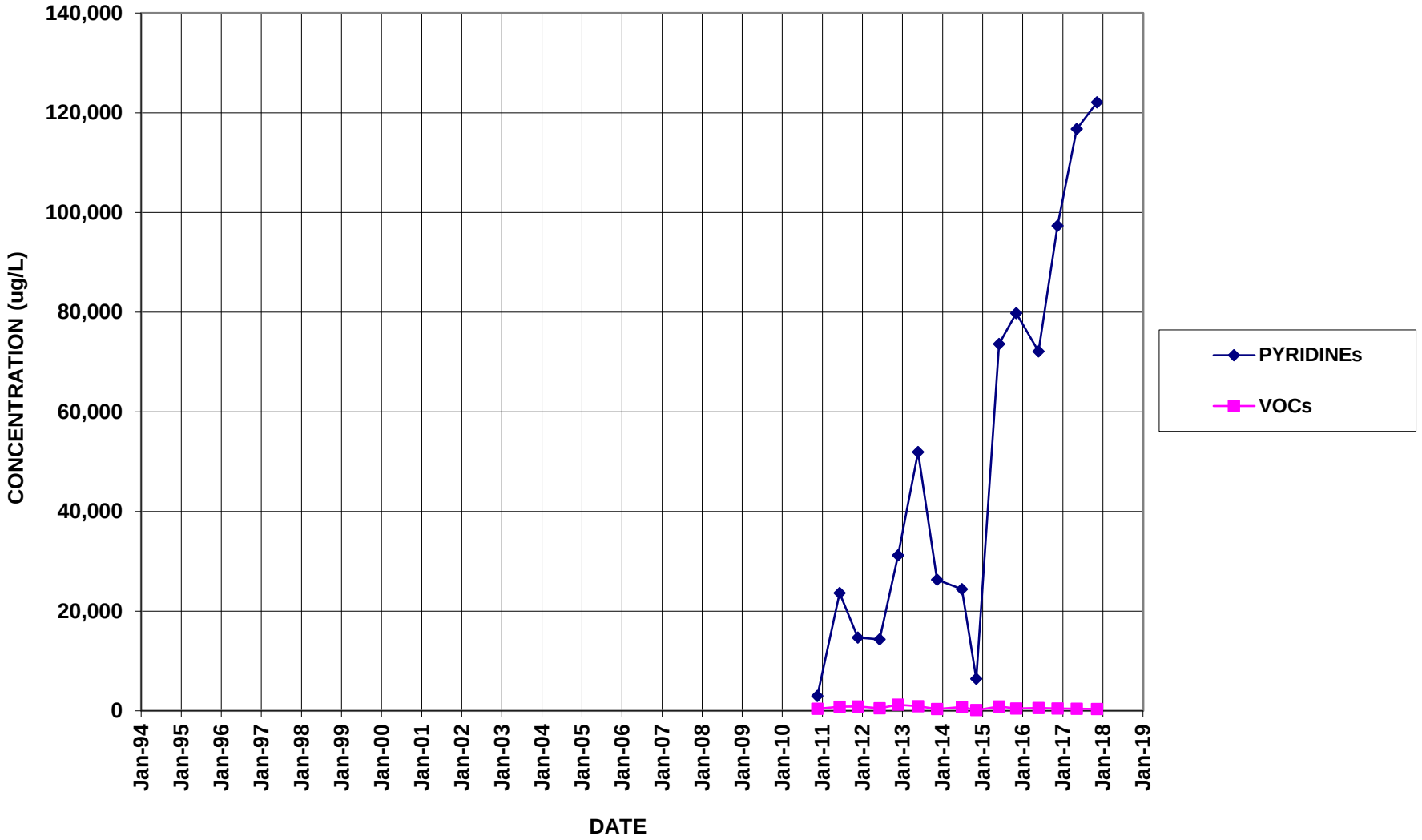
Prepared by: nmb
Reviewed by: jeb

PW15



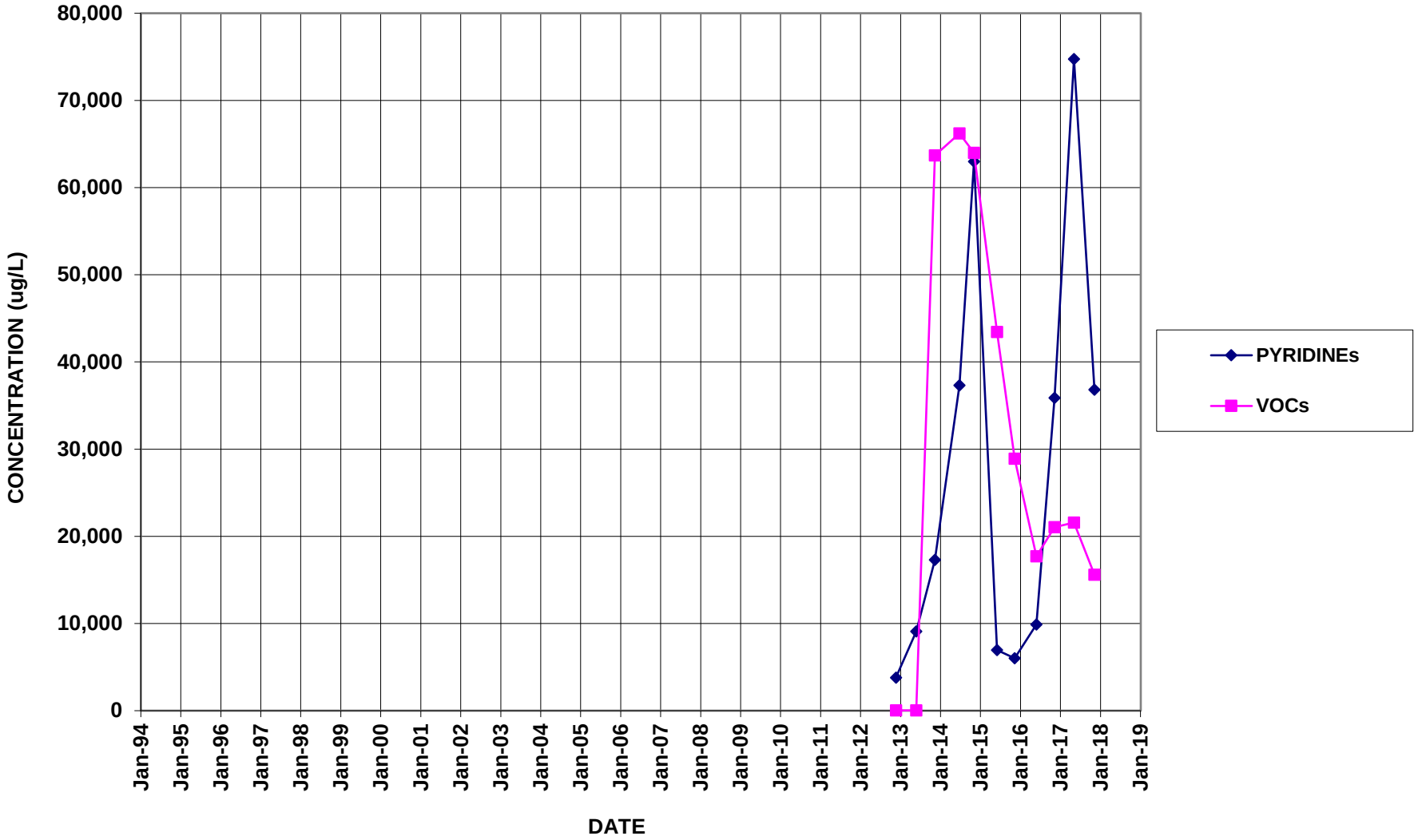
Prepared by: nmb
Reviewed by: jeb

PW16



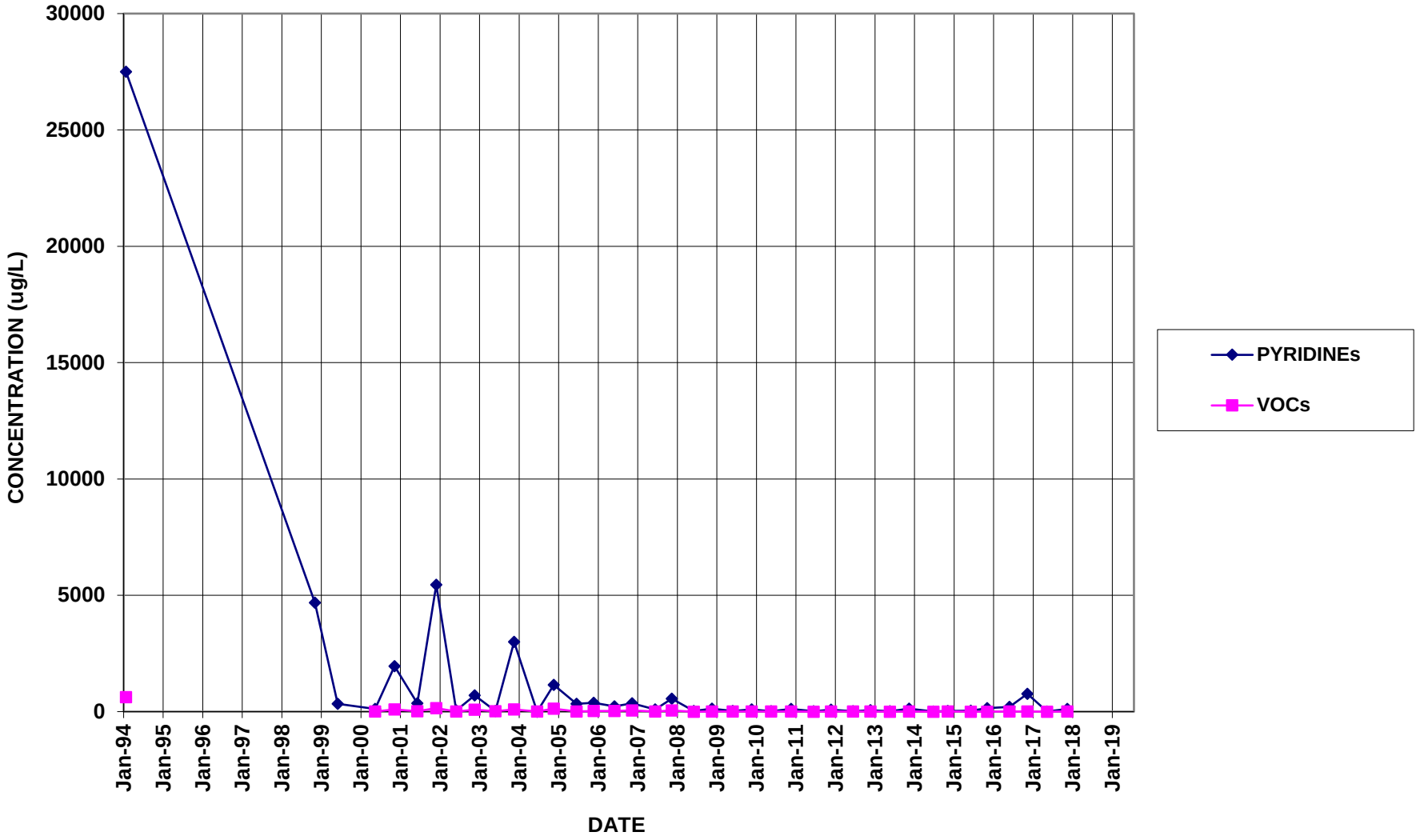
Prepared by: nmb
Reviewed by: jeb

PW17



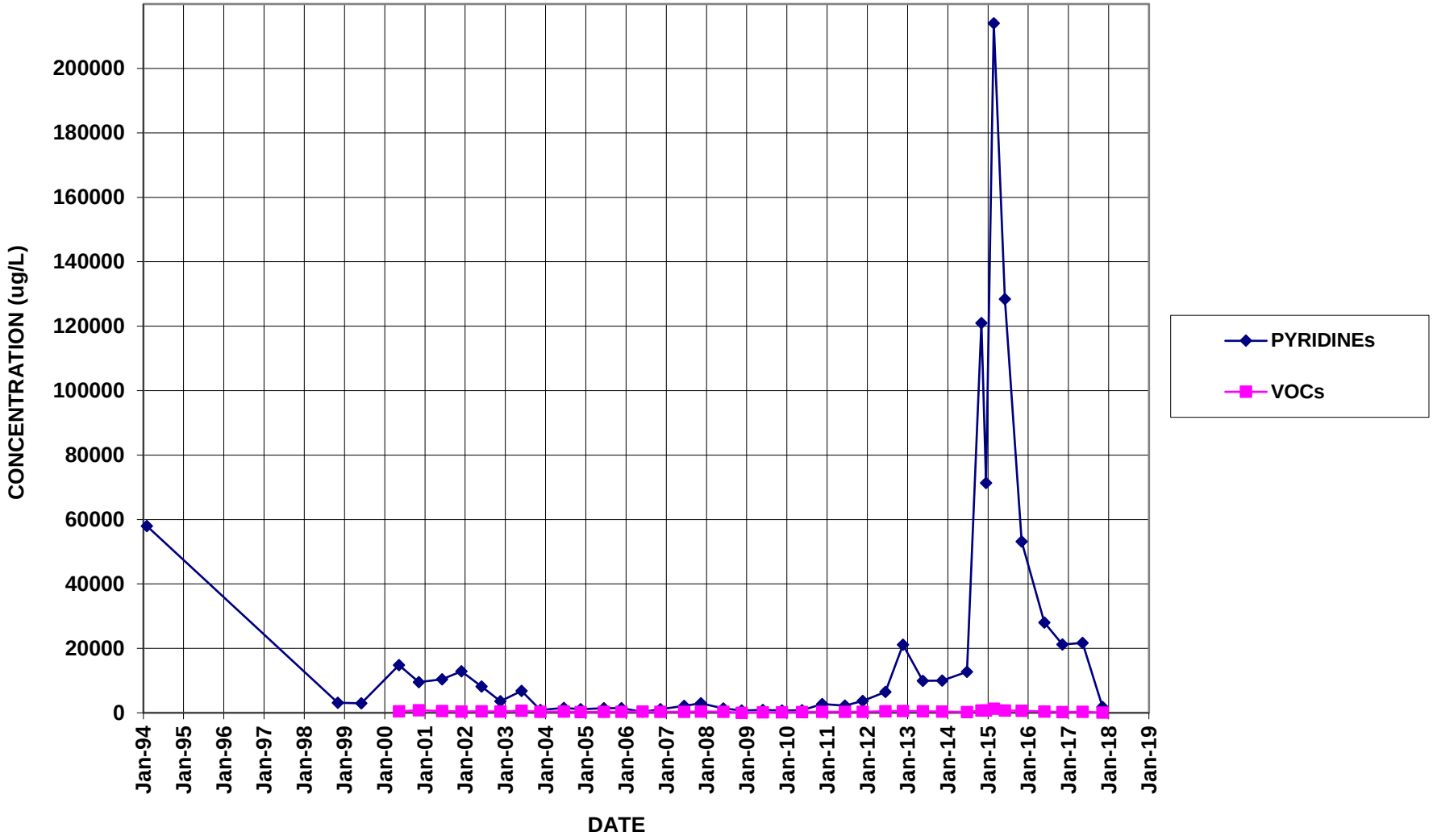
Prepared by: nmb
Reviewed by: jeb

PZ-101



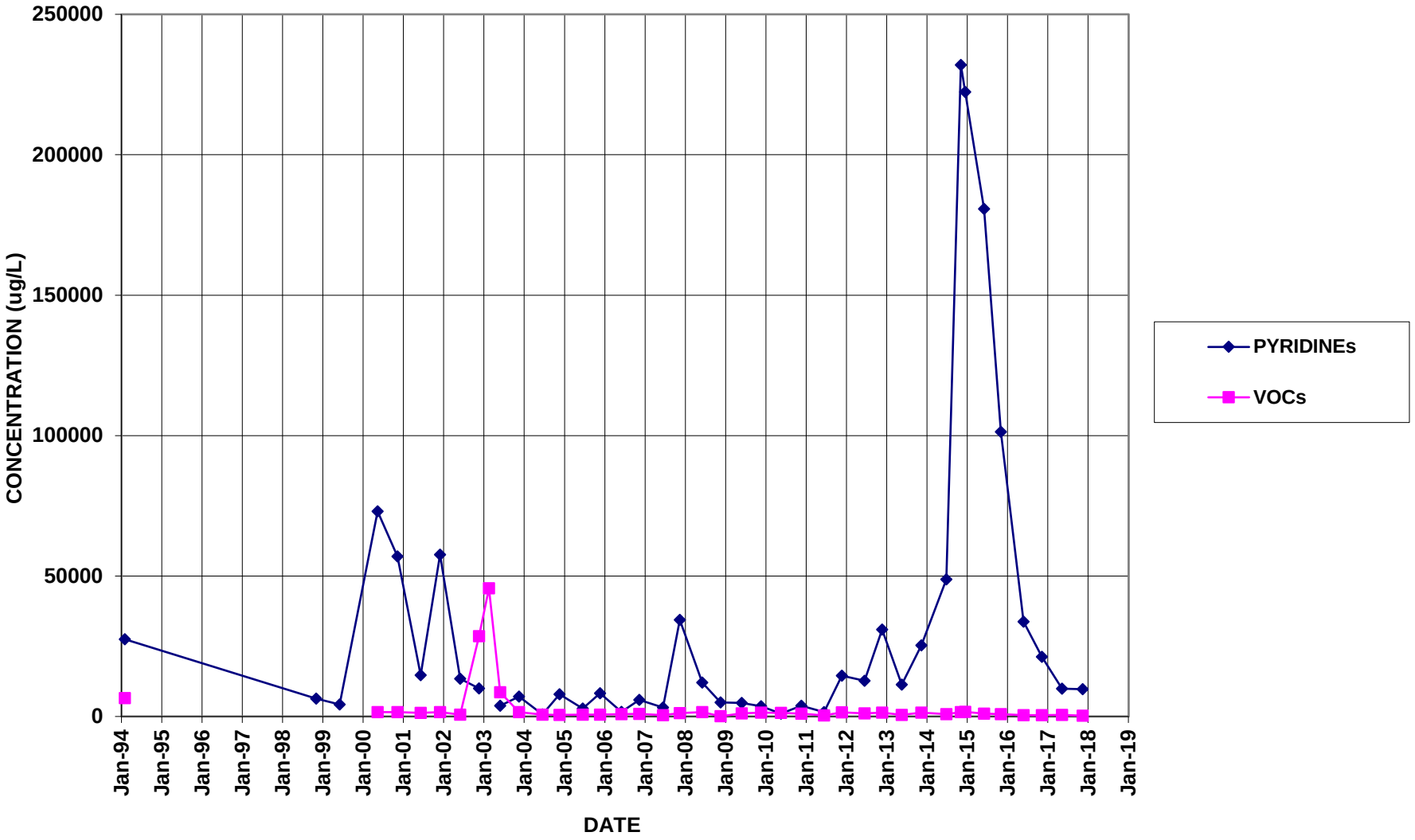
Prepared by: nmb
Reviewed by: jeb

PZ-102



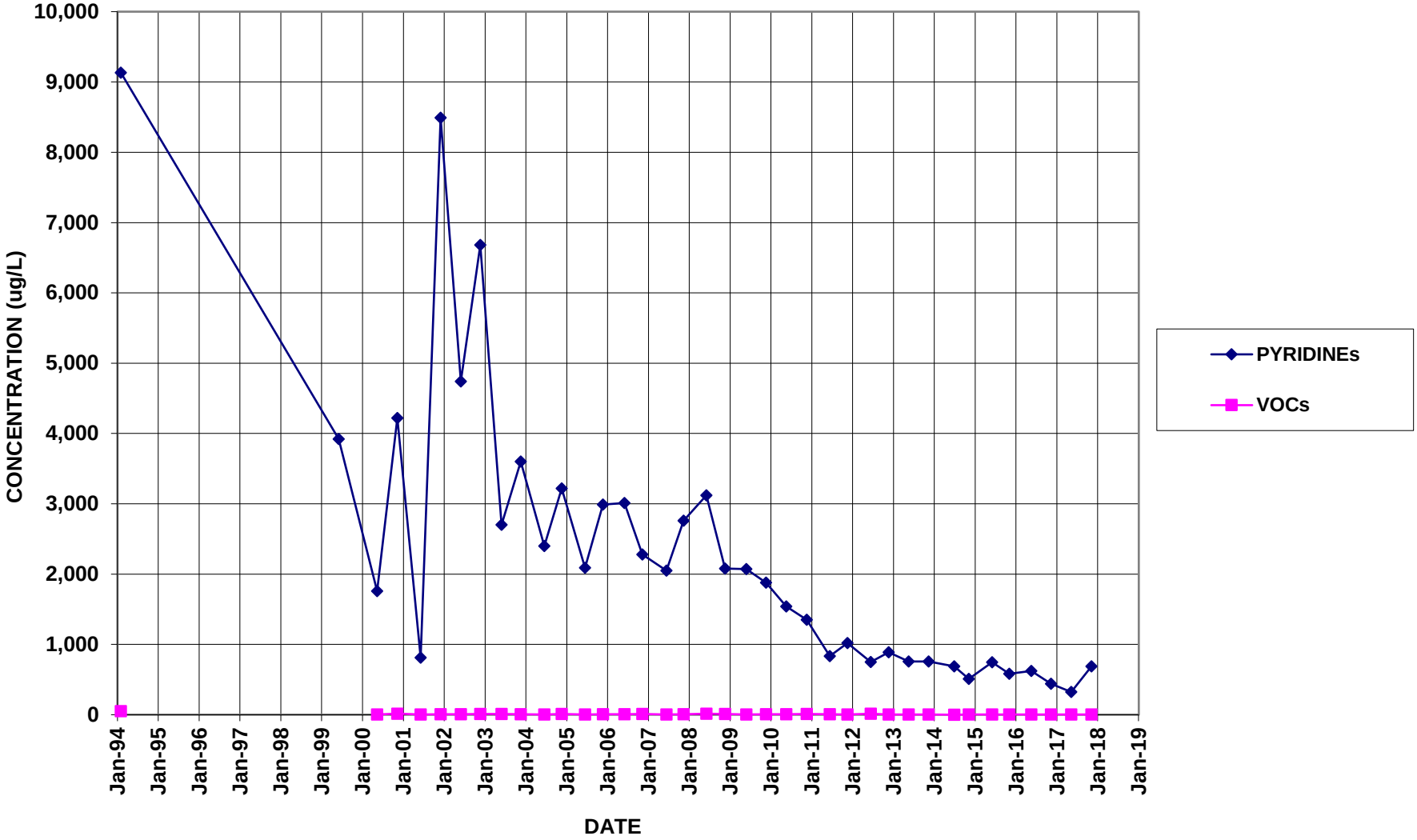
Prepared by: nmb
Reviewed by: jeb

PZ-103



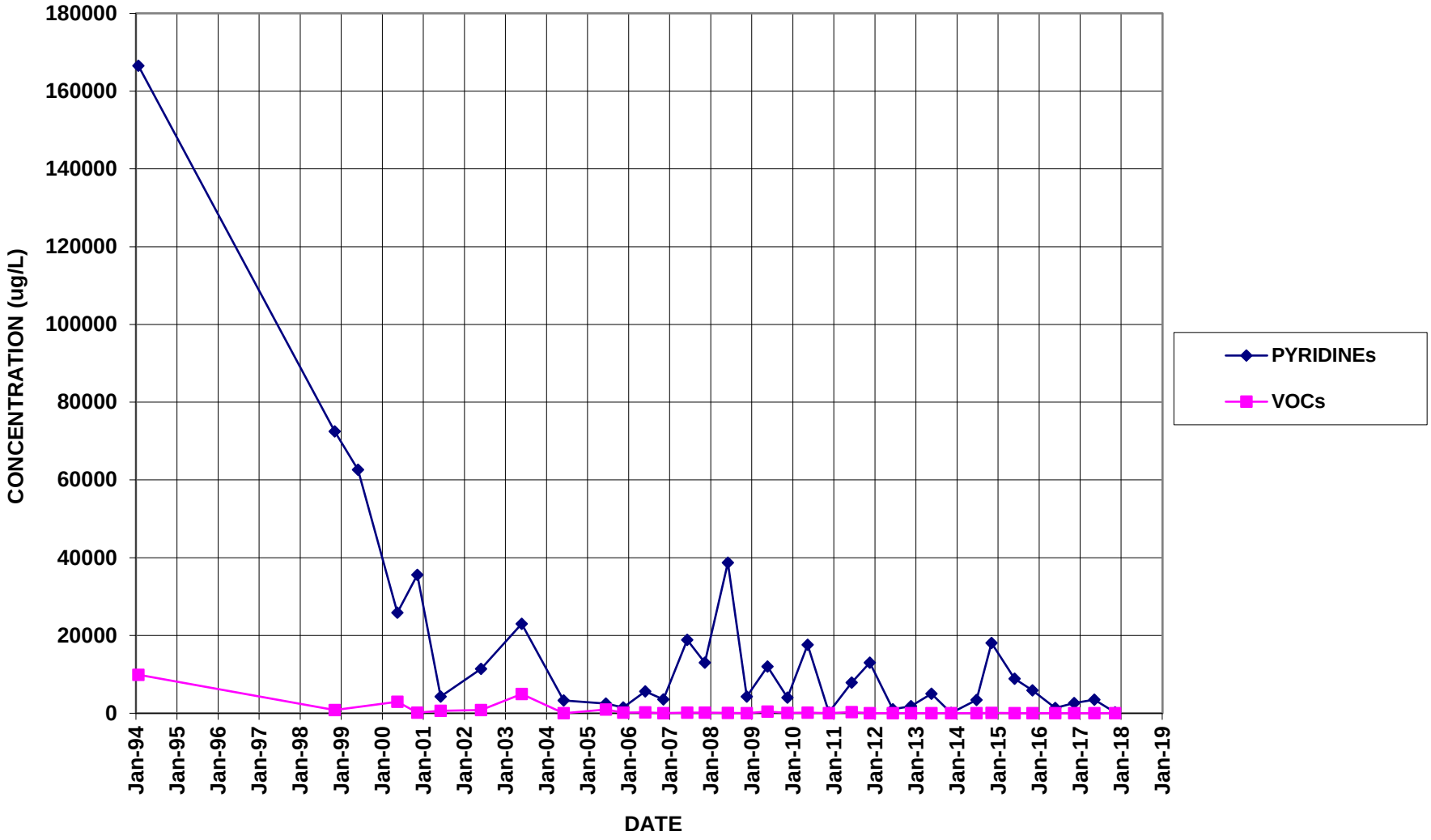
Prepared by: nmb
Reviewed by: jeb

PZ-104



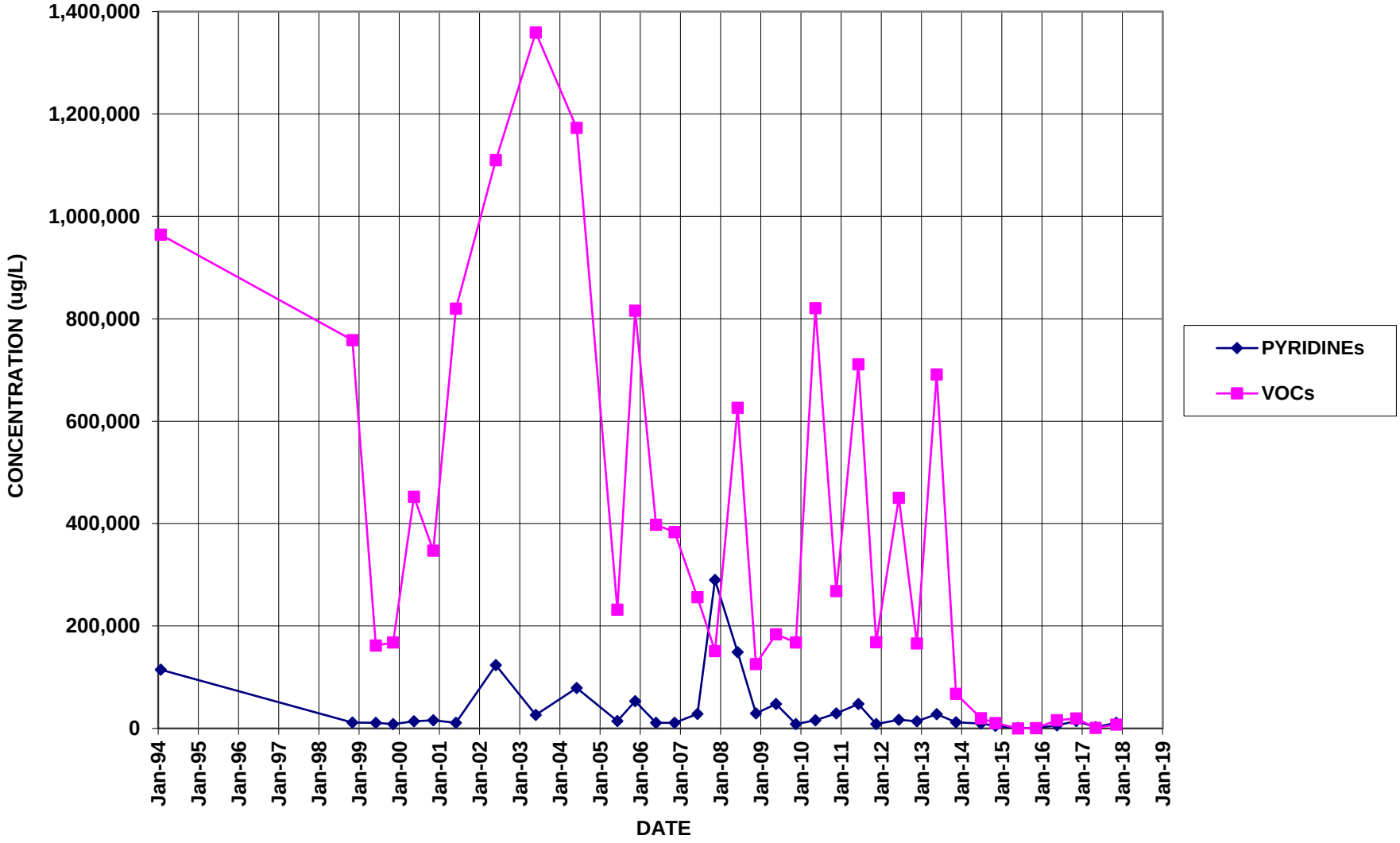
Prepared by: nmb
Reviewed by: jeb

PZ-105



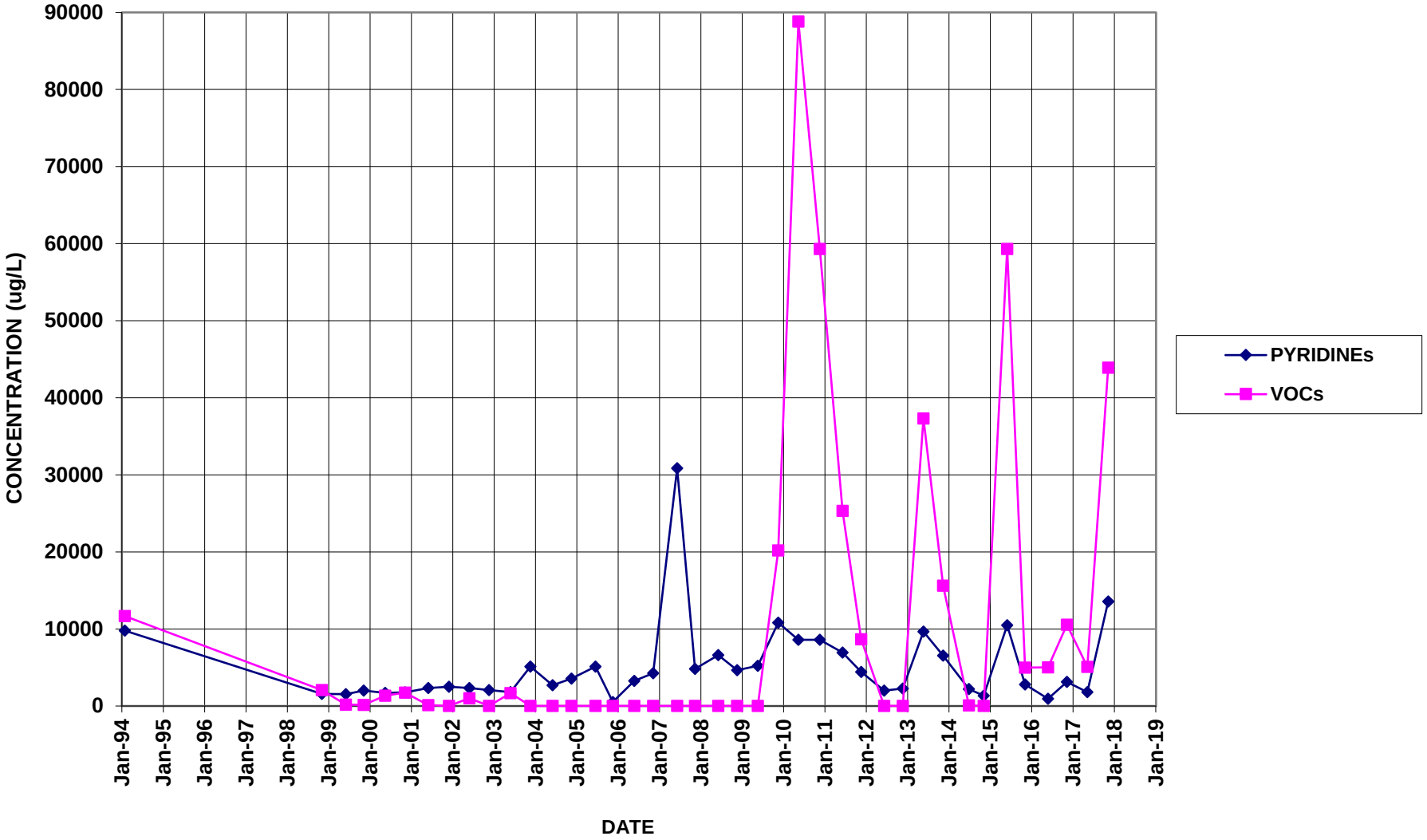
Prepared by: nmb
Reviewed by: jeb

PZ-106

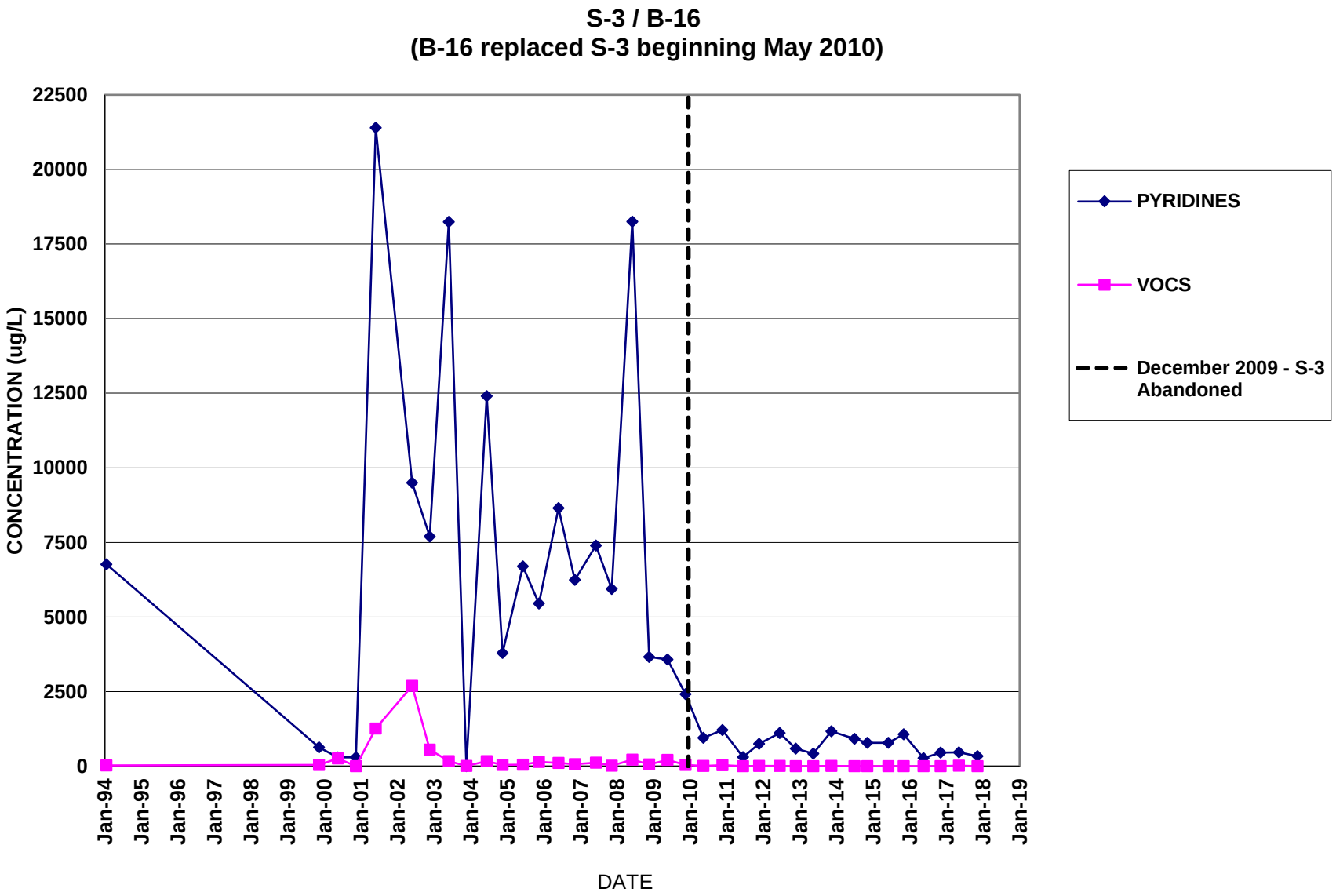


Prepared by: nmb
Reviewed by: jeb

PZ-107

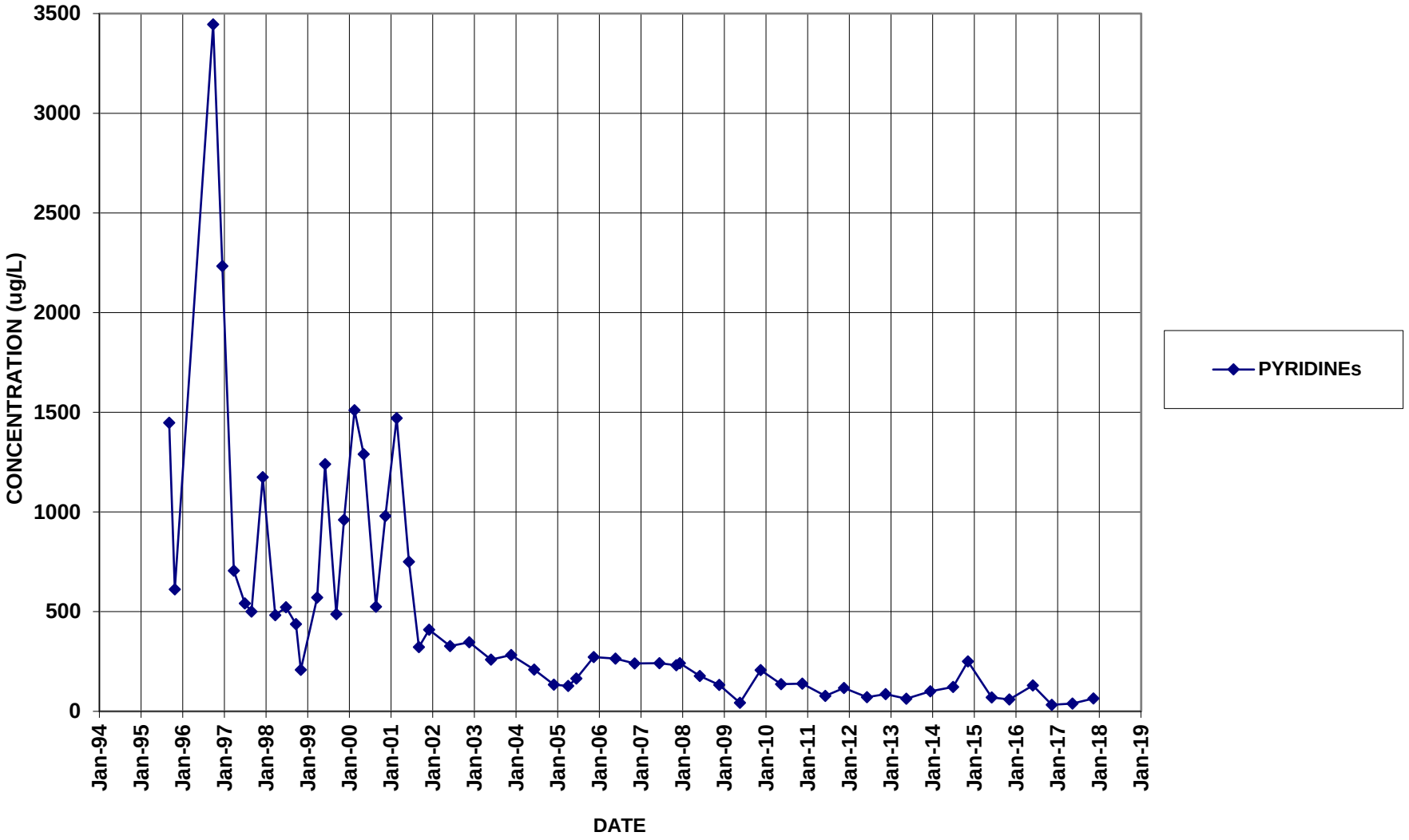


Prepared by: nmb
Reviewed by: jeb



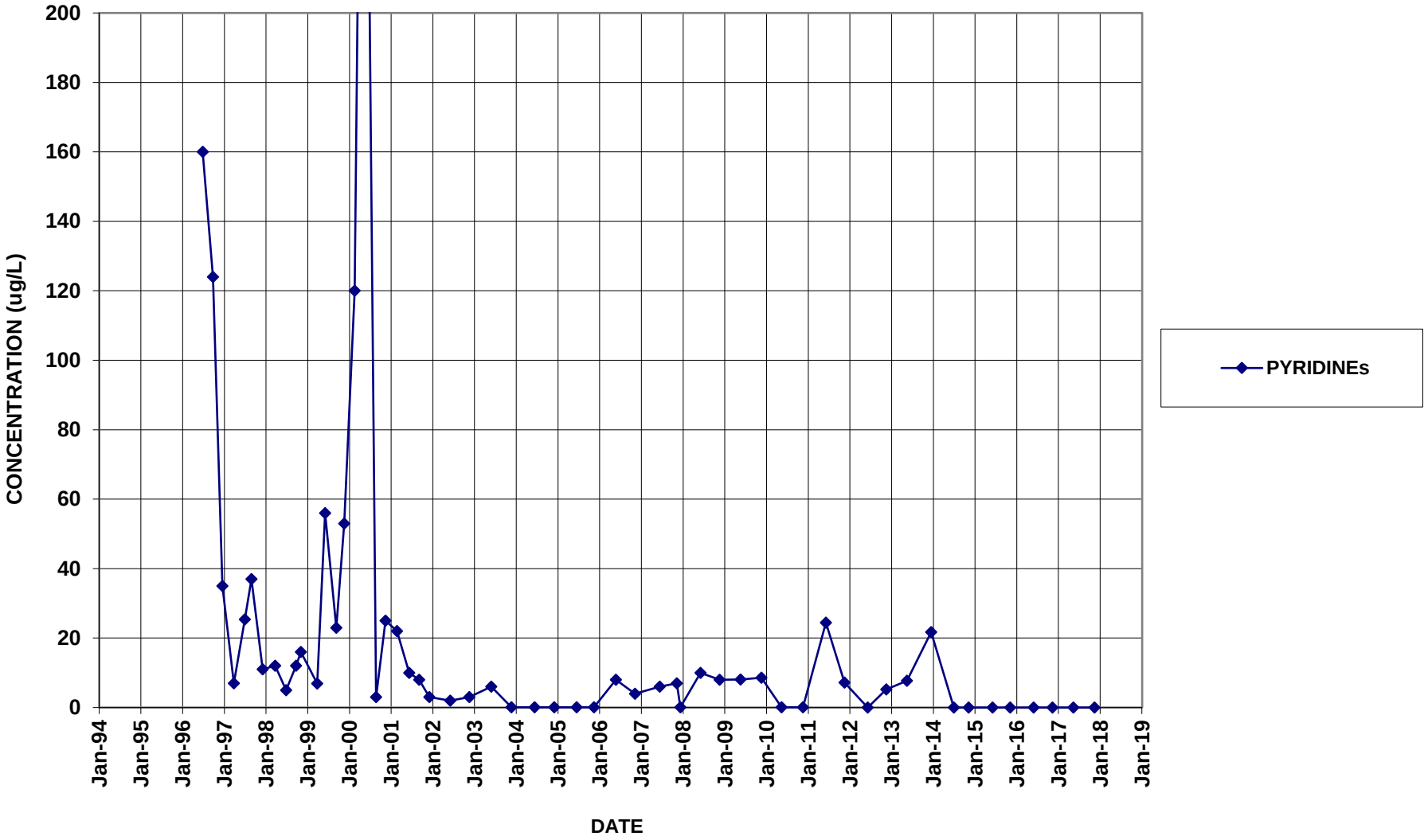
Prepared by: nmb
Reviewed by: jeb

QS-4 (QUARRY SEEP)



Prepared by: nmb
Reviewed by: jeb

QO-2 (QUARRY OUTFALL)



Prepared by: nmb
Reviewed by: jeb