Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

CERTIFICATIONS

Project:	GE LANCASTER 10/6
Pace Project No.:	70190549

Pace Analytical Services Long Island
575 Broad Hollow Rd, Melville, NY 11747
Connecticut Certification #: PH-0435
Delaware Certification # NY 10478
Maryland Certification #: 208
Massachusetts Certification #: M-NY026
New Hampshire Certification #: 2987
New Jersey Certification #: NY158
New York Certification #: 10478 Primary Accrediting Body
Pennsylvania Certification #: 68-00350
Rhode Island Certification #: LAO00340
Virginia Certification # 460302

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ANALYTICAL RESULTS

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

Sample: (b) (9) **PRE** **Lab ID: 70190549001** Collected: 10/06/21 09:50 Received: 10/09/21 10:15 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**17.2**	ug/L	2.0	1		10/19/21 21:47	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		10/19/21 21:47	78-93-3	N3
cis-1,2-Dichloroethene	**0.71**	ug/L	0.50	1		10/19/21 21:47	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		10/19/21 21:47	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		10/19/21 21:47	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		10/19/21 21:47	109-99-9	L1,N3
Trichloroethene	**<0.50**	ug/L	0.50	1		10/19/21 21:47	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		10/19/21 21:47	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	89	%	70-130	1		10/19/21 21:47	2199-69-1	
4-Bromofluorobenzene (S)	96	%	70-130	1		10/19/21 21:47	460-00-4	
180.1 Turbidity	Analytical Method: EPA 180.1							
	Pace Analytical Services - Melville							
Turbidity	**<1.0**	NTU	1.0	1		10/12/21 10:35		H3

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ANALYTICAL RESULTS

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

Sample: (b) (9) **MID** **Lab ID: 70190549002** Collected: 10/06/21 09:45 Received: 10/09/21 10:15 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**<2.0**	ug/L	2.0	1		10/19/21 21:21	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		10/19/21 21:21	78-93-3	N3
cis-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		10/19/21 21:21	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		10/19/21 21:21	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		10/19/21 21:21	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		10/19/21 21:21	109-99-9	L1,N3
Trichloroethene	**<0.50**	ug/L	0.50	1		10/19/21 21:21	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		10/19/21 21:21	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	93	%	70-130	1		10/19/21 21:21	2199-69-1	
4-Bromofluorobenzene (S)	95	%	70-130	1		10/19/21 21:21	460-00-4	

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ANALYTICAL RESULTS

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

Sample: [redacted]**POST** **Lab ID: 70190549003** Collected: 10/06/21 09:40 Received: 10/09/21 10:15 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Drinking Water	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
	Pace Analytical Services - Melville							
Cadmium	**<2.5**	ug/L	2.5	1	10/12/21 12:30	10/14/21 15:12	7440-43-9	
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8							
	Pace Analytical Services - Melville							
Nickel	**<0.50**	ug/L	0.50	1		10/19/21 14:45	7440-02-0	
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**<2.0**	ug/L	2.0	1		10/19/21 20:55	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		10/19/21 20:55	78-93-3	N3
cis-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		10/19/21 20:55	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		10/19/21 20:55	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		10/19/21 20:55	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		10/19/21 20:55	109-99-9	L1,N3
Trichloroethene	**<0.50**	ug/L	0.50	1		10/19/21 20:55	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		10/19/21 20:55	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	92	%	70-130	1		10/19/21 20:55	2199-69-1	
4-Bromofluorobenzene (S)	93	%	70-130	1		10/19/21 20:55	460-00-4	

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QUALITY CONTROL DATA

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

QC Batch: 229550
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET No Prep Drinking Water
Laboratory: Pace Analytical Services - Melville
Associated Lab Samples: 70190549003

METHOD BLANK: 1157960
Matrix: Water
Associated Lab Samples: 70190549003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nickel	ug/L	<0.50	0.50	10/19/21 14:14	

LABORATORY CONTROL SAMPLE: 1157961

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nickel	ug/L	50	46.7	93	85-115	

MATRIX SPIKE SAMPLE: 1157963

Parameter	Units	70189982007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nickel	ug/L	1.2	50	52.5	103	70-130	

MATRIX SPIKE SAMPLE: 1157965

Parameter	Units	70189982008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nickel	ug/L	25.9	50	74.6	97	70-130	

SAMPLE DUPLICATE: 1157962

Parameter	Units	70189982007 Result	Dup Result	RPD	Qualifiers
Nickel	ug/L	1.2	10.7	160	D6

SAMPLE DUPLICATE: 1157964

Parameter	Units	70189982008 Result	Dup Result	RPD	Qualifiers
Nickel	ug/L	25.9	25.6	1	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

QC Batch: 228962
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 MET Drinking Water
Laboratory: Pace Analytical Services - Melville
Associated Lab Samples: 70190549003

METHOD BLANK: 1155010
Matrix: Drinking Water
Associated Lab Samples: 70190549003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	<2.5	2.5	10/14/21 14:43	

LABORATORY CONTROL SAMPLE: 1155011

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	500	507	101	85-115	

MATRIX SPIKE SAMPLE: 1155013

Parameter	Units	70189597001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	<2.5	200	253	126	70-130	

SAMPLE DUPLICATE: 1155012

Parameter	Units	70189597001 Result	Dup Result	RPD	Qualifiers
Cadmium	ug/L	<2.5	<2.5		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

QC Batch: 229929
QC Batch Method: EPA 524.2
Analysis Method: EPA 524.2
Analysis Description: 524.2 MSV
Laboratory: Pace Analytical Services - Melville
Associated Lab Samples: 70190549001, 70190549002, 70190549003

METHOD BLANK: 1159794
Matrix: Water
Associated Lab Samples: 70190549001, 70190549002, 70190549003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2-Butanone (MEK)	ug/L	<2.0	2.0	10/19/21 14:44	N3
Acetone	ug/L	<2.0	2.0	10/19/21 14:44	N3
cis-1,2-Dichloroethene	ug/L	<0.50	0.50	10/19/21 14:44	
Tetrachloroethene	ug/L	<0.50	0.50	10/19/21 14:44	
Tetrahydrofuran	ug/L	<2.0	2.0	10/19/21 14:44	N3
trans-1,2-Dichloroethene	ug/L	<0.50	0.50	10/19/21 14:44	
Trichloroethene	ug/L	<0.50	0.50	10/19/21 14:44	
Vinyl chloride	ug/L	<0.50	0.50	10/19/21 14:44	
1,2-Dichlorobenzene-d4 (S)	%	97	70-130	10/19/21 14:44	
4-Bromofluorobenzene (S)	%	103	70-130	10/19/21 14:44	

LABORATORY CONTROL SAMPLE: 1159795

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Butanone (MEK)	ug/L	10	10.1	101	70-130	N3,v1
Acetone	ug/L	10	11.2	112	70-130	N3
cis-1,2-Dichloroethene	ug/L	10	10.2	102	70-130	
Tetrachloroethene	ug/L	10	10	100	70-130	
Tetrahydrofuran	ug/L	10	15.7	157	70-130	IH,L1,N3,v1
trans-1,2-Dichloroethene	ug/L	10	10.2	102	70-130	
Trichloroethene	ug/L	10	9.8	98	70-130	
Vinyl chloride	ug/L	10	9.9	99	70-130	
1,2-Dichlorobenzene-d4 (S)	%			106	70-130	
4-Bromofluorobenzene (S)	%			107	70-130	

SAMPLE DUPLICATE: 1160412

Parameter	Units	30444374001 Result	Dup Result	RPD	Qualifiers
2-Butanone (MEK)	ug/L	0.81U	<2.0		N3
Acetone	ug/L	5.3	10.6	66	D6,N3
cis-1,2-Dichloroethene	ug/L	0.00027U mg/L	<0.50		
Tetrachloroethene	ug/L	0.00015U mg/L	<0.50		
Tetrahydrofuran	ug/L	2.0J	<2.0		N3
trans-1,2-Dichloroethene	ug/L	0.00028U mg/L	<0.50		

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QUALITY CONTROL DATA

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

SAMPLE DUPLICATE: 1160412

Parameter	Units	30444374001 Result	Dup Result	RPD	Qualifiers
Trichloroethene	ug/L	0.00036U mg/L	<0.50		
Vinyl chloride	ug/L	0.00016U mg/L	<0.50		
1,2-Dichlorobenzene-d4 (S)	%	89	90		
4-Bromofluorobenzene (S)	%	97	96		

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QUALITY CONTROL DATA

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

QC Batch: 228913
QC Batch Method: EPA 180.1
Analysis Method: EPA 180.1
Analysis Description: 180.1 Turbidity
Laboratory: Pace Analytical Services - Melville
Associated Lab Samples: 70190549001

METHOD BLANK: 1154873
Matrix: Water
Associated Lab Samples: 70190549001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Turbidity	NTU	<1.0	1.0	10/12/21 10:33	

LABORATORY CONTROL SAMPLE: 1154874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Turbidity	NTU	10	9.9	99	90-110	

SAMPLE DUPLICATE: 1154875

Parameter	Units	70190549001 Result	Dup Result	RPD	Qualifiers
Turbidity	NTU	<1.0	<1.0		H3

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QUALIFIERS

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H3	Sample was received or analysis requested beyond the recognized method holding time.
IH	This analyte exceeded secondary source verification criteria high for the initial calibration. The reported results should be considered an estimated value.
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
v1	The continuing calibration verification was above the method acceptance limit. Any detection for the analyte in the associated samples may have a high bias.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GE LANCASTER 10/6
Pace Project No.: 70190549

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70190549003	(b) (9) **POST**	EPA 200.7	228962	EPA 200.7	229335
70190549003	[redacted] **POST**	EPA 200.8	229550		
70190549001	[redacted] **PRE**	EPA 524.2	229929		
70190549002	[redacted] **MID**	EPA 524.2	229929		
70190549003	[redacted] **POST**	EPA 524.2	229929		
70190549001	(b) (9) **PRE**	EPA 180.1	228913		

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CHAIN-OF-CUSTODY / Analytical Request Do

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at https://info.pacela

WO# : 70190549
70190549

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Pace Analytical Services Pittsburgh	Report To: Megan Smetanka	Attention:
Address: 1638 Roseytown Road	Copy To:	Company Name:
Greensburg, PA 15601		Address:
Email: megan.smetanka@pacelabs.com	Purchase Order #:	Pace Quote:
Phone: (724)850-5600 Fax:	Project Name: GE Lancaster	Pace Project Manager: kimberley.mack@pacelabs.com,
Requested Due Date:	Project #:	Pace Profile #: 9125

Regulatory Agency	State / Location
	PA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	524.2	200.7 Cd, Ni	Cond, pH, Alk, Anions, turb	Diss metals 200.8/200.7	Residual Chlorine (Y/N)
1	(b) (9) Pre	DW		10/6/21	0950				4	X		X	X						X		X	X	
2	[redacted] Mid	DW		↓	0945				2				X						X				
3	[redacted] Post	DW		↓	0940				3			X	X						X	X			
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

MATRIX CODE

Matrix	Code
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Metals will be field filtered (As, Ba, Cd, Ca, Cr, Cu, Fe,Pb, Mg, Mn, Hg, Ni, K, Se, Na, Zn)	JJR	10/8/21	1241	MS/PACE	10/8/21	1241				
	MS/PACE	10/8/21	1800	[signature]	10/9/21	1015	3.0	W	N	Y

SAMPLER NAME AND SIGNATURE		TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER: JASON DALIESSIO					
SIGNATURE of SAMPLER: JJR	DATE Signed: 10/6/21				

Pace Analytical®

Sample Condition Upon Rece

WO#: 70190549
PM: KMM **Due Date: 10/20/21**
CLIENT: TETRA

Client Name: PACE -PA

Projec

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other

Tracking #: 2846 8847 2799

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals intact: ☐ Yes ☑ No ☐ N/A

Temperature Blank Present: ☐ Yes ☑ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ Ziploc ☐ None ☐ Other

Type of Ice: (Wet) Blue None

Thermometer Used: TH091 Correction Factor: ± 0.0

☐ Samples on ice, cooling process has begun

Cooler Temperature(°C): 3.0 Cooler Temperature Corrected(°C): 3.0

Date/Time 5035A kits placed in freezer _____

Temp should be above freezing to 6.0°C

USDA Regulated Soil (☐ N/A, water sample)

Date and Initials of person examining contents: MN 10/9/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check map)? ☐ Yes ☐ No

Did samples orignate from a foreign source including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-LI-C-010) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present:	☑ Yes	☐ No		1.
Chain of Custody Filled Out:	☑ Yes	☐ No		2.
Chain of Custody Relinquished:	☑ Yes	☐ No		3.
Sampler Name & Signature on COC:	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time:	~~☑ Yes~~ MM	☑ No		5. Turbidity arrived out of hold
Short Hold Time Analysis (<72hr):	☑ Yes	~~☑ No~~ MM		6.
Rush Turn Around Time Requested:	☐ Yes	☑ No		7.
Sufficient Volume: (Triple volume provided for I	☑ Yes	☐ No		8.
Correct Containers Used:	☑ Yes	☐ No		9.
-Pace Containers Used:	☐ Yes	☐ No		
Containers Intact:	☐ Yes	☐ No		10.
Filtered volume received for Dissolved tests	☐ Yes	☐ No	☐ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels match COC: -Includes date/time/ID, Matrix: SL WT OIL	☐ Yes	☐ No		12.
All containers needing preservation have been checked? pH paper Lot # HC155166	☑ Yes	☐ No	☐ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with method recommendation? (HNO_3, H_2SO_4, HCl, NaOH>9 Sulfide, NAOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water). Per Method, VOA pH is checked after analysis	☑ Yes	☐ No	☐ N/A	Initial when completed: / Lot # of added preservative: / Date/Time preservative added:
Samples checked for dechlorination: KI starch test strips Lot # Residual chlorine strips Lot #	☐ Yes	☐ No	☑ N/A	14. Positive for Res. Chlorine? Y N
SM 4500 CN samples checked for sulfide? Lead Acetate Strips Lot #	☐ Yes	☐ No	☑ N/A	15. Positive for Sulfide? Y N
Headspace in VOA Vials (>6mm):	☐ Yes	☑ No	☐ N/A	16.
Trip Blank Present:	☐ Yes	☐ No	☑ N/A	17.
Trip Blank Custody Seals Present	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if applicable): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

* PM (Project Manager) review is documented electronically in LIMS.

ENV-FRM-MELV-0024 01

Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

December 09, 2021

John McCall
Tetra Tech
1777 Sentry Parkway West
Blue Bell, PA 19422

RE: Project: GE LANCASTER 11/23
Pace Project No.: 70195759

Dear John McCall:

Enclosed are the analytical results for sample(s) received by the laboratory on November 24, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Melville

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kimberley Mack

Kimberley M. Mack
kimberley.mack@pacelabs.com
(631)694-3040
Project Manager

Enclosures

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Melville, NY 11747
(631)694-3040

CERTIFICATIONS

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

Pace Analytical Services Long Island
575 Broad Hollow Rd, Melville, NY 11747
Connecticut Certification #: PH-0435
Delaware Certification # NY 10478
Maryland Certification #: 208
Massachusetts Certification #: M-NY026
New Hampshire Certification #: 2987
New Jersey Certification #: NY158
New York Certification #: 10478 Primary Accrediting Body
Pennsylvania Certification #: 68-00350
Rhode Island Certification #: LAO00340
Virginia Certification # 460302

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575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

ANALYTICAL RESULTS

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

Sample: (b) (9) **PRE** **Lab ID: 70195759001** Collected: 11/23/21 11:05 Received: 11/24/21 11:30 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**17.1**	ug/L	2.0	1		12/05/21 20:03	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/05/21 20:03	78-93-3	N3
cis-1,2-Dichloroethene	**0.57**	ug/L	0.50	1		12/05/21 20:03	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 20:03	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/05/21 20:03	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/05/21 20:03	109-99-9	L1,N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 20:03	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/05/21 20:03	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	88	%	70-130	1		12/05/21 20:03	2199-69-1	
4-Bromofluorobenzene (S)	93	%	70-130	1		12/05/21 20:03	460-00-4	

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ANALYTICAL RESULTS

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

Sample: (b) (9) **MID** **Lab ID: 70195759002** Collected: 11/23/21 10:46 Received: 11/24/21 11:30 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**<2.0**	ug/L	2.0	1		12/05/21 19:36	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/05/21 19:36	78-93-3	N3
cis-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 19:36	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 19:36	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/05/21 19:36	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/05/21 19:36	109-99-9	L1,N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 19:36	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/05/21 19:36	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	80	%	70-130	1		12/05/21 19:36	2199-69-1	
4-Bromofluorobenzene (S)	80	%	70-130	1		12/05/21 19:36	460-00-4	

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ANALYTICAL RESULTS

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

Sample: [redacted] **POST** **Lab ID: 70195759003** Collected: 11/23/21 10:10 Received: 11/24/21 11:30 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP, Drinking Water	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
	Pace Analytical Services - Melville							
Cadmium	**<2.5**	ug/L	2.5	1	11/30/21 09:23	12/03/21 16:46	7440-43-9	
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8							
	Pace Analytical Services - Melville							
Nickel	**<0.50**	ug/L	0.50	1		11/29/21 23:57	7440-02-0	
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**3.2**	ug/L	2.0	1		12/05/21 19:10	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/05/21 19:10	78-93-3	N3
cis-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 19:10	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 19:10	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/05/21 19:10	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/05/21 19:10	109-99-9	L1,N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 19:10	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/05/21 19:10	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	88	%	70-130	1		12/05/21 19:10	2199-69-1	
4-Bromofluorobenzene (S)	90	%	70-130	1		12/05/21 19:10	460-00-4	

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ANALYTICAL RESULTS

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

Sample: TRIP BLANK **Lab ID: 70195759004** Collected: 11/23/21 00:00 Received: 11/24/21 11:30 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**3.5**	ug/L	2.0	1		12/05/21 18:43	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/05/21 18:43	78-93-3	N3
cis-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 18:43	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 18:43	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/05/21 18:43	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/05/21 18:43	109-99-9	L1,N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/05/21 18:43	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/05/21 18:43	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	89	%	70-130	1		12/05/21 18:43	2199-69-1	
4-Bromofluorobenzene (S)	87	%	70-130	1		12/05/21 18:43	460-00-4	

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QUALITY CONTROL DATA

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

QC Batch: 234911
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET No Prep Drinking Water
Laboratory: Pace Analytical Services - Melville
Associated Lab Samples: 70195759003

METHOD BLANK: 1184925
Matrix: Water
Associated Lab Samples: 70195759003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nickel	ug/L	<0.50	0.50	11/29/21 22:42	

LABORATORY CONTROL SAMPLE: 1184926

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nickel	ug/L	50	52.1	104	85-115	

MATRIX SPIKE SAMPLE: 1184928

Parameter	Units	70195839001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nickel	ug/L	3.9	50	53.0	98	70-130	

MATRIX SPIKE SAMPLE: 1184930

Parameter	Units	70195839002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nickel	ug/L	3.8	50	52.2	97	70-130	

SAMPLE DUPLICATE: 1184927

Parameter	Units	70195839001 Result	Dup Result	RPD	Qualifiers
Nickel	ug/L	3.9	3.9	1	

SAMPLE DUPLICATE: 1184929

Parameter	Units	70195839002 Result	Dup Result	RPD	Qualifiers
Nickel	ug/L	3.8	3.8	0	

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QUALITY CONTROL DATA

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

QC Batch: 234896
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 MET Drinking Water
Laboratory: Pace Analytical Services - Melville
Associated Lab Samples: 70195759003

METHOD BLANK: 1184883
Matrix: Drinking Water
Associated Lab Samples: 70195759003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	<2.5	2.5	12/03/21 16:41	

LABORATORY CONTROL SAMPLE: 1184884

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	500	532	106	85-115	

MATRIX SPIKE SAMPLE: 1184886

Parameter	Units	70195759003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	<2.5	500	501	100	70-130	

SAMPLE DUPLICATE: 1184885

Parameter	Units	70195759003 Result	Dup Result	RPD	Qualifiers
Cadmium	ug/L	<2.5	<2.5		

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QUALITY CONTROL DATA

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

QC Batch: 235715
QC Batch Method: EPA 524.2
Analysis Method: EPA 524.2
Analysis Description: 524.2 MSV
Laboratory: Pace Analytical Services - Melville
Associated Lab Samples: 70195759001, 70195759002, 70195759003, 70195759004

METHOD BLANK: 1189630
Matrix: Water
Associated Lab Samples: 70195759001, 70195759002, 70195759003, 70195759004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2-Butanone (MEK)	ug/L	<2.0	2.0	12/05/21 13:15	N3
Acetone	ug/L	<2.0	2.0	12/05/21 13:15	N3
cis-1,2-Dichloroethene	ug/L	<0.50	0.50	12/05/21 13:15	
Tetrachloroethene	ug/L	<0.50	0.50	12/05/21 13:15	
Tetrahydrofuran	ug/L	<2.0	2.0	12/05/21 13:15	N3
trans-1,2-Dichloroethene	ug/L	<0.50	0.50	12/05/21 13:15	
Trichloroethene	ug/L	<0.50	0.50	12/05/21 13:15	
Vinyl chloride	ug/L	<0.50	0.50	12/05/21 13:15	
1,2-Dichlorobenzene-d4 (S)	%	90	70-130	12/05/21 13:15	
4-Bromofluorobenzene (S)	%	87	70-130	12/05/21 13:15	

LABORATORY CONTROL SAMPLE: 1189631

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Butanone (MEK)	ug/L	10	12.9	129	70-130	N3,v1
Acetone	ug/L	10	11.5	115	70-130	N3
cis-1,2-Dichloroethene	ug/L	10	10.7	107	70-130	
Tetrachloroethene	ug/L	10	11.1	111	70-130	
Tetrahydrofuran	ug/L	10	15.6	156	70-130	IH,L1,N3
trans-1,2-Dichloroethene	ug/L	10	10.9	109	70-130	
Trichloroethene	ug/L	10	10.3	103	70-130	
Vinyl chloride	ug/L	10	9.6	96	70-130	
1,2-Dichlorobenzene-d4 (S)	%			105	70-130	
4-Bromofluorobenzene (S)	%			105	70-130	

SAMPLE DUPLICATE: 1189760

Parameter	Units	70195830001 Result	Dup Result	RPD	Qualifiers
2-Butanone (MEK)	ug/L	<2.0	<2.0		N3
Acetone	ug/L	84.8	65.2	26	D6,N3
cis-1,2-Dichloroethene	ug/L	<0.50	<0.50		
Tetrachloroethene	ug/L	<0.50	<0.50		
Tetrahydrofuran	ug/L	<2.0	<2.0		N3
trans-1,2-Dichloroethene	ug/L	<0.50	<0.50		
Trichloroethene	ug/L	15.6	16.3	4	
Vinyl chloride	ug/L	<0.50	<0.50		
1,2-Dichlorobenzene-d4 (S)	%	87	85		

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REPORT OF LABORATORY ANALYSIS

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Melville, NY 11747
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QUALITY CONTROL DATA

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

SAMPLE DUPLICATE: 1189760

Parameter	Units	70195830001 Result	Dup Result	RPD	Qualifiers
4-Bromofluorobenzene (S)	%	91	90		

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Melville, NY 11747
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QUALIFIERS

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
IH	This analyte exceeded secondary source verification criteria high for the initial calibration. The reported results should be considered an estimated value.
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.
v1	The continuing calibration verification was above the method acceptance limit. Any detection for the analyte in the associated samples may have a high bias.

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Melville, NY 11747
(631)694-3040

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GE LANCASTER 11/23
Pace Project No.: 70195759

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70195759003	(b) (9) **POST**	EPA 200.7	234896	EPA 200.7	235124
70195759003	[redacted] **POST**	EPA 200.8	234911		
70195759001	[redacted] **PRE**	EPA 524.2	235715		
70195759002	[redacted] **MID**	EPA 524.2	235715		
70195759003	(b) (9) **POST**	EPA 524.2	235715		
70195759004	**TRIP BLANK**	EPA 524.2	235715		

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WO#: 70195759

70195759

Pace Analytical
WWW.PACELABS.COM

CHAIN-OF-CUSTODY / Analy

The Chain-of-Custody is a LEGAL DOCUMEN

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditi

Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Tetra Tech	Report To: John McCall	Attention:
Address: 1777 Sentry Parkway West	Copy To:	Company Name:
Bldg. 12, Suite 102, Blue Bell, PA 19422		Address:
Email: john.mccall@tetratech.com	Purchase Order #:	Pace Quote:
Phone: (215)648-3951 Fax:	Project Name: GE Lancaster	Pace Project Manager: kimberley.mack@pacelabs.com,
Requested Due Date:	Project #: 103 IP 7387	Pace Profile #: 9125

Regulatory Agency	State / Location
	PA

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	524.2	200.7 Cd, Ni	Residual Chlorine (Y/N)
1	[redacted]Pre	DW		11/23/21	1105				2				X						X		
2	(b) (9)Mid	DW		11/23/21	1076				2				X						X		
3	(b) (9)Post	DW		11/23/21	1015				3			X	X						X	X	
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Metals will be field filtered (~~As, Ba, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K~~ Se, ~~Na, Zn~~) MEB 11/23/21 Metals are only Cd & Ni unfiltered.	Markus Erik Blomer / Tetra Tech	11/23/21		[signature]	11/24/21	11:30	
Select VOCs are cis-1,2-DCE; trans-1,2-DCE; 1,2-DCE; TCE; VC; acetone; 2-butanone (MEK); and tetrahydrofuran.							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Markus Erik Blomer

SIGNATURE of SAMPLER: [signature] DATE Signed: 11/23/21

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical®

Sample Condition Upon Rece

WO#: 70195759
PM: KMM **Due Date: 12/07/21**
CLIENT: TETRA

Client Name: TETRA

Project

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other

Tracking #: 7752 8335 3880

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals intact: ☐ Yes ☐ No ☑ N/A

Temperature Blank Present: ☐ Yes ☑ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ Ziploc ☐ None ☐ Other

Type of Ice: (Wet) Blue None

Thermometer Used: ~~TH091~~ TH176 Correction Factor: +0.1

☐ Samples on ice, cooling process has begun

Cooler Temperature(°C): 3.1 Cooler Temperature Corrected(°C): 3.2

Date/Time 5035A kits placed in freezer

Temp should be above freezing to 6.0°C

USDA Regulated Soil (☑ N/A, water sample)

Date and Initials of person examining contents: KW 11/24/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check map)? ☐ Yes ☐ No

Did samples orignate from a foreign source including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-LI-C-010) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present:	☑ Yes	☐ No		1.
Chain of Custody Filled Out:	☑ Yes	☐ No		2.
Chain of Custody Relinquished:	☑ Yes	☐ No		3.
Sampler Name & Signature on COC:	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time:	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72hr):	☐ Yes	☑ No		6.
Rush Turn Around Time Requested:	☐ Yes	☑ No		7.
Sufficient Volume: (Triple volume provided for I	☑ Yes	☐ No		8.
Correct Containers Used:	☑ Yes	☐ No		9.
-Pace Containers Used:	☑ Yes	☐ No		
Containers Intact:	☑ Yes	☐ No		10.
Filtered volume received for Dissolved tests	☐ Yes	☐ No	☑ N/A	11. * Note if sediment is visible in the dissolved container.
Sample Labels match COC:	☑ Yes	☐ No		12.
-Includes date/time/ID/Matrix: SL (WT) OIL				
All containers needing preservation have been checked?	☑ Yes	☐ No	☐ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
pH paper Lot # HC160341				
All containers needing preservation are found to be in compliance with method recommendation? (HNO_3, H_2SO_4, HCl, NaOH>9 Sulfide, NAOH>12 Cyanide)	☑ Yes	☐ No	☐ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water). Per Method, VOA pH is checked after analysis				Initial when completed: / Lot # of added preservative: / Date/Time preservative added:
Samples checked for dechlorination:	☐ Yes	☐ No	☑ N/A	14.
KI starch test strips Lot #				
Residual chlorine strips Lot #				Positive for Res. Chlorine? Y N
SM 4500 CN samples checked for sulfide?	☐ Yes	☐ No	☑ N/A	15.
Lead Acetate Strips Lot #				Positive for Sulfide? Y N
Headspace in VOA Vials (>6mm):	☐ Yes	☑ No	☐ N/A	16.
Trip Blank Present:	☑ Yes	☐ No	☐ N/A	17. Trip blanks Received, not on COC
Trip Blank Custody Seals Present	☑ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if applicable):_____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

* PM (Project Manager) review is documented electronically in LIMS.

ENV-FRM-MELV-0024 01

Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

December 27, 2021

John McCall
Tetra Tech
1777 Sentry Parkway West
Blue Bell, PA 19422

RE: Project: GE LANCASTER 12/16
Pace Project No.: 70198387

Dear John McCall:

Enclosed are the analytical results for sample(s) received by the laboratory on December 17, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Melville

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kimberley Mack

Kimberley M. Mack
kimberley.mack@pacelabs.com
(631)694-3040
Project Manager

Enclosures

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575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

CERTIFICATIONS

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

Pace Analytical Services Long Island
575 Broad Hollow Rd, Melville, NY 11747
Connecticut Certification #: PH-0435
Delaware Certification # NY 10478
Maryland Certification #: 208
Massachusetts Certification #: M-NY026
New Hampshire Certification #: 2987
New Jersey Certification #: NY158
New York Certification #: 10478 Primary Accrediting Body
Pennsylvania Certification #: 68-00350
Rhode Island Certification #: LAO00340
Virginia Certification # 460302

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575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

ANALYTICAL RESULTS

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

Sample: [redacted]**-POST** **Lab ID: 70198387001** Collected: 12/16/21 09:35 Received: 12/17/21 11:15 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**<2.0**	ug/L	2.0	1		12/23/21 20:51	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/23/21 20:51	78-93-3	N3
cis-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 20:51	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 20:51	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/23/21 20:51	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/23/21 20:51	109-99-9	N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 20:51	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/23/21 20:51	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	80	%	70-130	1		12/23/21 20:51	2199-69-1	
4-Bromofluorobenzene (S)	82	%	70-130	1		12/23/21 20:51	460-00-4	

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ANALYTICAL RESULTS

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

Sample: [redacted]**-MID** **Lab ID: 70198387002** Collected: 12/16/21 09:45 Received: 12/17/21 11:15 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**<2.0**	ug/L	2.0	1		12/23/21 21:17	67-64-1	N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/23/21 21:17	78-93-3	N3
cis-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 21:17	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 21:17	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/23/21 21:17	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/23/21 21:17	109-99-9	N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 21:17	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/23/21 21:17	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	84	%	70-130	1		12/23/21 21:17	2199-69-1	
4-Bromofluorobenzene (S)	79	%	70-130	1		12/23/21 21:17	460-00-4	

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ANALYTICAL RESULTS

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

Sample: [redacted]**-PRE GAC** **Lab ID: 70198387003** Collected: 12/16/21 09:50 Received: 12/17/21 11:15 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**2.2**	ug/L	2.0	1		12/23/21 21:44	67-64-1	B,N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/23/21 21:44	78-93-3	N3
cis-1,2-Dichloroethene	**0.57**	ug/L	0.50	1		12/23/21 21:44	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 21:44	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/23/21 21:44	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/23/21 21:44	109-99-9	N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 21:44	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/23/21 21:44	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	82	%	70-130	1		12/23/21 21:44	2199-69-1	
4-Bromofluorobenzene (S)	81	%	70-130	1		12/23/21 21:44	460-00-4	

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ANALYTICAL RESULTS

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

Sample: [redacted]**-RAW** **Lab ID: 70198387004** Collected: 12/16/21 10:00 Received: 12/17/21 11:15 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**7.4**	ug/L	2.0	1		12/23/21 22:10	67-64-1	B,N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/23/21 22:10	78-93-3	N3
cis-1,2-Dichloroethene	**0.58**	ug/L	0.50	1		12/23/21 22:10	156-59-2	D6
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 22:10	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/23/21 22:10	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/23/21 22:10	109-99-9	N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 22:10	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/23/21 22:10	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	86	%	70-130	1		12/23/21 22:10	2199-69-1	
4-Bromofluorobenzene (S)	82	%	70-130	1		12/23/21 22:10	460-00-4	

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ANALYTICAL RESULTS

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

Sample: TRIP BLANK **Lab ID: 70198387005** Collected: 12/16/21 00:00 Received: 12/17/21 11:15 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
524.2 MSV	Analytical Method: EPA 524.2							
	Pace Analytical Services - Melville							
Acetone	**5.0**	ug/L	2.0	1		12/23/21 22:36	67-64-1	B,N3
2-Butanone (MEK)	**<2.0**	ug/L	2.0	1		12/23/21 22:36	78-93-3	N3
cis-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 22:36	156-59-2	
trans-1,2-Dichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 22:36	156-60-5	
Tetrachloroethene	**<0.50**	ug/L	0.50	1		12/23/21 22:36	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	2.0	1		12/23/21 22:36	109-99-9	N3
Trichloroethene	**<0.50**	ug/L	0.50	1		12/23/21 22:36	79-01-6	
Vinyl chloride	**<0.50**	ug/L	0.50	1		12/23/21 22:36	75-01-4	
Surrogates								
1,2-Dichlorobenzene-d4 (S)	91	%	70-130	1		12/23/21 22:36	2199-69-1	
4-Bromofluorobenzene (S)	84	%	70-130	1		12/23/21 22:36	460-00-4	

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QUALITY CONTROL DATA

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

QC Batch: 238327
QC Batch Method: EPA 524.2
Analysis Method: EPA 524.2
Analysis Description: 524.2 MSV
Laboratory: Pace Analytical Services - Melville
Associated Lab Samples: 70198387001, 70198387002, 70198387003, 70198387004, 70198387005

METHOD BLANK: 1203735
Matrix: Water
Associated Lab Samples: 70198387001, 70198387002, 70198387003, 70198387004, 70198387005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
2-Butanone (MEK)	ug/L	<2.0	2.0	12/23/21 14:12	N3
Acetone	ug/L	3.1	2.0	12/23/21 14:12	N3
cis-1,2-Dichloroethene	ug/L	<0.50	0.50	12/23/21 14:12	
Tetrachloroethene	ug/L	<0.50	0.50	12/23/21 14:12	
Tetrahydrofuran	ug/L	<2.0	2.0	12/23/21 14:12	N3
trans-1,2-Dichloroethene	ug/L	<0.50	0.50	12/23/21 14:12	
Trichloroethene	ug/L	<0.50	0.50	12/23/21 14:12	
Vinyl chloride	ug/L	<0.50	0.50	12/23/21 14:12	
1,2-Dichlorobenzene-d4 (S)	%	84	70-130	12/23/21 14:12	
4-Bromofluorobenzene (S)	%	84	70-130	12/23/21 14:12	

LABORATORY CONTROL SAMPLE: 1203736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Butanone (MEK)	ug/L	10	10.3	103	70-130	N3
Acetone	ug/L	10	10	100	70-130	N3
cis-1,2-Dichloroethene	ug/L	10	9.3	93	70-130	
Tetrachloroethene	ug/L	10	9.4	94	70-130	
Tetrahydrofuran	ug/L	10	9.2	92	70-130	IH,N3
trans-1,2-Dichloroethene	ug/L	10	8.9	89	70-130	
Trichloroethene	ug/L	10	8.9	89	70-130	
Vinyl chloride	ug/L	10	7.8	78	70-130	
1,2-Dichlorobenzene-d4 (S)	%			110	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	

SAMPLE DUPLICATE: 1204444

Parameter	Units	70198387004 Result	Dup Result	RPD	Qualifiers
2-Butanone (MEK)	ug/L	<2.0	<2.0		N3
Acetone	ug/L	7.4	7.0	6	N3
cis-1,2-Dichloroethene	ug/L	0.58	0.79	30	D6
Tetrachloroethene	ug/L	<0.50	<0.50		
Tetrahydrofuran	ug/L	<2.0	<2.0		N3
trans-1,2-Dichloroethene	ug/L	<0.50	<0.50		
Trichloroethene	ug/L	<0.50	<0.50		
Vinyl chloride	ug/L	<0.50	<0.50		
1,2-Dichlorobenzene-d4 (S)	%	86	86		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Melville, NY 11747
(631)694-3040

QUALITY CONTROL DATA

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

SAMPLE DUPLICATE: 1204444

Parameter	Units	70198387004 Result	Dup Result	RPD	Qualifiers
4-Bromofluorobenzene (S)	%	82	80		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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Melville, NY 11747
(631)694-3040

QUALIFIERS

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
IH	This analyte exceeded secondary source verification criteria high for the initial calibration. The reported results should be considered an estimated value.
N3	Accreditation is not offered by the relevant laboratory accrediting body for this parameter.

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575 Broad Hollow Road
Melville, NY 11747
(631)694-3040

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: GE LANCASTER 12/16
Pace Project No.: 70198387

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
70198387001	(b) (9)[redacted]**-POST**	EPA 524.2	238327		
70198387002	[redacted]**-MID**	EPA 524.2	238327		
70198387003	[redacted]**-PRE GAC**	EPA 524.2	238327		
70198387004	[redacted]**-RAW**	EPA 524.2	238327		
70198387005	**TRIP BLANK**	EPA 524.2	238327		

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WO#: 70198387

70198387

CHAIN-OF-CUSTODY / A

The Chain-of-Custody is a LEGAL DOC

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and C

df.

1 Of 1

Section A — Required Client Information:

Company:	Tetra Tech
Address:	1777 Sentry Parkway West
	Bldg. 12, Suite 102, Blue Bell, PA 19422
Email:	john.mccall@tetratech.com
Phone:	(215)648-3951 Fax:
Requested Due Date:	

Section B — Required Project Information:

Report To:	John McCall
Copy To:	
Purchase Order #:	
Project Name:	GE Lancaster
Project #:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	kimberley.mack@pacelabs.com,
Pace Profile #:	9125

Regulatory Agency	
State / Location	
	PA

Requested Analysis Filtered (Y/N): Y/N

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: 524.2 VOC	Residual Chlorine (Y/N)
1	(b) (9) - POST	DW	G	12/14/21	0935				2				X					✓	
2	[redacted] - Mid	↓	↓	↓	0945				2				X					✓	
3	(b) (9) - Pre GAC	↓	↓	↓	~~0950~~ 0950				2				X					✓	
4	[redacted] - Raw	↓	↓	↓	1000				2				X					✓	
5	Trip Blank			—	—				2				X					✓	
6																			
7																			
8																			
9																			
10																			
11																			
12																			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
~~Metals will be field filtered (As, Ba, Cd, Ca, Cr, Co, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Na, Zn).~~	H. Martin Tt	12/16/21	15:00	Courier	12/16	15:00	
Select VOC's Cis-1-2-DCE	Courier			[illegible]	12/17/21	11:15	
Trans-1,2-DCE, PCE, TCE, VC,							
acetone, 2-butanone (MEK)							
Tetrahydrofuran							

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	HAYDEN MARTIN		
SIGNATURE of SAMPLER:	[signature]	DATE Signed:	12/16/21

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical®

Sample Condition Upon Recei

WO#: 70198387
PM: KMM Due Date: 12/29/21
CLIENT: TETRA

Client Name: Tetra Tech

Projec

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other

Tracking #: 7755

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No Seals intact: ☐ Yes ☐ No ☑ N/A

Temperature Blank Present: ☐ Yes ☒ No

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ Ziploc ☐ None ☐ Other

Type of Ice: Wet Blue None

Thermometer Used: TH091 Correction Factor: 0.00

☐ Samples on ice, cooling process has begun

Cooler Temperature(°C): 4.1 Cooler Temperature Corrected(°C): 4.1

Date/Time 5035A kits placed in freezer

Temp should be above freezing to 6.0°C

USDA Regulated Soil (☑ N/A, water sample)

Date and Initials of person examining contents: MM 12/17/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check map)? ☐ Yes ☐ No

Did samples orignate from a foreign source including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-LI-C-010) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present:	☑ Yes	☐ No		1.
Chain of Custody Filled Out:	☑ Yes	☐ No		2.
Chain of Custody Relinquished:	☑ Yes	☐ No		3.
Sampler Name & Signature on COC:	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time:	☑ Yes	☐ No		5.
Short Hold Time Analysis (<72hr):	☐ Yes	☑ No		6.
Rush Turn Around Time Requested:	☐ Yes	☑ No		7.
Sufficient Volume: (Triple volume provided for I	☑ Yes	☐ No		8.
Correct Containers Used:	☑ Yes	☐ No		9.
-Pace Containers Used:	☑ Yes	☐ No		
Containers Intact:	☑ Yes	☐ No		10.
Filtered volume received for Dissolved tests	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels match COC:	☑ Yes	☐ No		12.
-Includes date/time/ID/ Matrix: SL WT OIL				
All containers needing preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
pH paper Lot #				
All containers needing preservation are found to be in compliance with method recommendation? (HNO_3, H_2SO_4, HCl, NaOH>9 Sulfide, NAOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water). Per Method, VOA pH is checked after analysis				Initial when completed: / Lot # of added preservative: / Date/Time preservative added:
Samples checked for dechlorination:	☐ Yes	☐ No	☑ N/A	14.
KI starch test strips Lot #				
Residual chlorine strips Lot #				Positive for Res. Chlorine? Y N
SM 4500 CN samples checked for sulfide?	☐ Yes	☐ No	☑ N/A	15.
Lead Acetate Strips Lot #				Positive for Sulfide? Y N
Headspace in VOA Vials (>6mm):	☐ Yes	☑ No	☐ N/A	16.
Trip Blank Present:	☑ Yes	☐ No	☐ N/A	17.
Trip Blank Custody Seals Present	☑ Yes	☐ No	☐ N/A	
Pace Trip Blank Lot # (if applicable):_____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

* PM (Project Manager) review is documented electronically in LIMS.

ENV-FRM-MELV-0024 01

APPENDIX D

Groundwater Flow Rate Calculations

GROUNDWATER FLOW RATE CALCULATIONS

INTRODUCTION

Section 264.100(d) of the Pennsylvania Department of Environmental Protection (PADEP) Hazardous Waste Management Regulations requires a calculation of the rate of ground water flow. The nature of ground water flow in fractured bedrock makes an accurate assessment difficult as ground water velocities may vary widely between individual fractures. Therefore, the following calculations of ground water flow rates should only be considered as approximation:

$$V = \frac{Ki}{n_c * (7.48)}$$

Where:

V = ground water velocity (ft/day)
K = hydraulic conductivity (gallons per day per foot squared [gpd/ft^2]): K = T/b
i = hydraulic gradient (ft/ft)
n_c = effective porosity
b = saturated thickness (ft)
T = transmissivity (gallons per day per foot [gpd/ft])
Conversion Factor = 7.48 gallons/cubic foot
(built in conversion factor required to convert gpd/ft to ft/day

Assumptions:

T = 45 gpd/ft to 75 gpd/ft

b = 5 ft

i = 0.021 ft/ft to 0.027 ft/ft

n_c = 0.15 to 0.20

T (TRANSMISSIVITY)

The transmissivity (T) is a product of the hydraulic conductivity (K) and the saturated thickness (b). The transmissivity calculated was evaluated from several pumping tests (Geraghty & Miller, Inc. 1986).

b (SATURATED THICKNESS)

The 5 ft saturated thickness used in this calculation represents Geraghty & Miller's best estimate, based on review of drilling/core logs and the fractured portion of the rock in which most, if not all, ground water movement occurs. Most of the bedrock is dense and impermeable with little or no ground water movement occurring in it. The transmissivity (T) is a product of the hydraulic conductivity (K) and the saturated thickness (b). The transmissivity was calculated from several pumping tests (Geraghty & Miller, Inc.). If the transmissivity were divided by a saturated thickness of 398.54 feet in the deepest well (which is the difference between the water-level elevation (24.46ft) and the bottom of Well No. 11D (423ft)), the result would be an average hydraulic conductivity for the entire rock sequence. However, this result would be misleading because the fractures in the

well have a considerably higher hydraulic conductivity than the average calculated and, conversely, the unfractured rock has an actual hydraulic conductivity below the average. Most of the ground water flow occurs within the fractures with little or no flow occurring in the unfractured bedrock. Therefore, using the saturated thickness of 397.55 feet and an overall average hydraulic conductivity in the velocity calculations would result in a low rate of ground water movement that would be unrealistic. To estimate the rate of ground water movement, only the fractured part of the bedrock (in which most of the flow occurs) must be considered. Therefore, the hydraulic conductivity representative of the fractured rock was used in calculating the actual ground water velocity, and this required using a saturated thickness of 5 feet (i.e., total thickness of fractures).

n (EFFECTIVE POROSITY)

The effective porosity of 0.20 that we have used in our calculations is an estimate value (Geraghty & Miller 1994 Annual Progress Report) for the fractured portion of the bedrock only. As discussed above, we have only considered the fractured portion of the bedrock in calculating the ground water velocity.

i (HYDRAULIC GRADIENT)

Based upon the configuration of the potentiometric surface of both the shallow and deep bedrock aquifers (presented as **Figures 4** and **5** respectively) the average hydraulic gradient for the shallow and deep bedrock aquifers are as follows:

- Shallow Aquifer - as measured between BW-3 (311.917') and SW-9002 (257.52') is calculated at 0.034 ft/ft
- Deep Bedrock Aquifer – as measured between BW-9 (314.21') and GW-9008 (255.36') is calculated at 0.019 ft/ft

Therefore:

$$K_1 = \frac{T_1}{b}$$

$$K_1 = \frac{45\ gpd/ft}{5\ ft} = 9\ gpd/ft^2$$

$$V_1 = \frac{(9\ gpd/ft^2) * (0.034\ ft/ft)}{(0.2) * (7.48\ g/ft^3)} = 0.205\ ft/day = 75\ ft/yr$$

$$K_2 = \frac{T_2}{b}$$

$$K_2 = \frac{75\ gpd/ft}{5ft} = 15\ gpd/ft^2$$

$$V_2 = \frac{K_2 * i}{n_c}$$

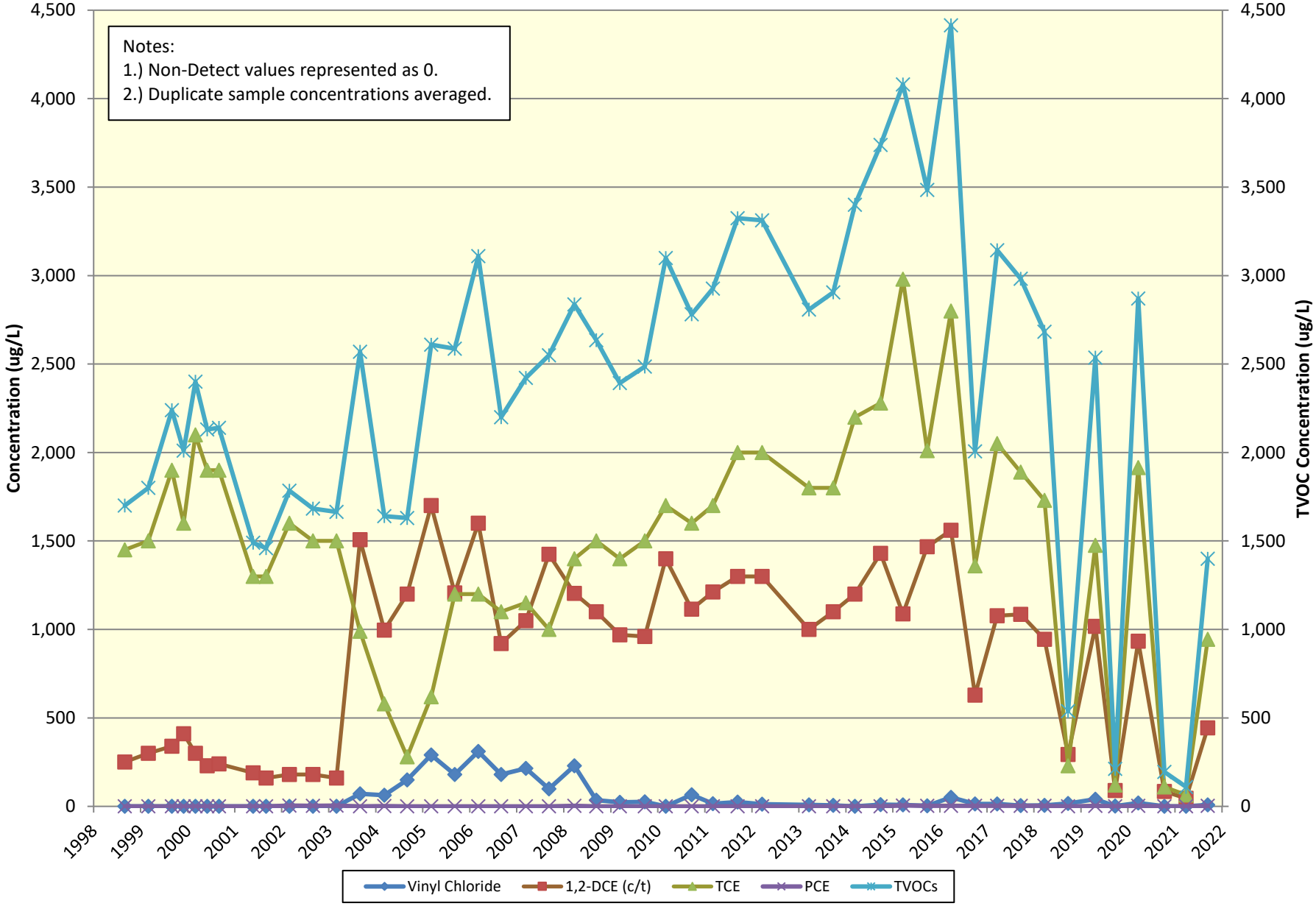
$$V_2 = \frac{(15\ gpd/ft^2)*(0.019\ ft/ft)}{(0.2) * (7.48 g/ft^3)} = 0.191\ ft/day = 70\ ft/yr$$

The approximate range for ground water velocity is, therefore, 0.19 ft/day to 0.21 ft/day.

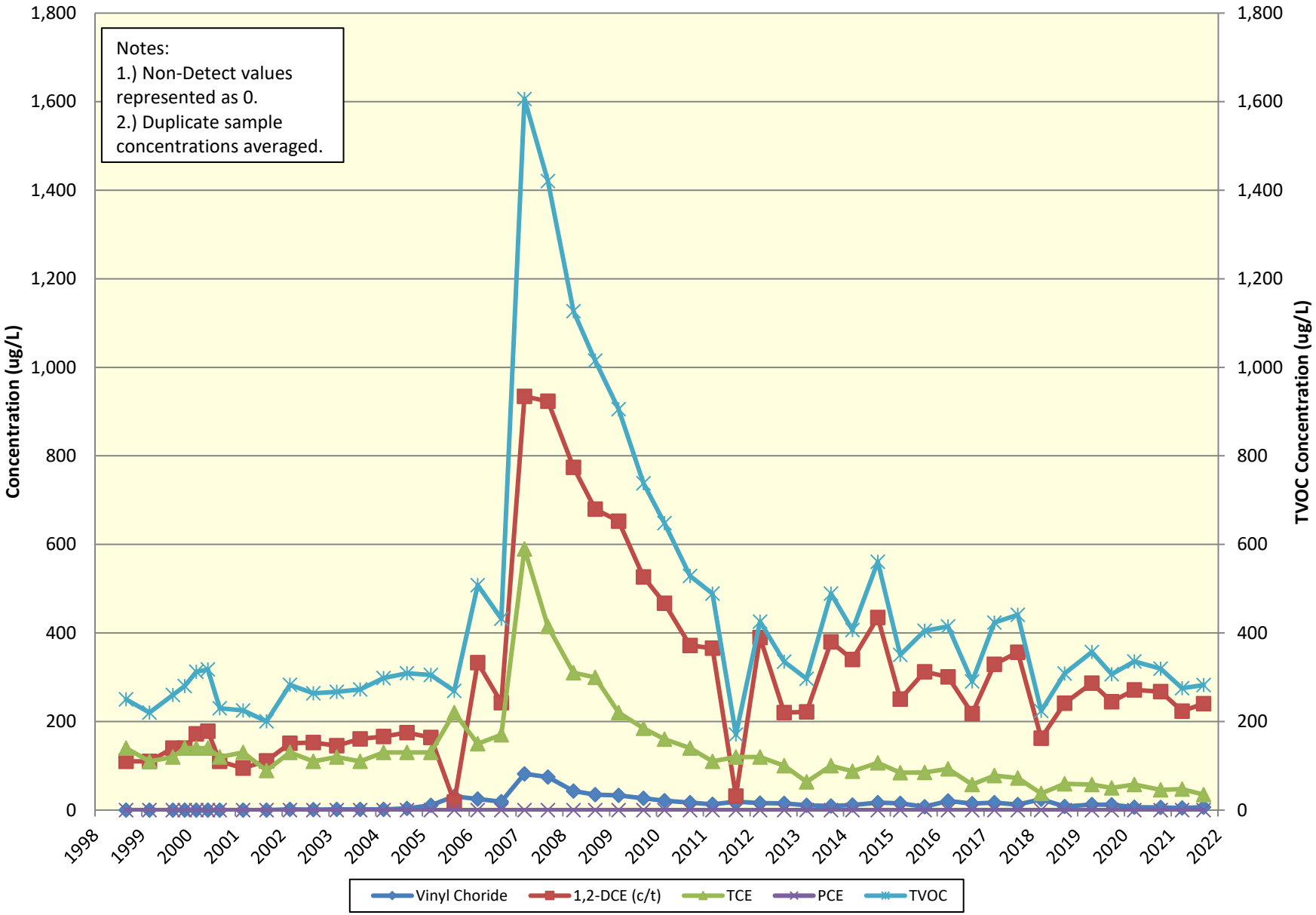
APPENDIX E

Concentration vs. Time Charts

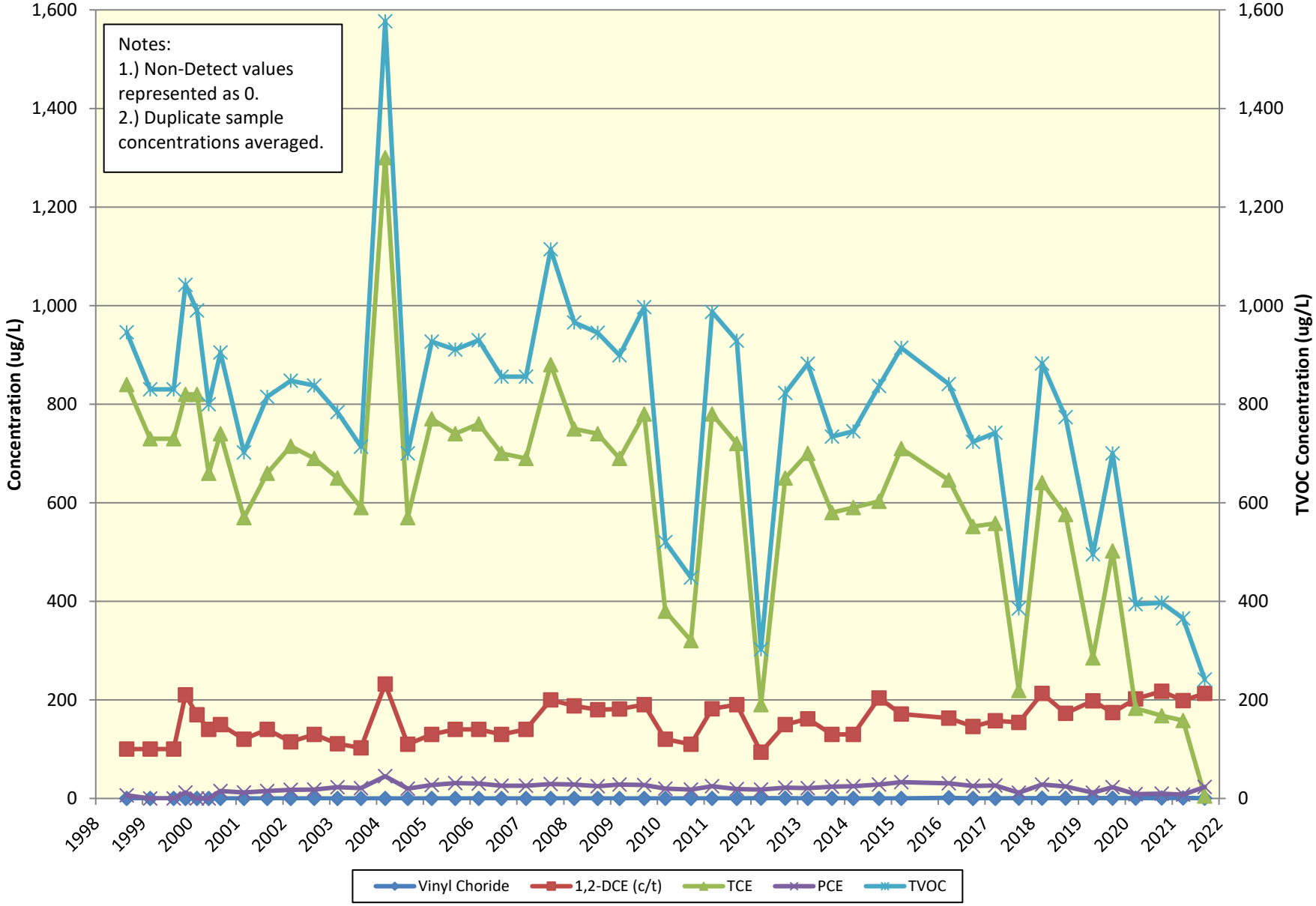
GW-9001: VOC Concentration vs. Time



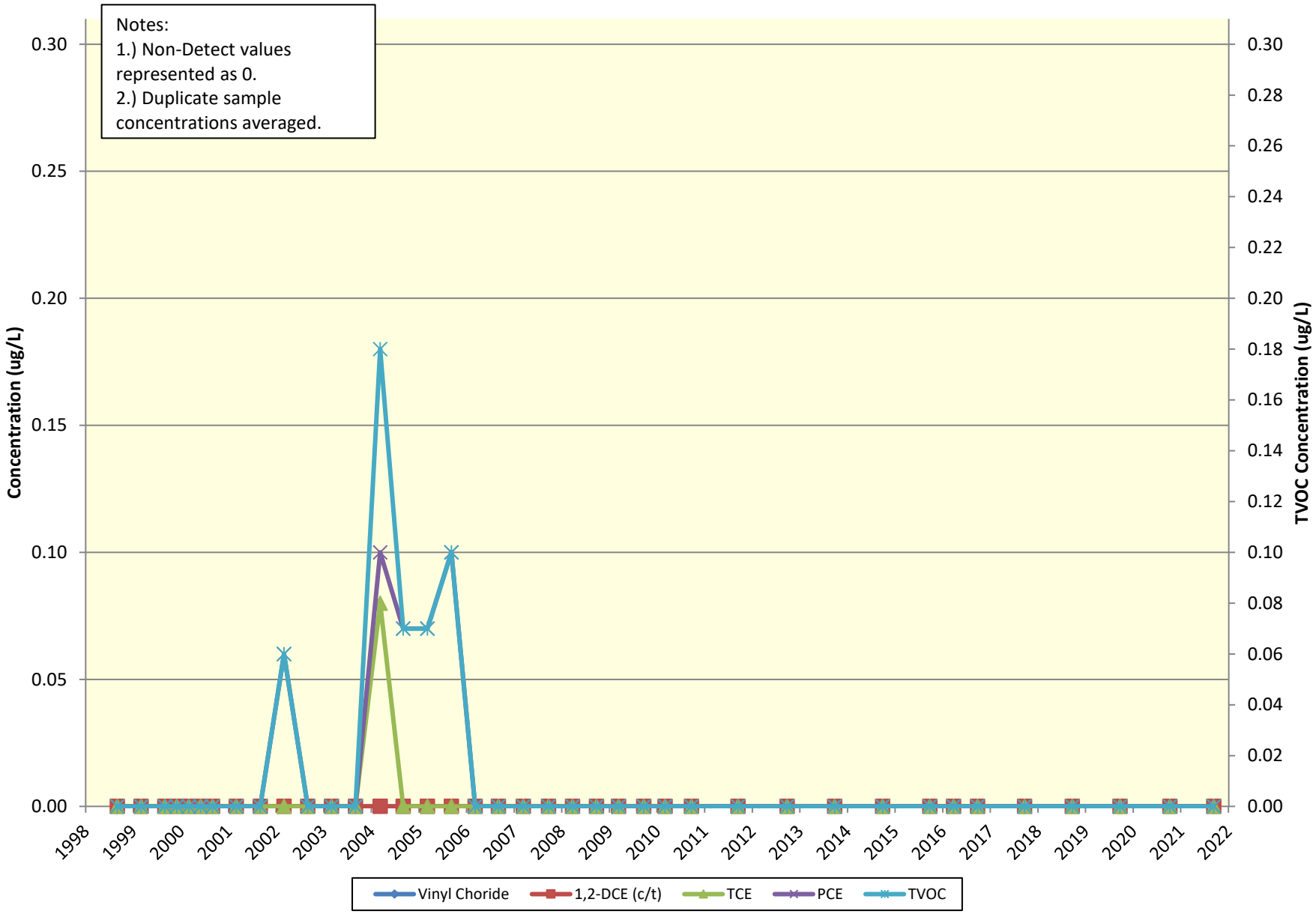
GW-9004: VOC Concentration vs. Time



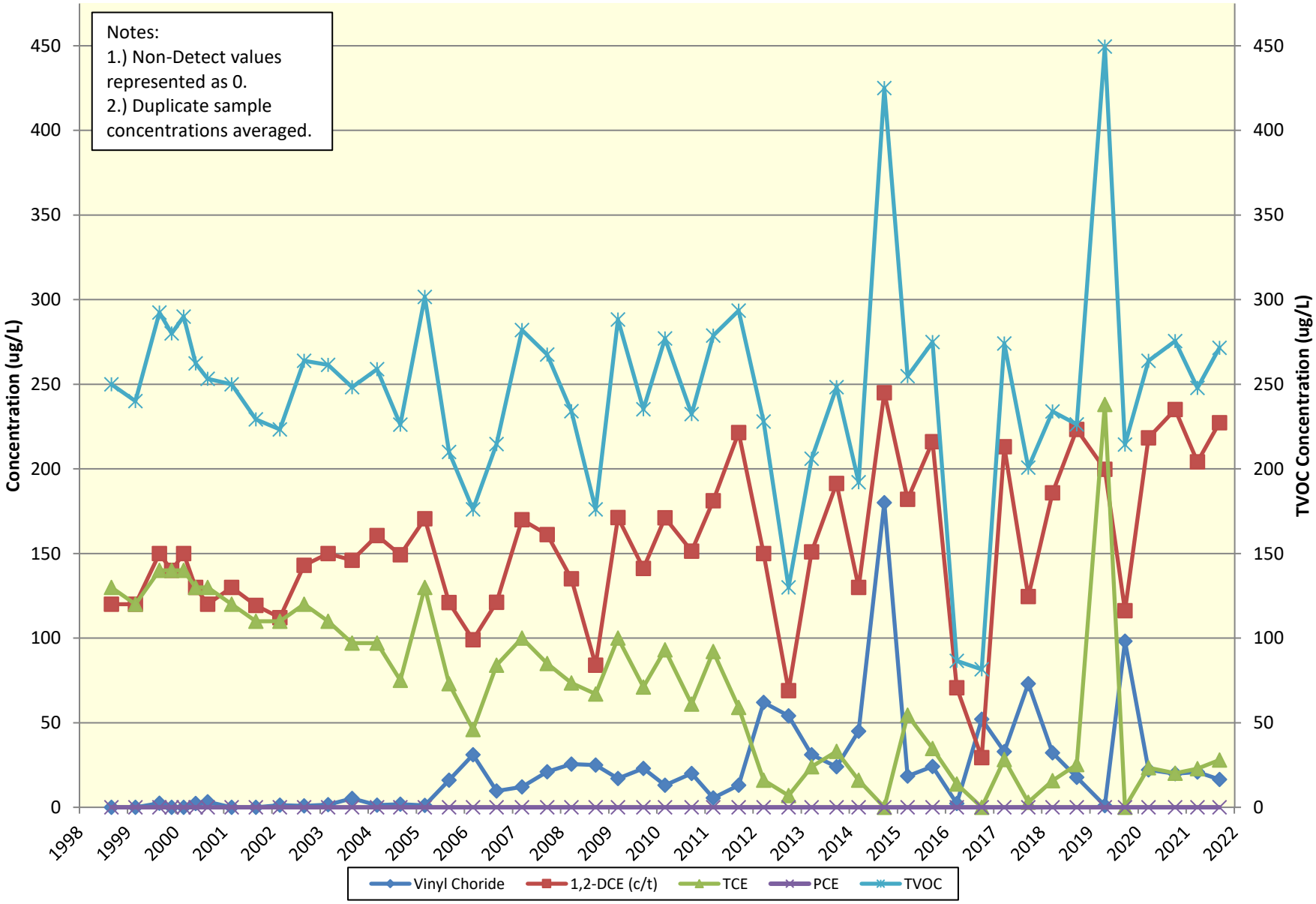
GW-9006: VOC Concentration vs. Time



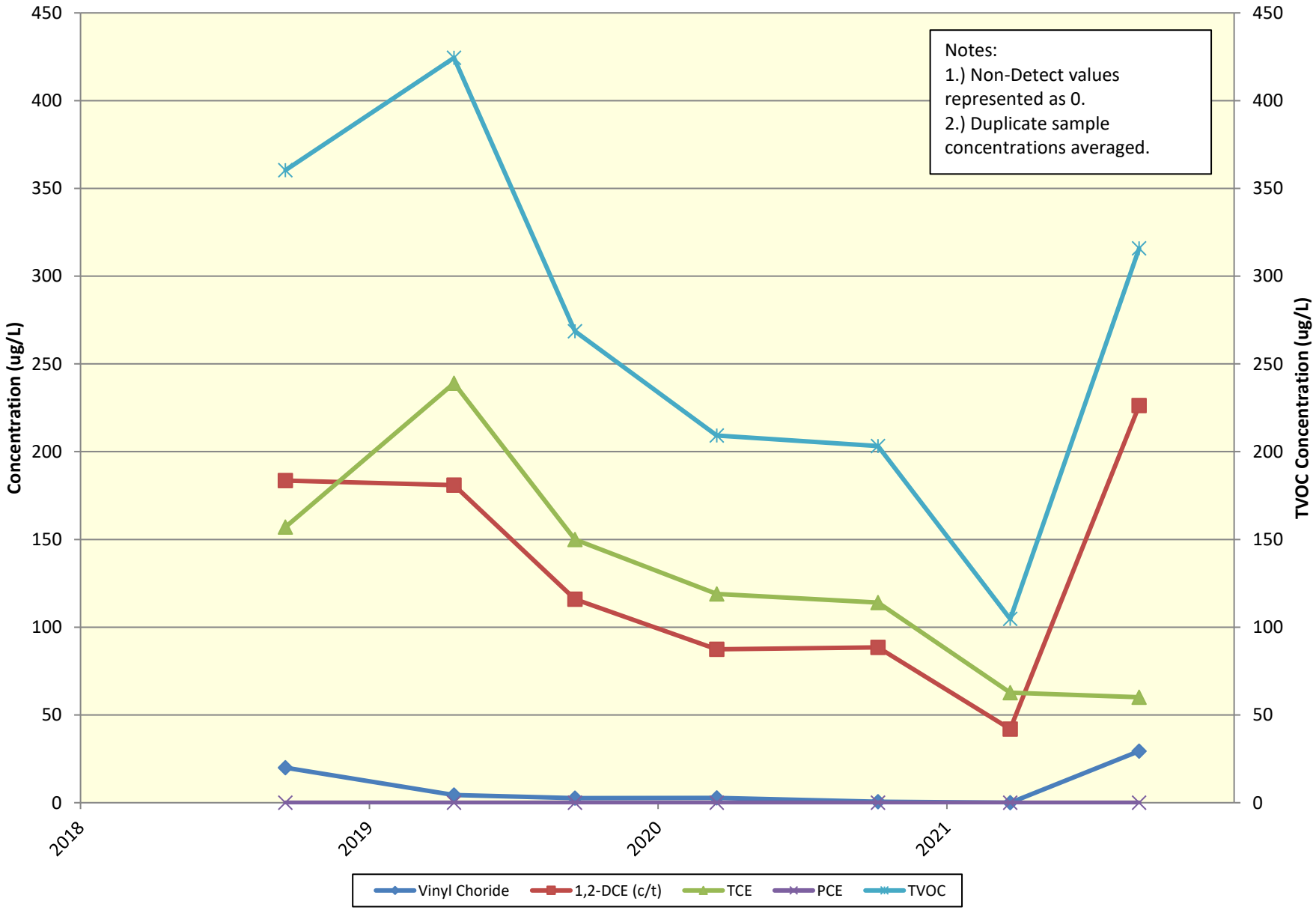
GW-9007: VOC Concentration vs. Time



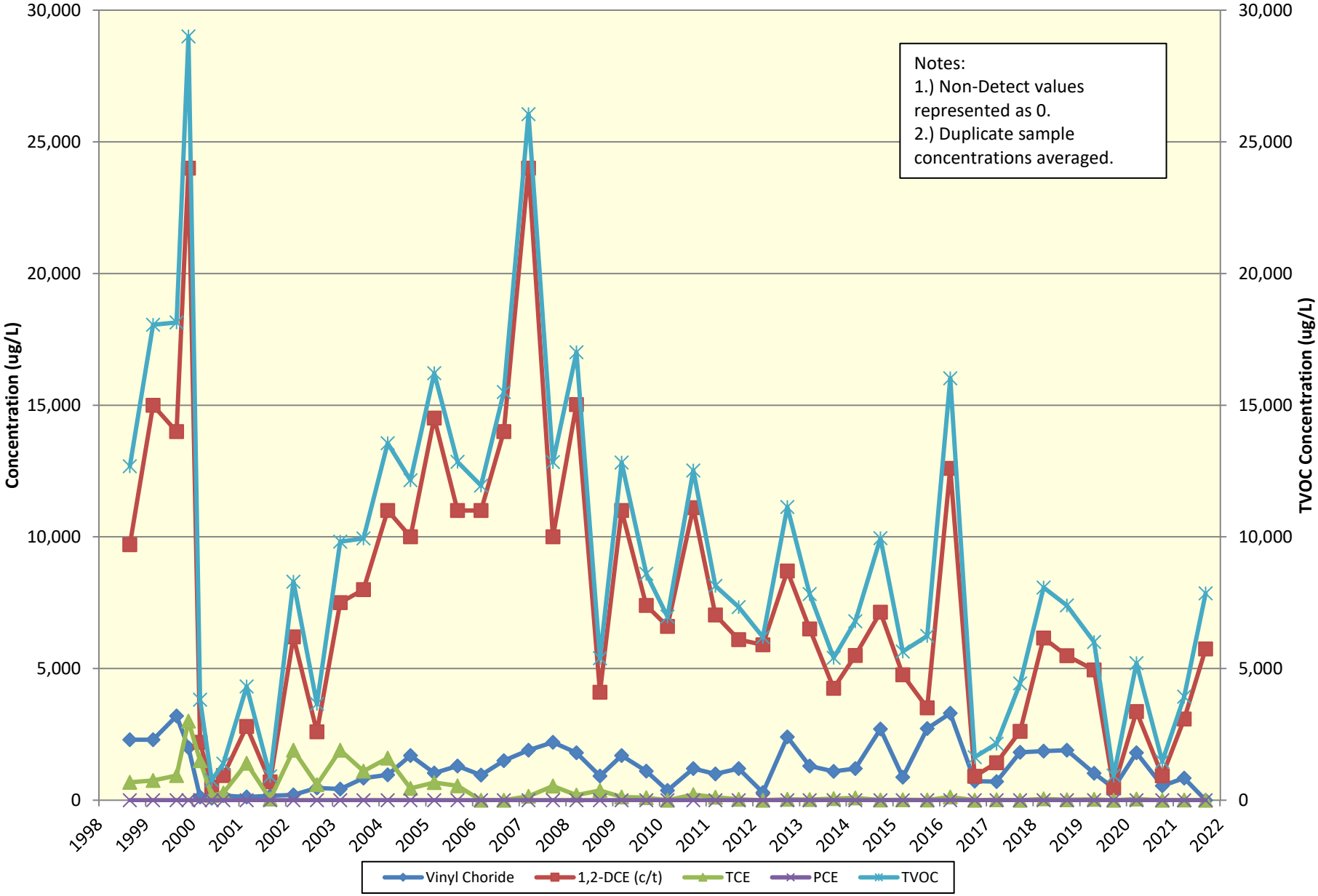
GW-9008: VOC Concentration vs. Time



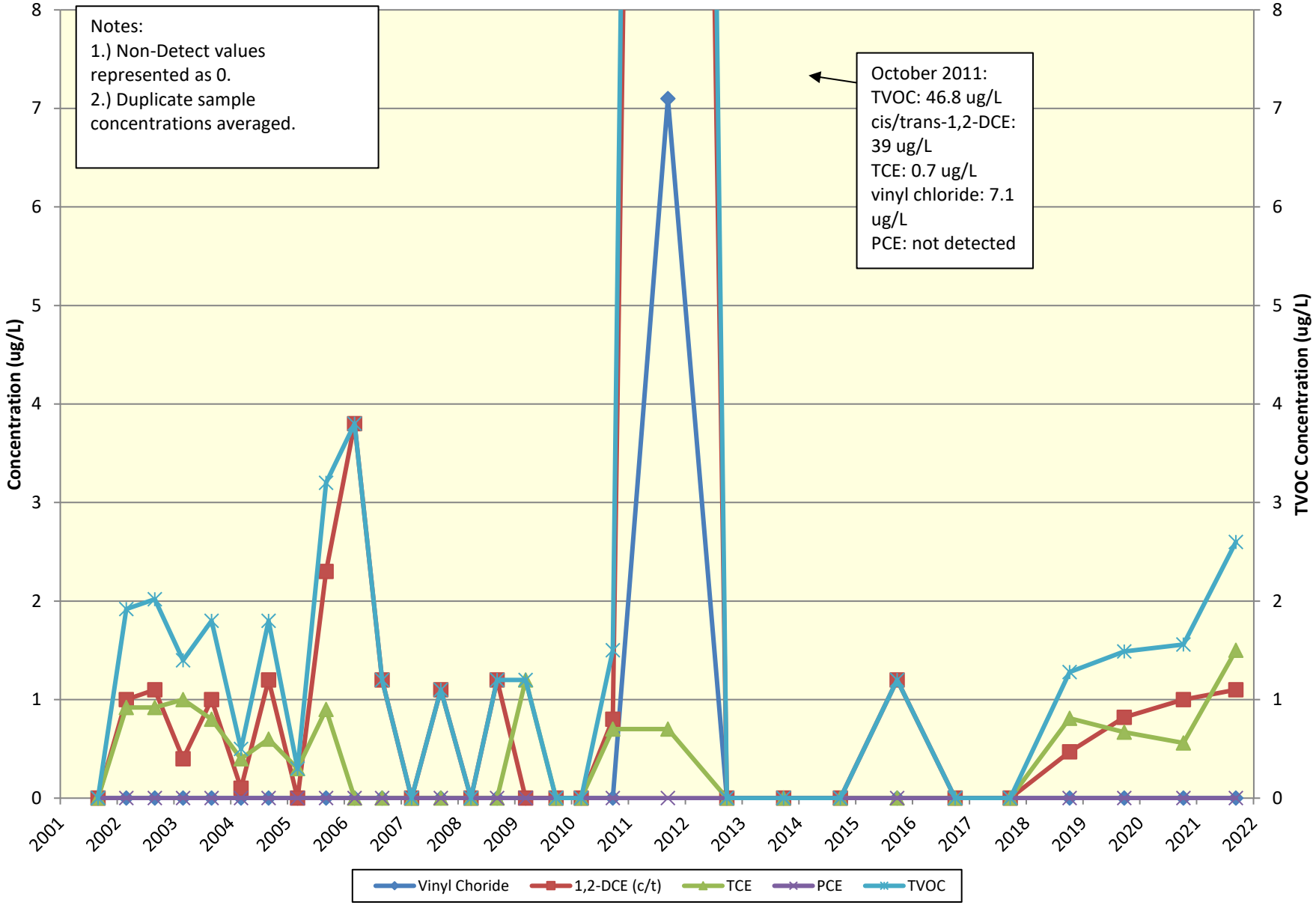
GW-9020: VOC Concentration vs. Time



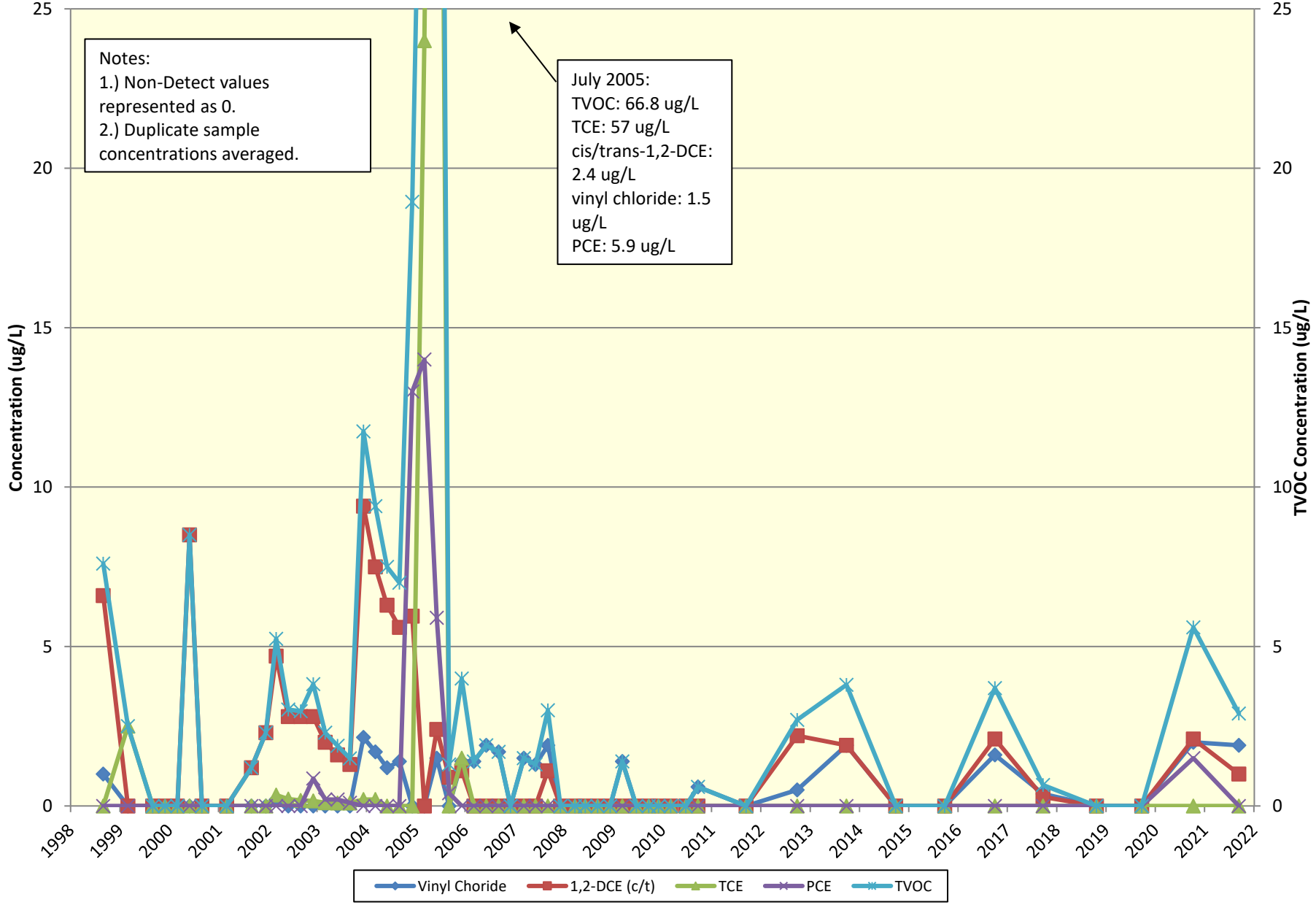
5: VOC Concentration vs. Time



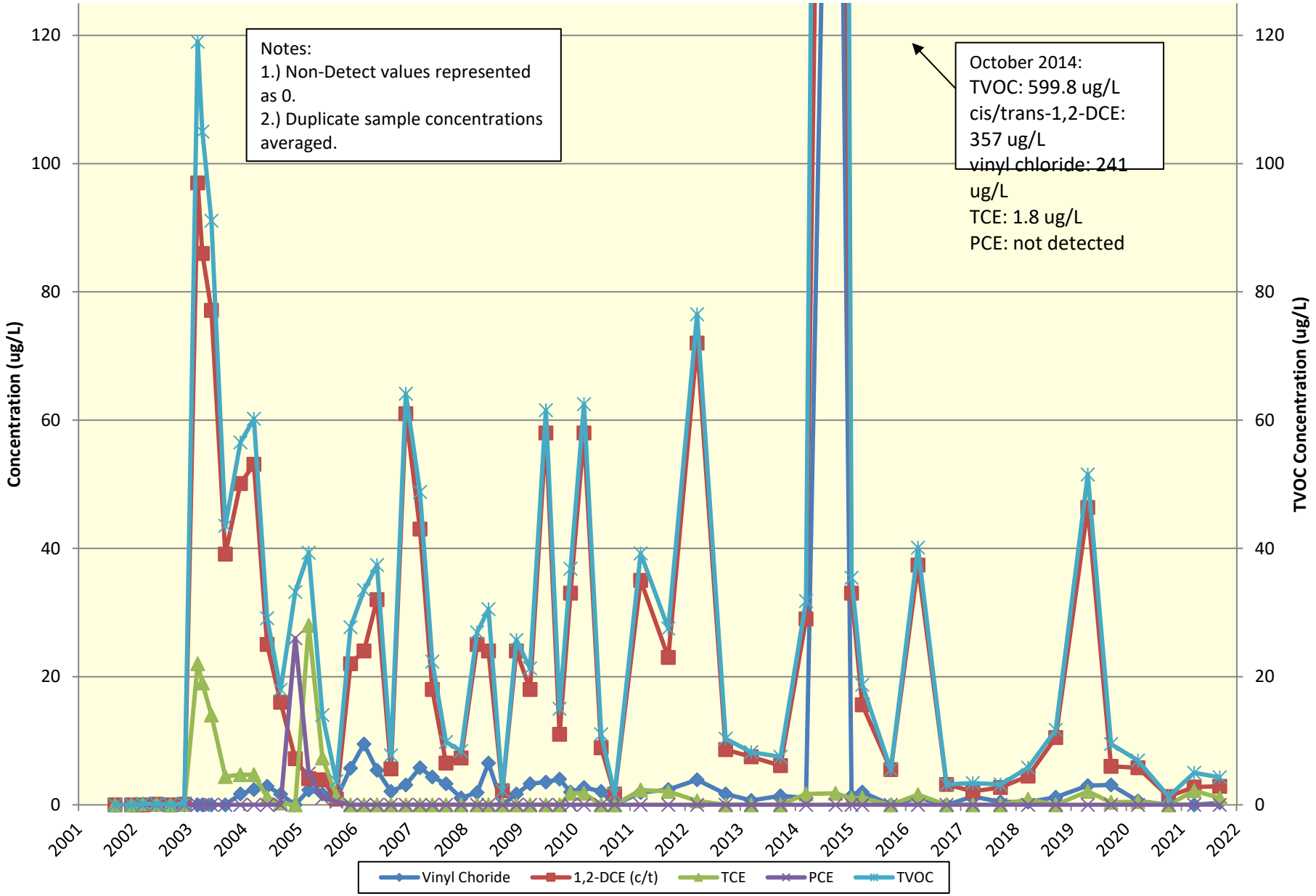
6: VOC Concentration vs. Time



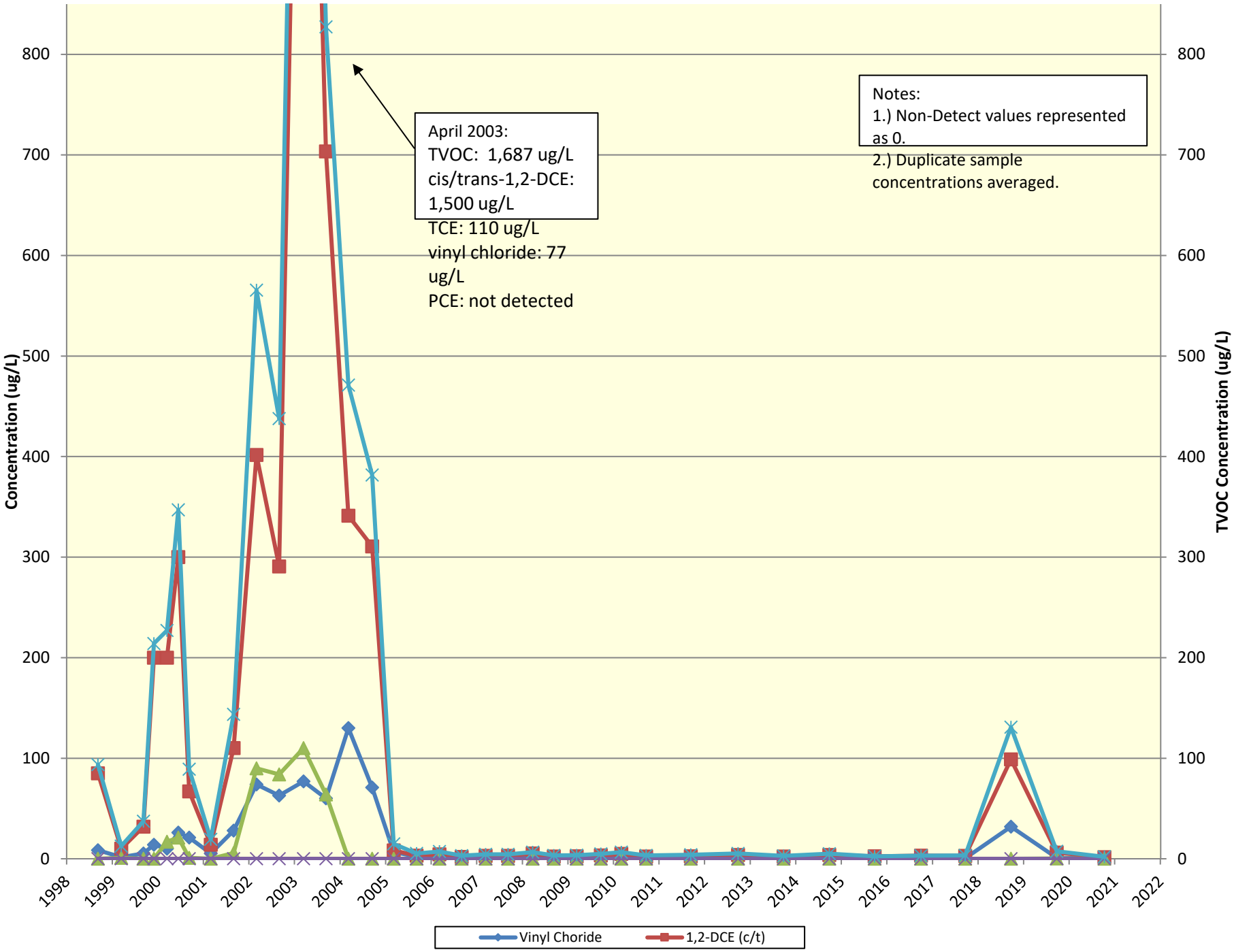
7D: VOC Concentration vs. Time



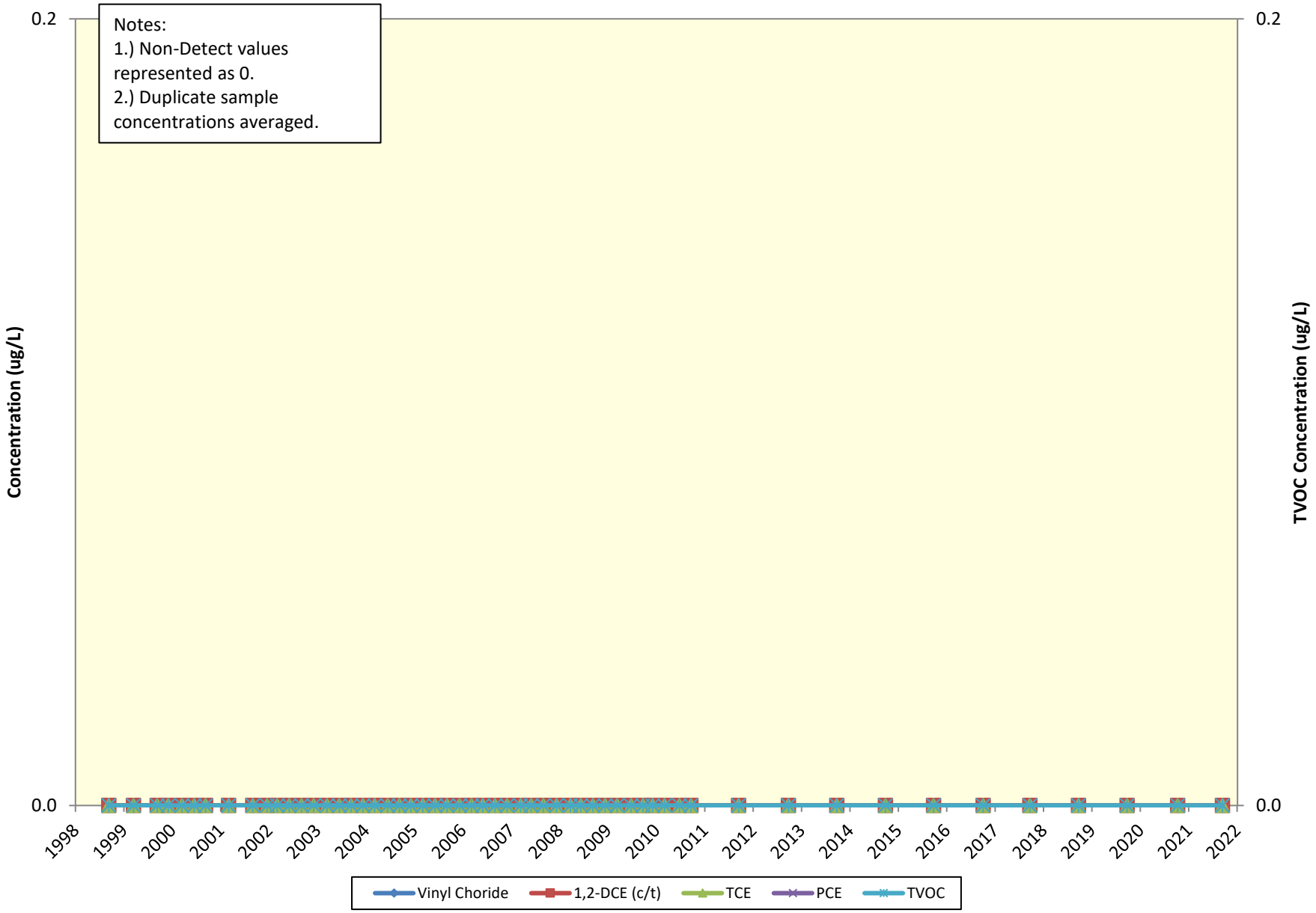
10D: VOC Concentration vs. Time



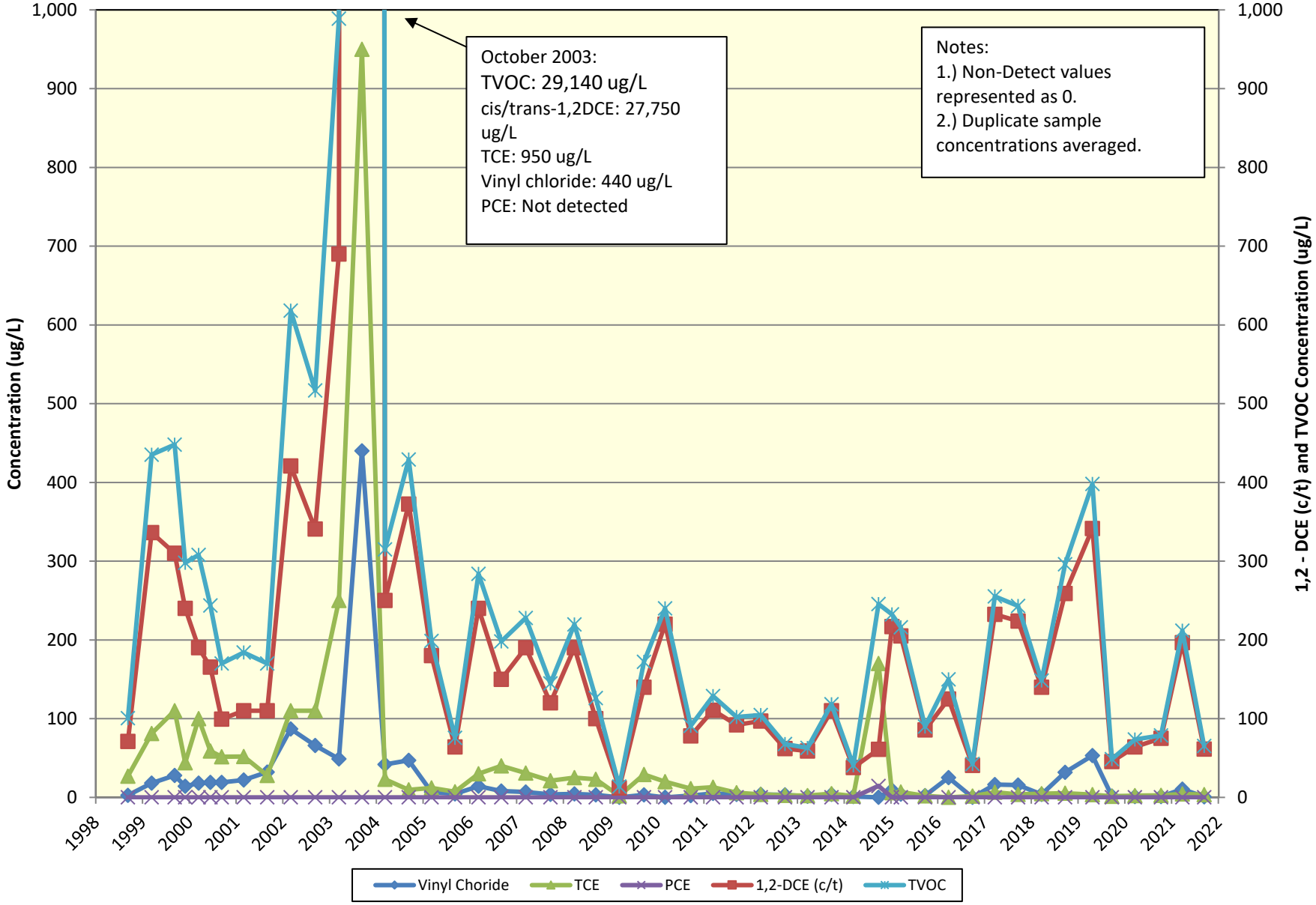
11S: VOC Concentration vs. Time



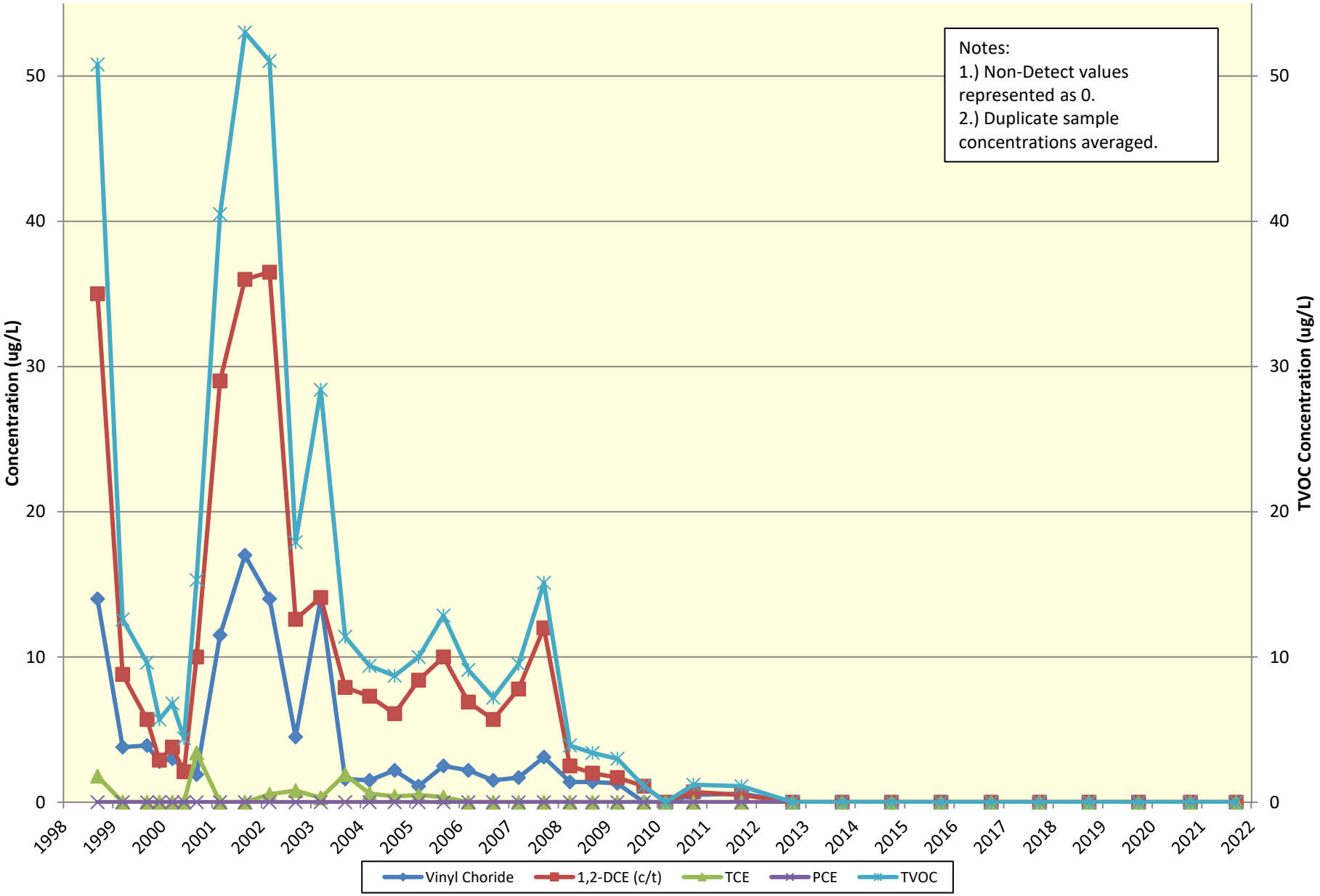
12D: VOC Concentration vs. Time



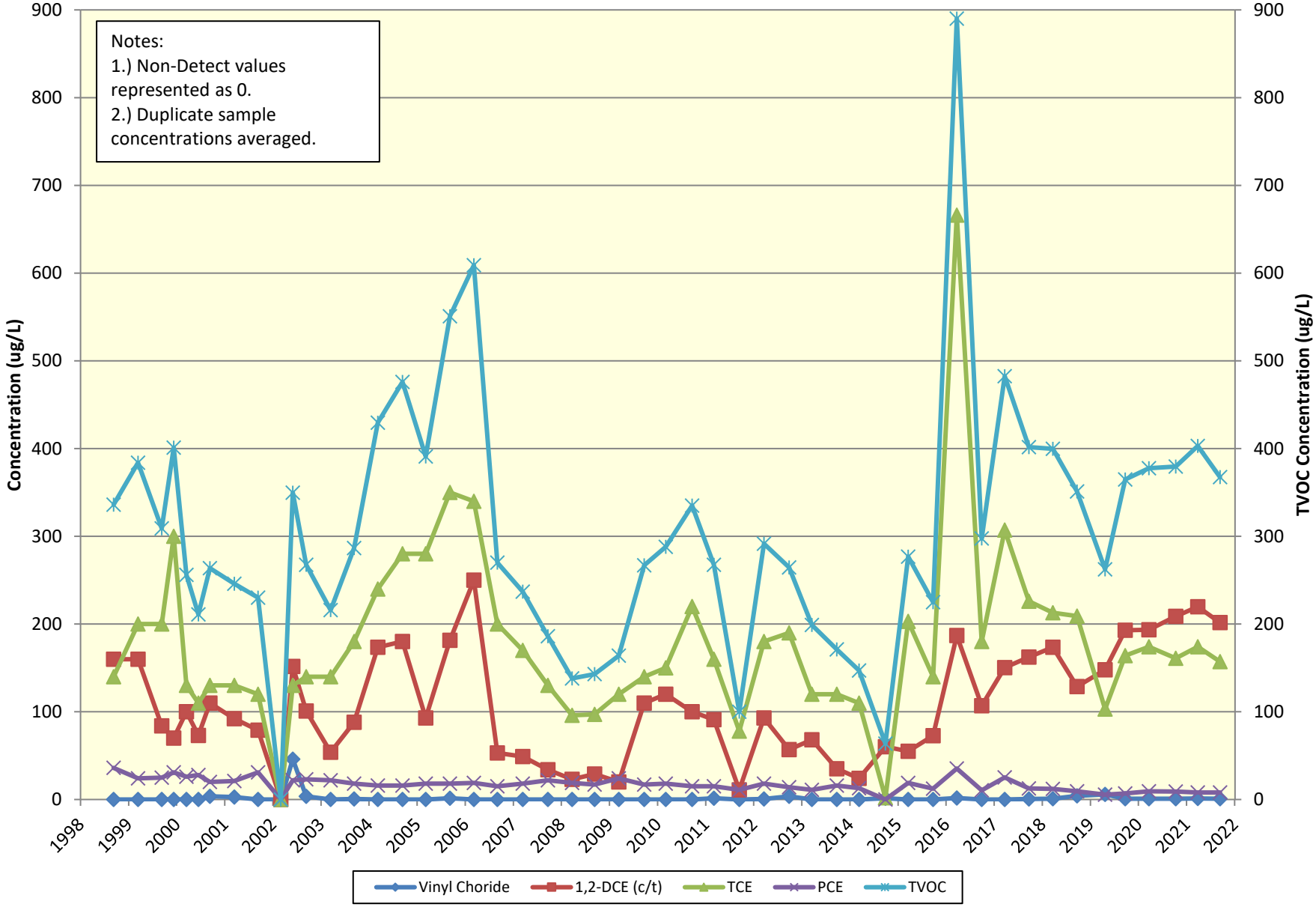
14: VOC Concentration vs. Time



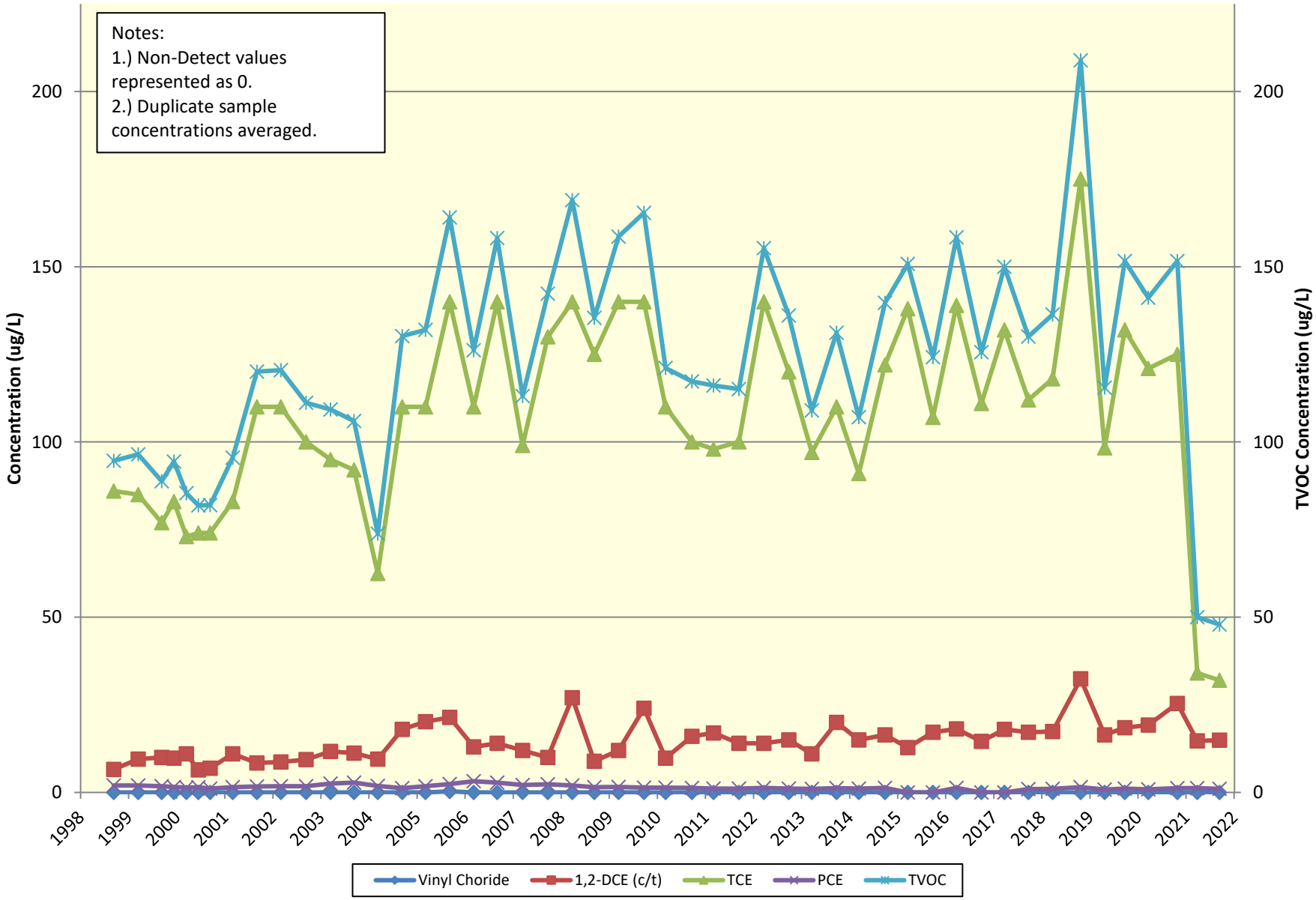
15: VOC Concentration vs. Time



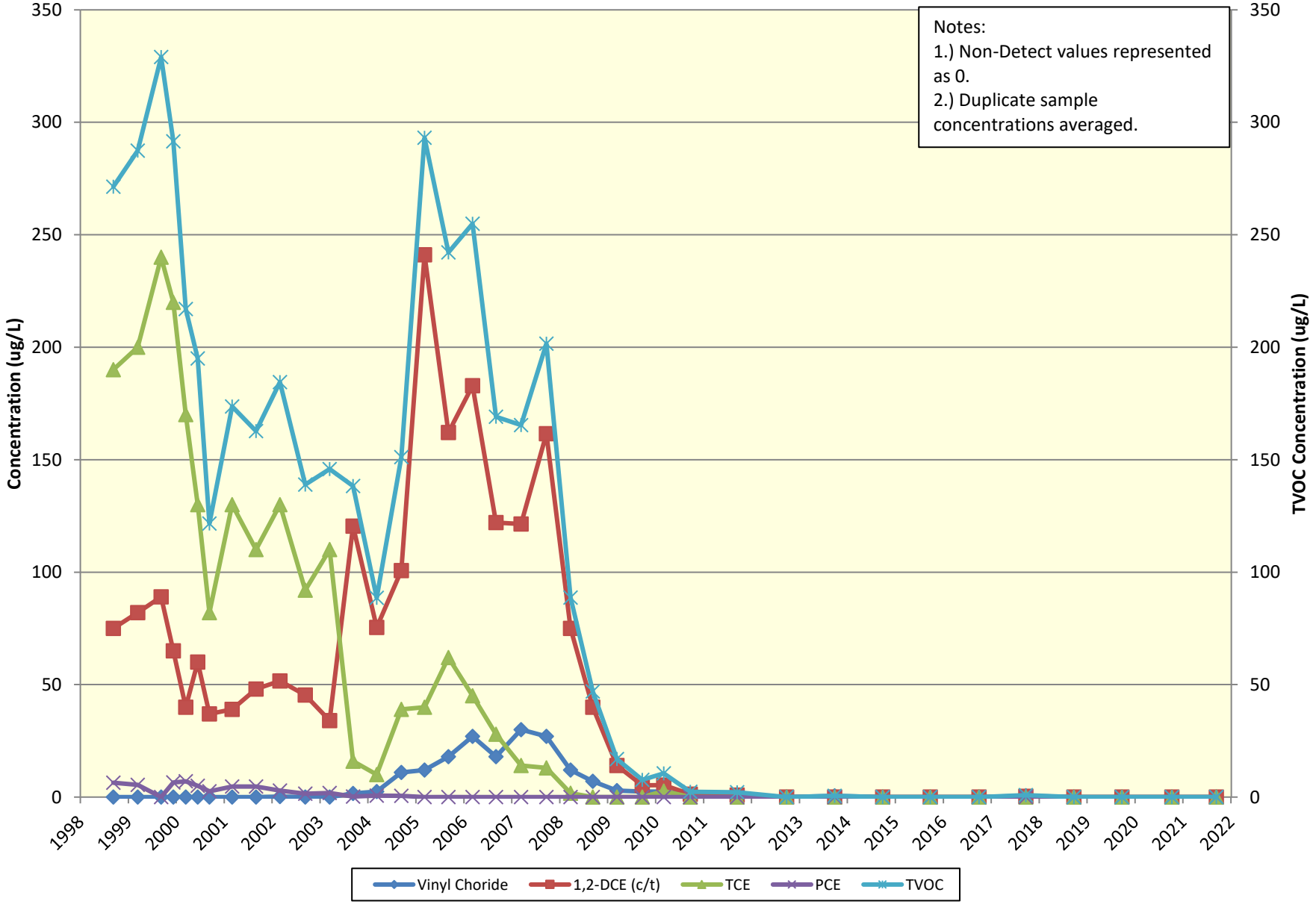
18: VOC Concentration vs. Time



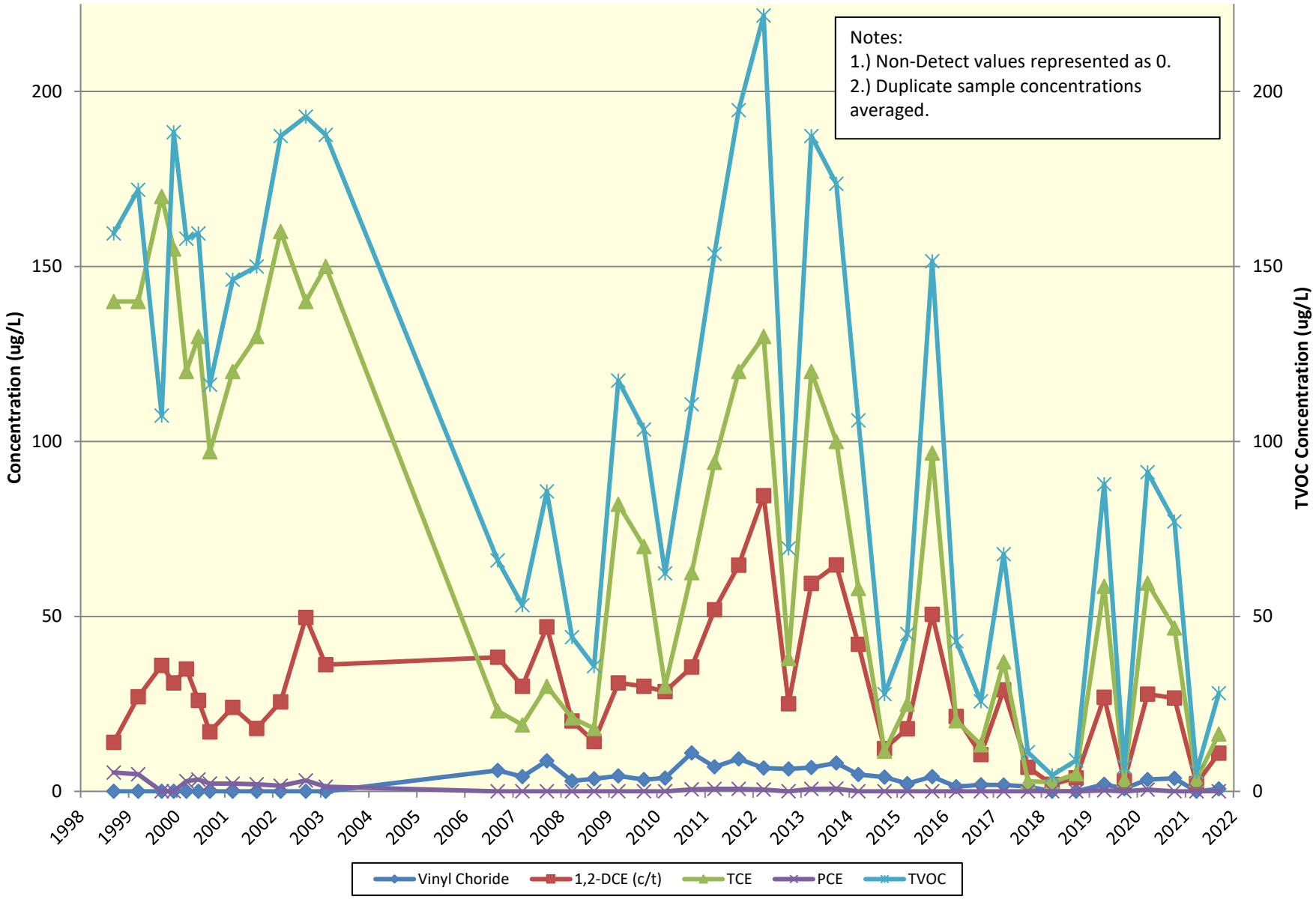
Spring-1 : VOC Concentration vs. Time



AW-3: VOC Concentration vs. Time



AW-4: VOC Concentration vs. Time



APPENDIX F

Statistical Trend Analysis

Statistical Trend Analysis for GE Lancaster Facility

Kirk Cameron, Ph.D., TetraTech, Inc.

2022-01-07

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1 Statistical Trend Analysis

This memo describes the 2021 update to the estimated trends in key contaminants at the Lancaster, Pennsylvania General Electric (GE) facility. The contaminants, all volatile organic compounds (VOCs), are listed in **Table 1**. Time series plots of all the historical data for these contaminants are presented in **Appendix A**. The 'R' Statistical Analysis package (www.r-project.org) in conjunction with R-Studio (www.rstudio.com) (both public domain software products) were used in the production of the statistical values and graphs presented below.

Table 1: GE Monitored Constituents

Monitored	Constituents
DCE12C	TVOC
PCE	VC
TCE	

To estimate these trends, linear regression with Monte Carlo imputation of any non-detects was employed. Linear regression is a standard method for estimating trend lines, including the slope of the line, thus providing an explicit rate of change. The estimated slope can be tested for statistical significance to gauge whether the trend is real. Further, a confidence band can be constructed around the trend line in order both to visualize the degree of uncertainty associated with the trend estimate, as well as to make formal statistical comparisons against fixed (regulatory) standards of compliance or clean-up goals.

As a general strategy, USEPA recommends (USEPA 2009) comparing some type of confidence interval (CI) against a groundwater protection standard (GWPS, often an MCL) in order to assess whether or not the limit has been exceeded with statistical significance, or whether remedial activities have been successful. If the entire interval exceeds the GWPS, a statistical exceedance is identified. If none of the interval, or only part, exceeds the GWPS, no exceedance is recorded. Conversely, if the entire interval is *below* a clean-up limit, remedial success is flagged.

Since groundwater data are collected over time, and not all at once, some or most of the variation in the measurements may be due to a trend. To better account for this possibility, USEPA also recommends a variation on the confidence interval method known as a **confidence interval band** around a trend line. In this case, a (linear) trend line is first fit to the data, then a confidence band is constructed around the trend line. The confidence interval band can be compared against a GWPS in much the same fashion as a confidence interval, only now the comparison can be made at different points in time by comparing the 'cross-section' of the band for a given sampling date. If the interval represented by the confidence band cross-section fully exceeds the GWPS, an exceedance is identified for that sampling event. Likewise, if the cross-section is below the clean-up limit, remedial success is reported.

At the GE Lancaster site, CI bands were constructed for each well-constituent pair using all available sampling data from the most recent 10 years of sampling. Ten years was selected for two reasons: 1) not all the trends are linear in nature, so using a more recent 'window' of the historical record better captures what has transpired more recently; and 2) since sampling has generally been semi-annual to annual (depending on the parameter), 10 years provides enough data to accurately capture and estimate most of the trends, particularly the uncertainty associated with each trend via the confidence band.

1.1 Trend Lines Using Linear Regression

Unless there are extreme outliers and/or curvature in the data, linear regression provides a standard and well-tested method for estimating the linear portion of a trend. The slope of the regression line points to the magnitude and direction of the trend. There is also a standard method for computing a confidence band around a linear regression trend line, illustrated in the following equation:

$$CB_{1-\alpha} = \hat{x}_0 \pm \sqrt{2 s_e^2 F_{1-\alpha,n-2} \left[\frac{1}{n} + \frac{(t_0 - \bar{t})^2}{(n-1)s_t^2} \right]}$$

where CB = confidence band, $\hat{x}_0$ is the regression line estimate at time t_0, s_e^2 is the mean squared error of the regression line, F is a quantile from the F-distribution with 2 and $n-2$ degrees of freedom, and $\bar{t}$ and s_t^2 represent the mean and standard deviation of the sampling dates.

For well-constituent pairs with no non-detects, linear regression and the formula above were used to construct each confidence band with 98% overall confidence, corresponding to a lower confidence limit with 99% confidence. When non-detects are present, the same formulas apply but an adjustment must be made for the censored measurements. The strategy adopted for the GE Lancaster facility involved the following steps:

1. Each non-detect was assumed to follow a triangle distribution centered at half the (sample-specific) reporting limit, and with limits extending from zero to the reporting limit. Then an imputation for each non-detect was randomly drawn from this distribution;
2. The combined set of detected values and imputed non-detects were used to estimate a linear regression trend line and associated confidence band with 98% statistical confidence;
3. Steps (1) and (2) were repeated 500 times, each time with a different set of random imputations, leading to 500 potentially different trend lines and confidence bands;
4. The 500 sets of trends lines and bands were averaged point-wise (i.e., at each time along a sequence of dates spanning the time range of the data) to compute the final trend and confidence band estimates.

By repeating this sequence of steps many times (500), the uncertainty associated with the non-detects can be reasonably captured within the final CI band estimate.

The estimated trends and associated confidence bands are presented for each well-constituent pair in **Appendix A**. **Table 2** summarizes the results of the trend analysis, displaying each slope estimate (in units of ug/L per year), the p-value of each slope, whether the trend is significantly increasing over time (note: FALSE indicates the trend was stable or decreasing), whether it is significantly decreasing over time, and cases where the confidence band exceeded the MCL at the most recent sampling event (Exceed.MCL = TRUE). Note also that high p-values (i.e., $p > 0.05$) are associated with non-significant trends (neither increasing or decreasing, i.e., 'stable').

Due to the large range in observed concentration values across well locations, the plots in **Appendix A** are displayed on a log scale. The scaling causes some of the trend estimates to appear curved when in fact linear trends were estimated in every case.

Table 2: Trend Analysis Summary

COC	Well	MCL	Slope	Units	P-value	Incr.Trend	Decr.Trend	Exceed.MCL
DCE12C	10D	70	-2.62	ug/L/yr	0.026	FALSE	TRUE	NA
DCE12C	11S	70	2.95	ug/L/yr	0.405	FALSE	FALSE	NA
DCE12C	12D	70	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
DCE12C	14	70	6.39	ug/L/yr	0.213	FALSE	FALSE	TRUE
DCE12C	15	70	0.0158	ug/L/yr	0.101	FALSE	FALSE	NA
DCE12C	18	70	17.3	ug/L/yr	0.000	TRUE	FALSE	TRUE
DCE12C	5	70	-407	ug/L/yr	0.002	FALSE	TRUE	NA
DCE12C	6	70	-1.69	ug/L/yr	0.129	FALSE	FALSE	NA
DCE12C	7D	70	-0.00899	ug/L/yr	0.915	FALSE	FALSE	NA
DCE12C	AW-3	70	-0.00356	ug/L/yr	0.841	FALSE	FALSE	NA
DCE12C	AW-4	70	-5.22	ug/L/yr	0.000	FALSE	TRUE	NA
DCE12C	GW-9001	70	-103	ug/L/yr	0.000	FALSE	TRUE	NA
DCE12C	GW-9004	70	-10.1	ug/L/yr	0.030	FALSE	TRUE	TRUE
DCE12C	GW-9006	70	5.33	ug/L/yr	0.008	TRUE	FALSE	TRUE
DCE12C	GW-9007	70	0.0273	ug/L/yr	0.278	FALSE	FALSE	NA
DCE12C	GW-9008	70	4.36	ug/L/yr	0.286	FALSE	FALSE	TRUE
DCE12C	GW-9020	70	-15.1	ug/L/yr	0.588	FALSE	FALSE	TRUE
DCE12C	SPRING-1	70	0.374	ug/L/yr	0.050	TRUE	FALSE	NA
PCE	10D	5	0.0297	ug/L/yr	0.096	FALSE	FALSE	NA
PCE	11S	5	0.0313	ug/L/yr	0.266	FALSE	FALSE	NA
PCE	12D	5	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
PCE	14	5	0.0308	ug/L/yr	0.000	TRUE	FALSE	NA
PCE	15	5	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
PCE	18	5	-0.608	ug/L/yr	0.080	FALSE	FALSE	TRUE
PCE	5	5	-1.37	ug/L/yr	0.000	FALSE	TRUE	NA
PCE	6	5	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
PCE	7D	5	0.0644	ug/L/yr	0.099	FALSE	FALSE	NA
PCE	AW-3	5	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
PCE	AW-4	5	-0.0095	ug/L/yr	0.252	FALSE	FALSE	NA
PCE	GW-9001	5	-0.212	ug/L/yr	0.032	FALSE	TRUE	NA
PCE	GW-9004	5	-0.039	ug/L/yr	0.214	FALSE	FALSE	NA
PCE	GW-9006	5	-0.9	ug/L/yr	0.067	FALSE	FALSE	TRUE
PCE	GW-9007	5	0.0273	ug/L/yr	0.278	FALSE	FALSE	NA
PCE	GW-9008	5	0.0206	ug/L/yr	0.003	TRUE	FALSE	NA
PCE	GW-9020	5	-0.00378	ug/L/yr	0.649	FALSE	FALSE	NA
PCE	SPRING-1	5	-0.00979	ug/L/yr	0.609	FALSE	FALSE	NA
TCE	10D	5	-0.0233	ug/L/yr	0.625	FALSE	FALSE	NA
TCE	11S	5	0.0241	ug/L/yr	0.066	FALSE	FALSE	NA
TCE	12D	5	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
TCE	14	5	-0.302	ug/L/yr	0.073	FALSE	FALSE	NA
TCE	15	5	0.0201	ug/L/yr	0.069	FALSE	FALSE	NA
TCE	18	5	5.13	ug/L/yr	0.223	FALSE	FALSE	TRUE
TCE	5	5	-4.48	ug/L/yr	0.045	FALSE	TRUE	NA
TCE	6	5	0.0649	ug/L/yr	0.059	FALSE	FALSE	NA
TCE	7D	5	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
TCE	AW-3	5	0.0201	ug/L/yr	0.068	FALSE	FALSE	NA
TCE	AW-4	5	-8.51	ug/L/yr	0.000	FALSE	TRUE	NA
TCE	GW-9001	5	-152	ug/L/yr	0.000	FALSE	TRUE	TRUE
TCE	GW-9004	5	-7.12	ug/L/yr	0.000	FALSE	TRUE	TRUE
TCE	GW-9006	5	-47.7	ug/L/yr	0.001	FALSE	TRUE	NA
TCE	GW-9007	5	0.0174	ug/L/yr	0.123	FALSE	FALSE	NA
TCE	GW-9008	5	-2.61	ug/L/yr	0.083	FALSE	FALSE	TRUE

Table 2: Trend Analysis Summary *(continued)*

COC	Well	MCL	Slope	Units	P-value	Incr.Trend	Decr.Trend	Exceed.MCL
TCE	GW-9020	5	-48.9	ug/L/yr	0.018	FALSE	TRUE	NA
TCE	SPRING-1	5	-2.46	ug/L/yr	0.235	FALSE	FALSE	TRUE
TVOC	10D	NA	-2.8	ug/L/yr	0.026	FALSE	TRUE	NA
TVOC	11S	NA	3.82	ug/L/yr	0.417	FALSE	FALSE	NA
TVOC	12D	NA	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
TVOC	14	NA	6.26	ug/L/yr	0.297	FALSE	FALSE	NA
TVOC	15	NA	-0.0187	ug/L/yr	0.413	FALSE	FALSE	NA
TVOC	18	NA	22.2	ug/L/yr	0.001	TRUE	FALSE	NA
TVOC	5	NA	-408	ug/L/yr	0.013	FALSE	TRUE	NA
TVOC	6	NA	-1.93	ug/L/yr	0.151	FALSE	FALSE	NA
TVOC	7D	NA	0.138	ug/L/yr	0.462	FALSE	FALSE	NA
TVOC	AW-3	NA	-0.0701	ug/L/yr	0.155	FALSE	FALSE	NA
TVOC	AW-4	NA	-14.4	ug/L/yr	0.000	FALSE	TRUE	NA
TVOC	GW-9001	NA	-264	ug/L/yr	0.000	FALSE	TRUE	NA
TVOC	GW-9004	NA	-9.59	ug/L/yr	0.114	FALSE	FALSE	NA
TVOC	GW-9006	NA	-55.3	ug/L/yr	0.000	FALSE	TRUE	NA
TVOC	GW-9007	NA	0.0174	ug/L/yr	0.123	FALSE	FALSE	NA
TVOC	GW-9008	NA	3.59	ug/L/yr	0.545	FALSE	FALSE	NA
TVOC	GW-9020	NA	-60.9	ug/L/yr	0.158	FALSE	FALSE	NA
TVOC	SPRING-1	NA	-1.92	ug/L/yr	0.390	FALSE	FALSE	NA
VC	10D	2	-0.139	ug/L/yr	0.023	FALSE	TRUE	NA
VC	11S	2	0.853	ug/L/yr	0.462	FALSE	FALSE	NA
VC	12D	2	0.027	ug/L/yr	0.279	FALSE	FALSE	NA
VC	14	2	0.457	ug/L/yr	0.393	FALSE	FALSE	TRUE
VC	15	2	0.0113	ug/L/yr	0.304	FALSE	FALSE	NA
VC	18	2	0.0131	ug/L/yr	0.854	FALSE	FALSE	NA
VC	5	2	2.92	ug/L/yr	0.956	FALSE	FALSE	TRUE
VC	6	2	-0.285	ug/L/yr	0.143	FALSE	FALSE	NA
VC	7D	2	0.0902	ug/L/yr	0.202	FALSE	FALSE	NA
VC	AW-3	2	-0.0252	ug/L/yr	0.274	FALSE	FALSE	NA
VC	AW-4	2	-0.675	ug/L/yr	0.000	FALSE	TRUE	NA
VC	GW-9001	2	-0.024	ug/L/yr	0.967	FALSE	FALSE	TRUE
VC	GW-9004	2	-0.683	ug/L/yr	0.036	FALSE	TRUE	TRUE
VC	GW-9006	2	-0.00991	ug/L/yr	0.674	FALSE	FALSE	NA
VC	GW-9007	2	0.0273	ug/L/yr	0.278	FALSE	FALSE	NA
VC	GW-9008	2	-0.12	ug/L/yr	0.944	FALSE	FALSE	TRUE
VC	GW-9020	2	1.32	ug/L/yr	0.796	FALSE	FALSE	NA
VC	SPRING-1	2	0.0306	ug/L/yr	0.068	FALSE	FALSE	NA

1.2 Trend Stability

After a remedial action has been completed, there may or may not be residual groundwater contamination. If no further action is warranted, it is important to monitor the groundwater plume and to ensure that groundwater quality does not deteriorate further. Statistically, this idea can translate into monitoring for trends and assessing whether those trends are increasing over time, decreasing, or stable. Ostensibly, decreasing or stable trends imply that groundwater quality is either improving or not getting any worse. If each well-constituent pair has a stable or decreasing trend, groundwater conditions at the site might be classified as stable to improving.

Ideally, if the current status of a groundwater plume is stable, one would like to project the same status for future years, based on the trend analysis. However, extrapolation of any trend beyond the

range of available data may be highly uncertain. Further, the estimated rate of change in groundwater concentrations may be less certain when there is insufficient data upon which to construct the trend estimate or when there is substantial variability in the data collected to date. This is why confidence bands around trend lines are so useful.

Another thing to consider is the statistical power of the trend tests. Statistical power in trend testing is the probability that the test will identify a real trend when it exists, rather than 'miss it' due to insufficient data or high data variation. A trend test with high power (e.g., 80%, 90%) is very likely to signal an actual, increasing trend, *when it exists*. This last qualification can be a source of confusion when it comes to statistical power. Power in linear trend testing is tied to the slope of the trend and its magnitude. If the trend is 'flat' (i.e., zero slope), the trend test *should not* flag a trend, otherwise one would get a false positive. By similar logic, the power of a trend test to detect a *non-existent* trend should be quite low. Statistical power will only be high if the true slope has a sufficiently positive magnitude. Further, there is also a 'gray area' where the slope may be non-zero, but small enough that the trend test power is not very large. Such cases may occasionally be flagged as significant trends, but not consistently.

At the GE Lancaster site, statistical power was estimated in the following manner. First, the trends were estimated as described in **Section 1.1** above. Then, for each trend, the power associated with a test for positive slope was computed, based on the sample size, data variation, and the frequency and pattern of non-detects. Since power varies with slope magnitude, **Table 3** displays three different cases. The first case is the power of the nominal slope estimate, i.e., the estimated trend magnitude. When this slope is close to zero or negative, the statistical power is expected to be low. Such results are evident in **Table 3** for cases where the trend was not statistically significant.

In addition, however, a computation was made of the projected *slopes* associated with either 80% power or 90% power. These projected values indicate what positive slope magnitudes the trend test *would have identified* with high probability, should a real trend of that magnitude actually exist. The purpose behind these power estimates is to provide assurance that an increasing trend of importance would not likely have been missed, and that trends with non-significant results may be classified as currently stable with high statistical assurance.

Table 3: Power Analysis Summary

COC	Well	N	ND.Pct	Slope	Power	80%.Power	90%.Power
DCE12C	10D	24	0	-5.05	0.4	12.20	14.40
DCE12C	11S	10	0	2.95	20.1	9.13	10.80
DCE12C	12D	11	100	0	NA	NA	NA
DCE12C	14	26	0	6.39	34.4	12.80	15.00
DCE12C	15	11	91	0.016	21.1	0.05	0.06
DCE12C	18	22	0	17.3	100.0	5.98	7.04
DCE12C	5	25	0	-403	0.0	392.00	462.00
DCE12C	6	11	45	-1.69	0.1	2.74	3.22
DCE12C	7D	11	45	-0.00941	4.0	0.22	0.26
DCE12C	AW-3	11	82	-0.00352	3.5	0.06	0.07
DCE12C	AW-4	24	0	-5.22	0.0	2.68	3.15
DCE12C	GW-9001	33	0	-103	0.0	46.60	54.80
DCE12C	GW-9004	23	0	-3.83	1.1	14.70	17.30
DCE12C	GW-9006	21	0	5.33	88.3	4.68	5.50
DCE12C	GW-9007	12	100	0	NA	NA	NA
DCE12C	GW-9008	22	0	4.36	27.9	10.20	12.00

Table 3: Power Analysis Summary *(continued)*

COC	Well	N	ND.Pct	Slope	Power	80%.Power	90%.Power
DCE12C	GW-9020	7	0	-15.1	1.6	75.50	89.30
DCE12C	SPRING-1	23	0	0.524	59.6	0.69	0.81
PCE	10D	24	100	0	NA	NA	NA
PCE	11S	10	100	0	NA	NA	NA
PCE	12D	11	100	0	NA	NA	NA
PCE	14	24	96	-0.0627	2.5	0.50	0.58
PCE	15	11	100	0	NA	NA	NA
PCE	18	22	5	-0.634	0.2	1.21	1.43
PCE	5	25	100	0	NA	NA	NA
PCE	6	11	100	0	NA	NA	NA
PCE	7D	11	91	0.0638	61.7	0.08	0.10
PCE	AW-3	11	100	0	NA	NA	NA
PCE	AW-4	23	70	-0.00927	0.9	0.03	0.04
PCE	GW-9001	32	53	-0.21	0.0	0.20	0.24
PCE	GW-9004	23	100	0	NA	NA	NA
PCE	GW-9006	21	0	-0.9	0.0	1.20	1.41
PCE	GW-9007	12	100	0	NA	NA	NA
PCE	GW-9008	22	95	0.153	25.5	0.39	0.45
PCE	GW-9020	7	100	0	NA	NA	NA
PCE	SPRING-1	23	17	-0.00984	1.6	0.05	0.06
TCE	10D	24	38	-0.0235	1.7	0.12	0.14
TCE	11S	10	90	0.0232	27.9	0.06	0.07
TCE	12D	11	100	0	NA	NA	NA
TCE	14	26	4	-1.2	1.4	5.31	6.24
TCE	15	11	91	0.0195	26.6	0.05	0.06
TCE	18	22	0	4.57	13.1	21.70	25.50
TCE	5	25	4	-4.48	0.0	5.39	6.35
TCE	6	11	55	0.0643	65.0	0.08	0.09
TCE	7D	11	100	0	NA	NA	NA
TCE	AW-3	11	91	0.0195	26.6	0.05	0.06
TCE	AW-4	24	0	-8.51	0.0	5.35	6.30
TCE	GW-9001	32	0	-152	0.0	96.50	114.00
TCE	GW-9004	23	0	-7.12	0.0	2.17	2.55
TCE	GW-9006	21	0	-47.7	0.0	30.40	35.80
TCE	GW-9007	12	92	0.0184	23.5	0.05	0.06
TCE	GW-9008	22	14	0.202	5.6	8.89	10.50
TCE	GW-9020	7	0	-48.9	0.0	41.40	48.90
TCE	SPRING-1	23	0	-2.46	0.2	5.17	6.09
TVOC	10D	24	0	-6.97	0.6	20.60	24.30
TVOC	11S	10	0	3.82	19.5	12.20	14.40
TVOC	12D	11	100	0	NA	NA	NA
TVOC	14	26	0	6.26	27.1	15.00	17.70
TVOC	15	11	82	-0.019	1.0	0.07	0.09
TVOC	18	22	0	21.6	63.9	26.80	31.60

Table 3: Power Analysis Summary *(continued)*

COC	Well	N	ND.Pct	Slope	Power	80%.Power	90%.Power
TVOC	5	25	0	-403	0.0	502.00	591.00
TVOC	6	11	45	-1.93	0.1	3.32	3.91
TVOC	7D	11	45	0.138	17.5	0.49	0.57
TVOC	AW-3	11	64	-0.0704	0.1	0.13	0.15
TVOC	AW-4	24	0	-14.4	0.0	8.19	9.65
TVOC	GW-9001	33	0	-264	0.0	140.00	164.00
TVOC	GW-9004	23	0	-9.59	0.1	15.00	17.60
TVOC	GW-9006	21	0	-43	0.0	33.00	38.80
TVOC	GW-9007	12	92	0.0184	23.5	0.05	0.06
TVOC	GW-9008	22	0	3.59	14.7	15.00	17.70
TVOC	GW-9020	7	0	-60.9	0.1	107.00	126.00
TVOC	SPRING-1	23	0	-1.92	0.6	5.64	6.63
VC	10D	24	17	-1.87	1.4	8.48	9.98
VC	11S	10	20	0.853	17.5	3.01	3.55
VC	12D	11	100	0	NA	NA	NA
VC	14	25	8	1.03	37.2	1.94	2.28
VC	15	11	91	0.0114	13.8	0.05	0.06
VC	18	22	36	0.0739	18.3	0.25	0.29
VC	5	25	0	2.92	5.6	134.00	158.00
VC	6	11	91	-0.285	0.1	0.48	0.57
VC	7D	11	45	0.0898	34.7	0.18	0.21
VC	AW-3	11	73	-0.0251	0.5	0.07	0.08
VC	AW-4	24	12	-0.675	0.0	0.26	0.31
VC	GW-9001	32	12	-0.096	3.7	1.76	2.07
VC	GW-9004	23	0	-0.683	0.0	0.78	0.92
VC	GW-9006	21	43	-0.00957	2.7	0.07	0.08
VC	GW-9007	12	100	0	NA	NA	NA
VC	GW-9008	22	0	-1.28	1.8	6.96	8.20
VC	GW-9020	7	14	1.32	8.0	14.00	16.60
VC	SPRING-1	23	100	0	NA	NA	NA

2 Summary

Only six cases of significantly increasing trends were identified: DCE12C at well locations 18, GW-9006, and SPRING-1, PCE at well locations 14 and GW-9008, and Total VOCs (TVOC) at well location 18. Two of these well-constituent pairs, DCE12C at locations 18 and GW-9006, also had confidence bands exceeding their respective MCLs in 2021. Of note, the two increasing PCE trends were strictly artifacts due to a change to higher reporting limits for non-detects that began around 2015. So these two cases should in reality be counted with the rest of the trend estimates that were either stable or decreasing, as indicated by Incr.Trend = FALSE in **Table 2**, and the fact that a modest positive slope would have been identified with high power were it to exist. More specifically, there were a total of 21 cases with statistically *decreasing* trends. And, regardless of trend direction, there were 18 well-constituent pairs that had confidence bands in excess of the MCL.

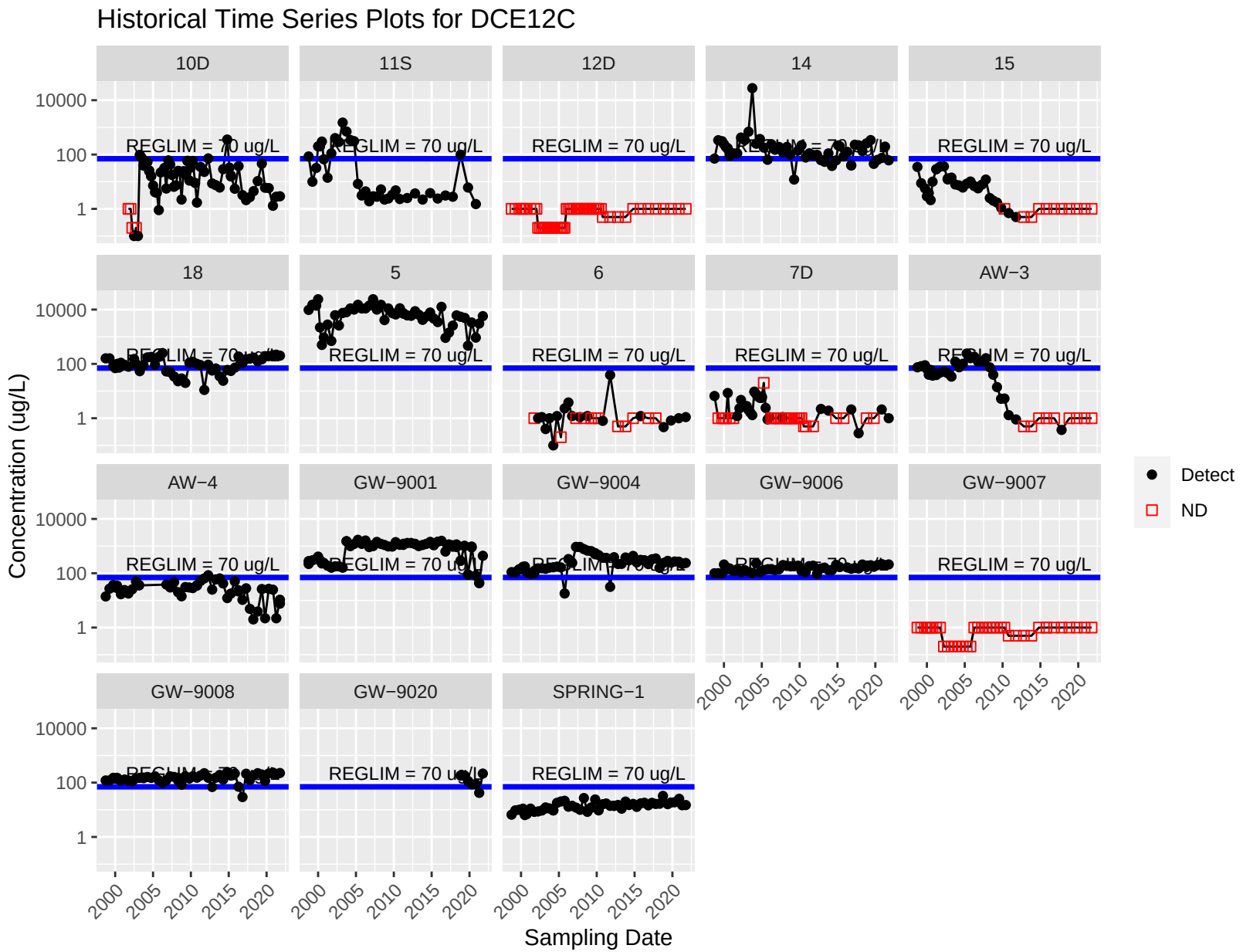
3 References

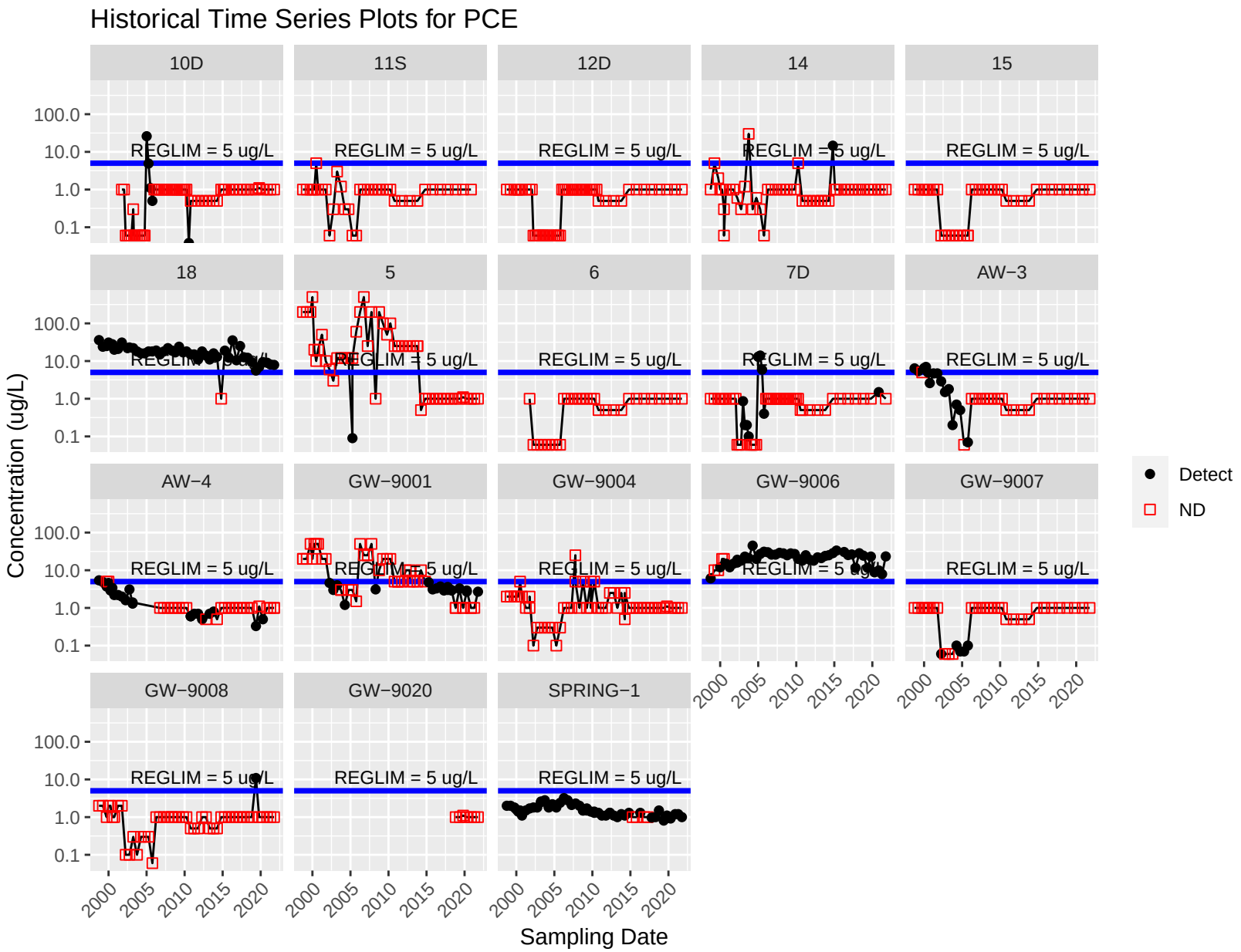
USEPA. 2009. "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance." USEPA: Office of Resource Conservation & Recovery.

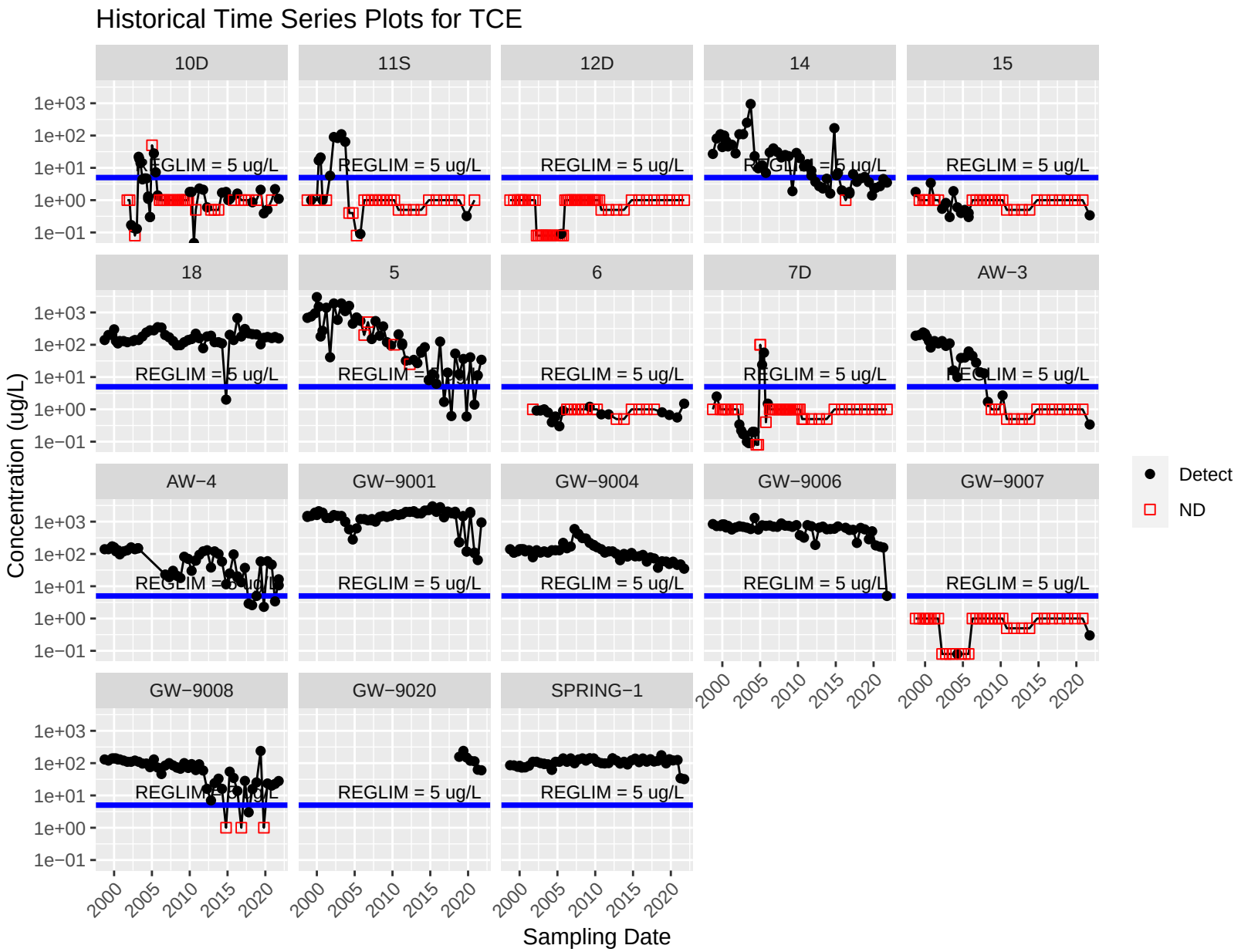
Appendix A: Supporting Graphics

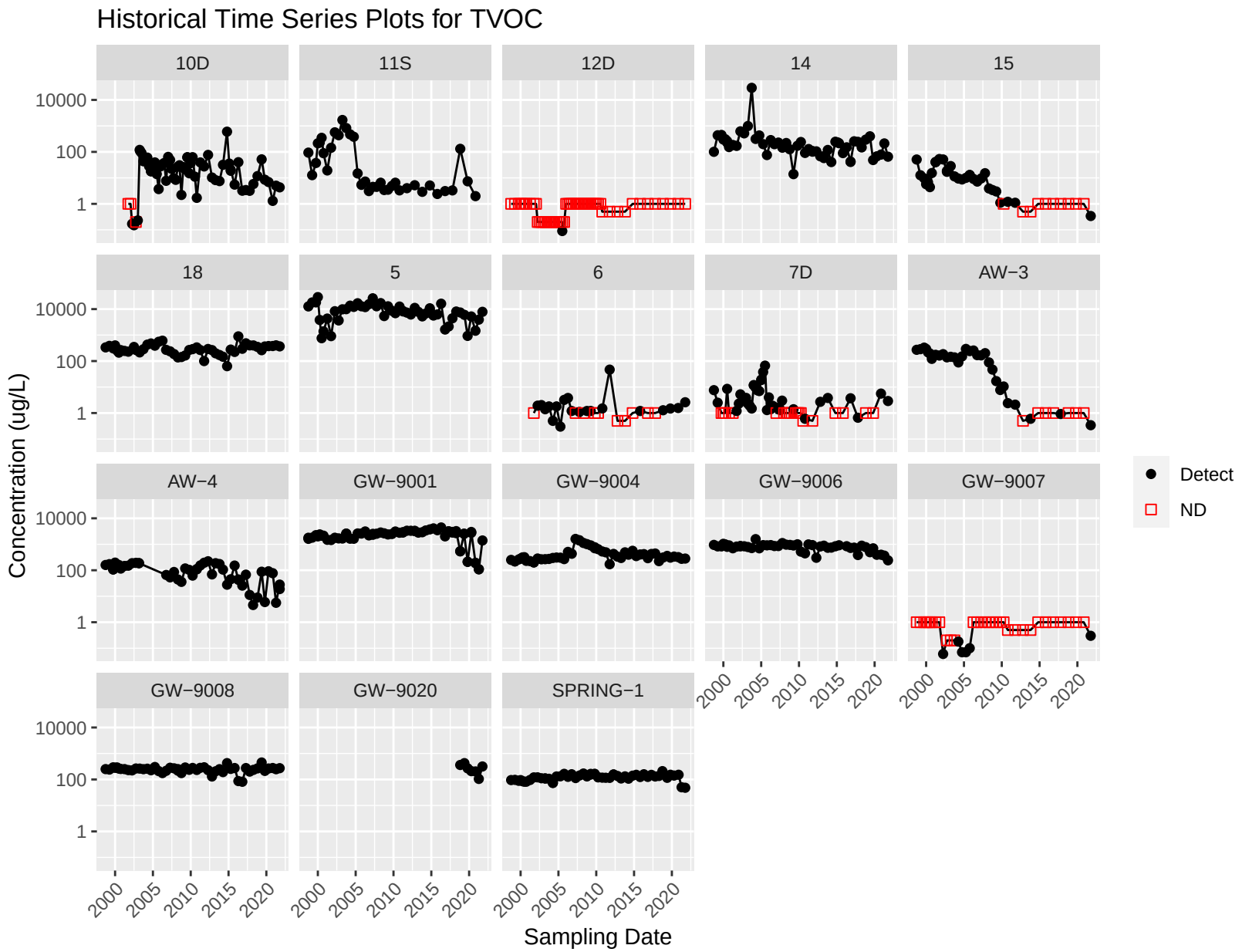
1. Time Series Plots of Each Parameter
2. Estimated Trends and Confidence Bands of Each Parameter

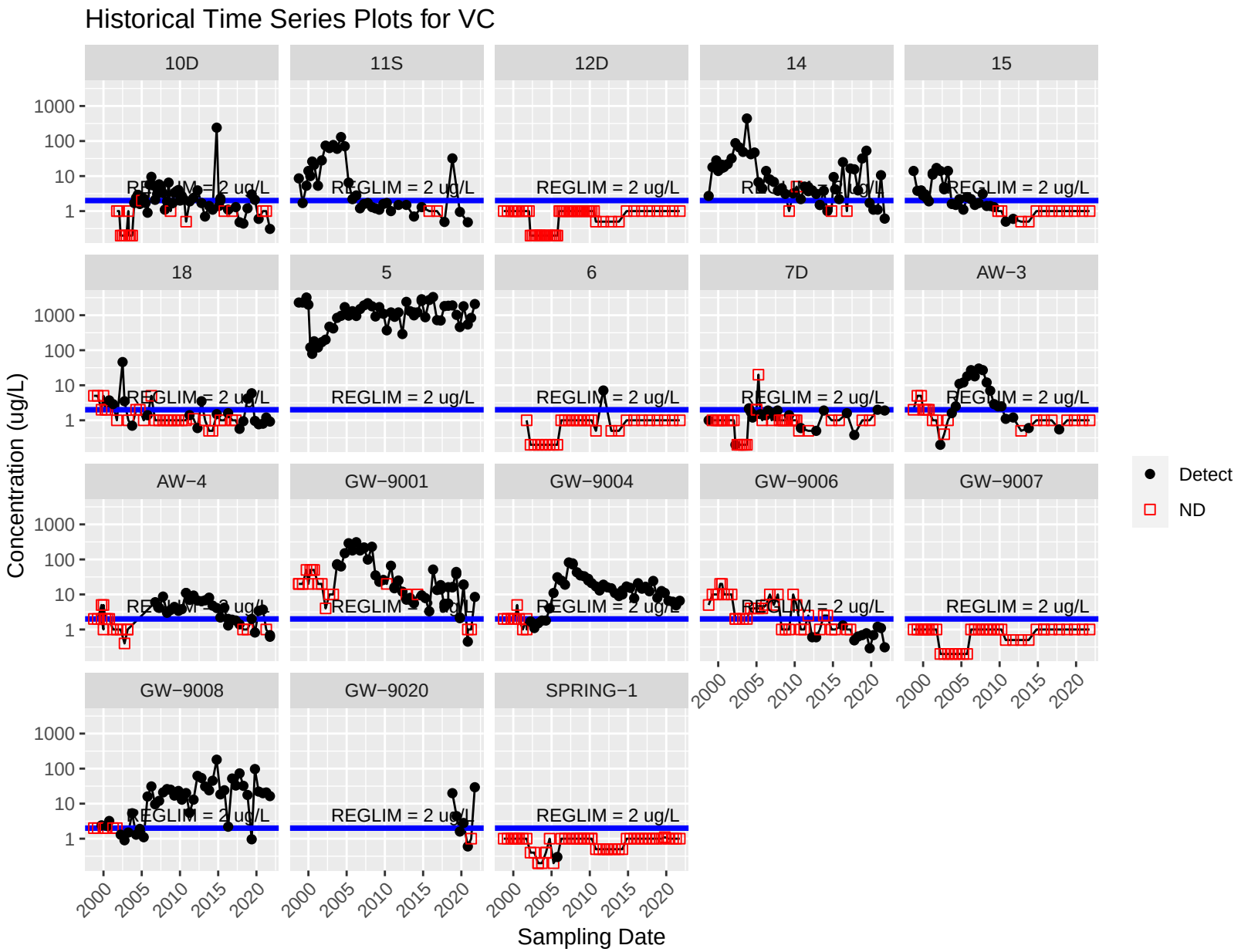
Time Series Plots



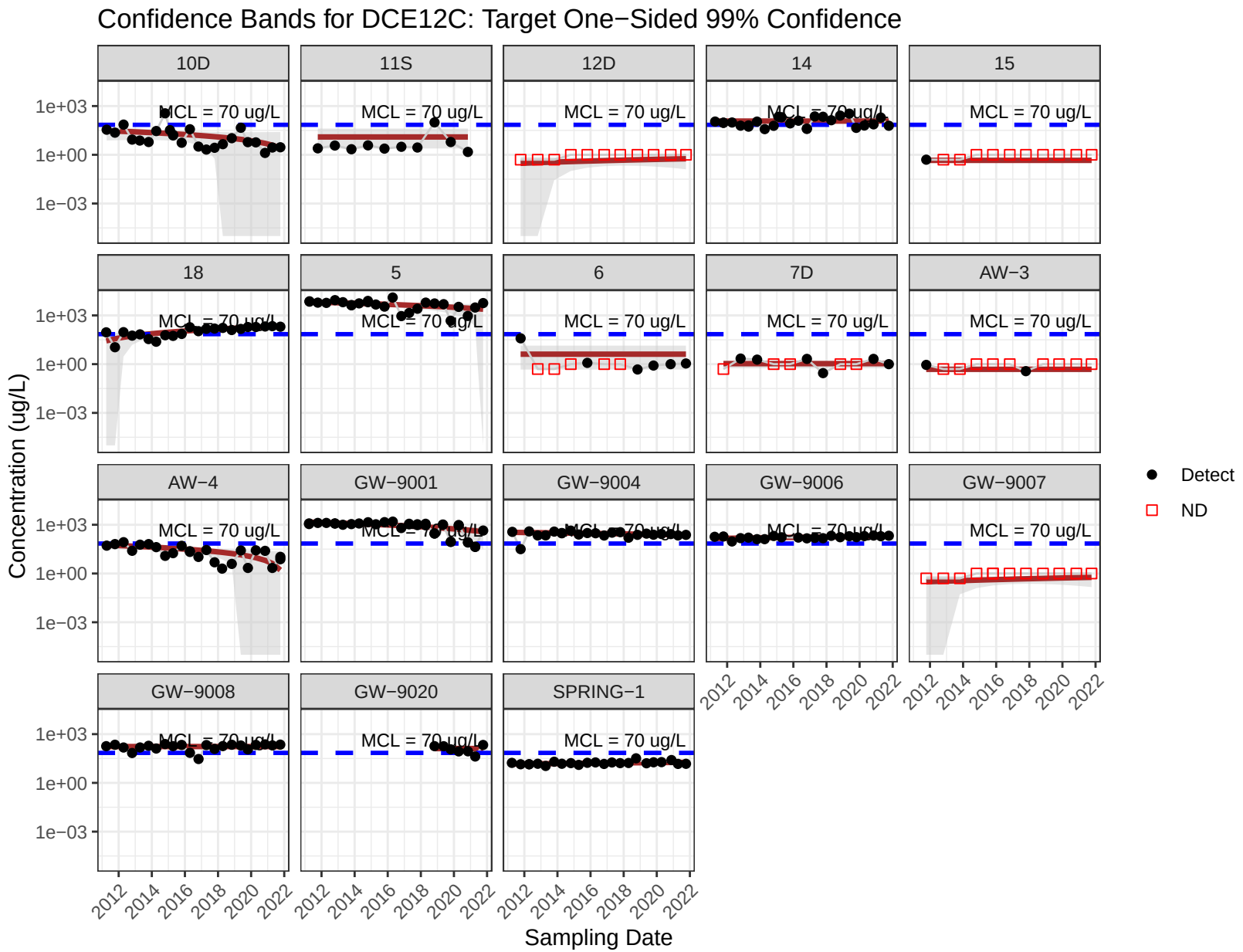

Historical Time Series Plots for PCE
10D
11S
12D
14
15
18
5
6
7D
AW−3
AW−4
GW−9001
GW−9004
GW−9006
GW−9007
GW−9008
GW−9020
SPRING−1
REGLIM = 5 ug/L
100.0
10.0
1.0
0.1
Concentration (ug/L)
2000
2005
2010
2015
2020
Sampling Date
Detect
ND

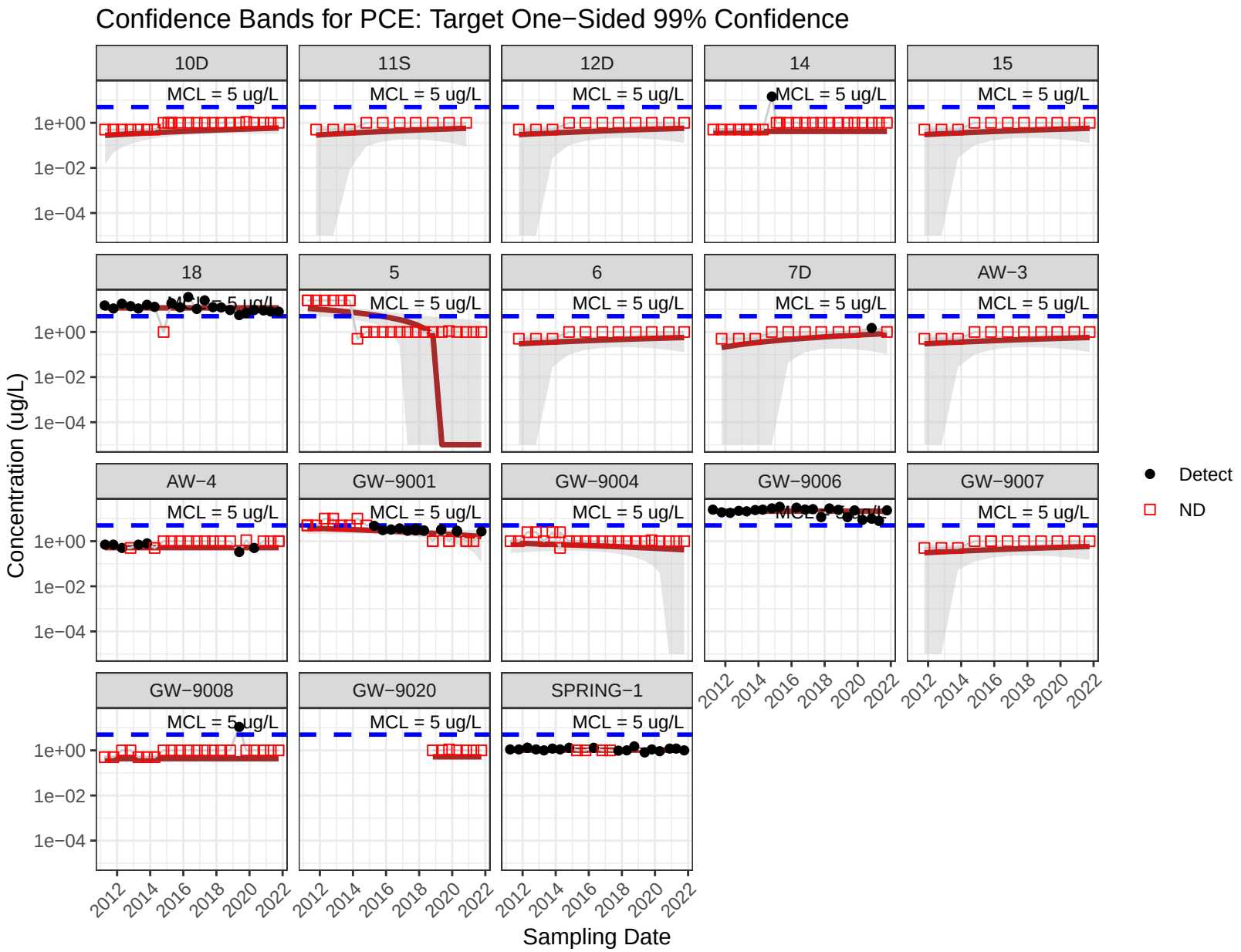

Historical Time Series Plots for TCE
10D
11S
12D
14
15
18
5
6
7D
AW−3
AW−4
GW−9001
GW−9004
GW−9006
GW−9007
GW−9008
GW−9020
SPRING−1
REGLIM = 5 ug/L
Concentration (ug/L)
1e+03
1e+02
1e+01
1e+00
1e−01
2000
2005
2010
2015
2020
Sampling Date
Detect
ND

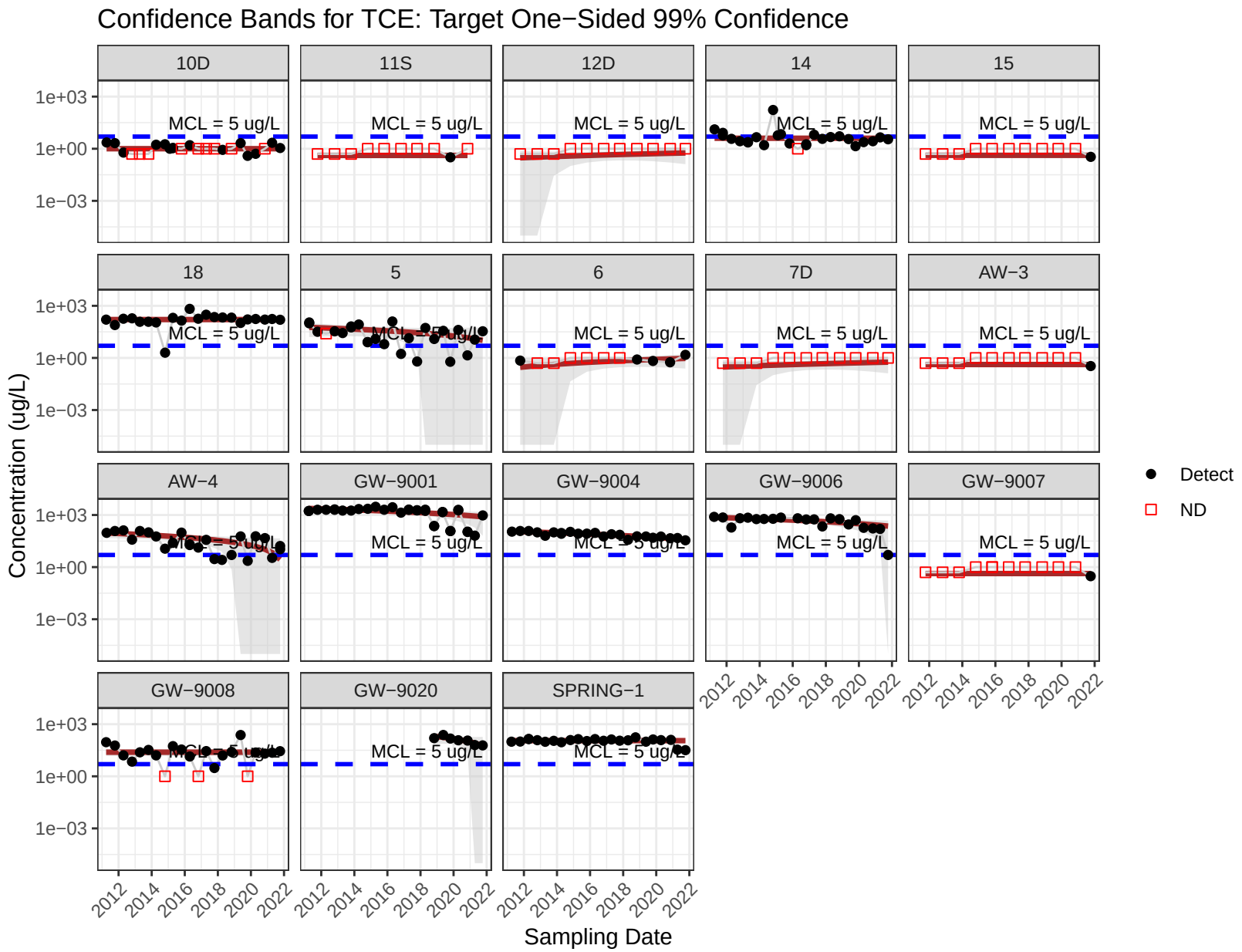

Historical Time Series Plots for TVOC
10D
11S
12D
14
15
18
5
6
7D
AW−3
AW−4
GW−9001
GW−9004
GW−9006
GW−9007
GW−9008
GW−9020
SPRING−1
10000
100
1
Concentration (ug/L)
2000
2005
2010
2015
2020
Sampling Date
Detect
ND

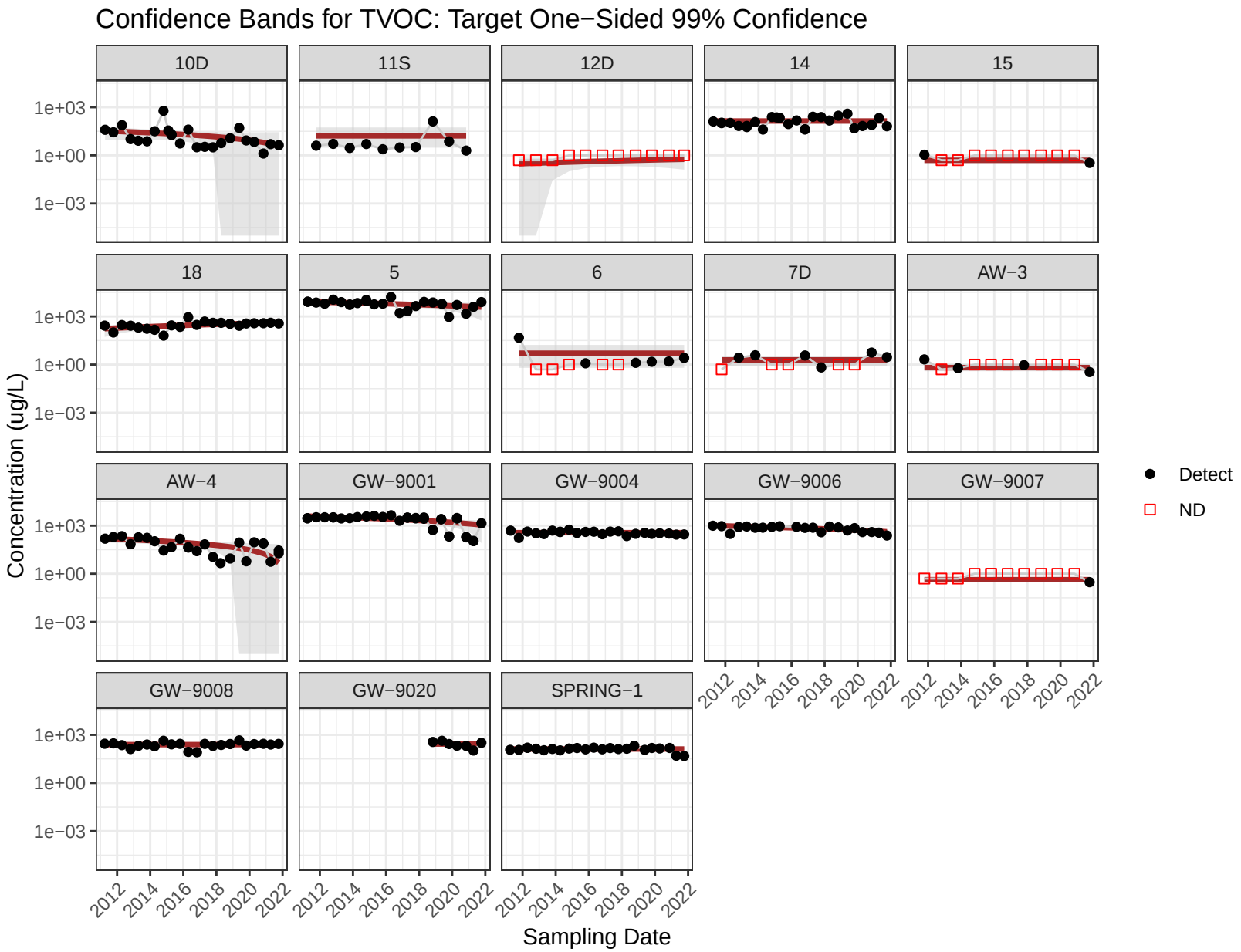

Historical Time Series Plots for VC
10D
11S
12D
14
15
18
5
6
7D
AW−3
AW−4
GW−9001
GW−9004
GW−9006
GW−9007
GW−9008
GW−9020
SPRING−1
REGLIM = 2 ug/L
1000
100
10
1
Concentration (ug/L)
2000
2005
2010
2015
2020
Sampling Date
Detect
ND

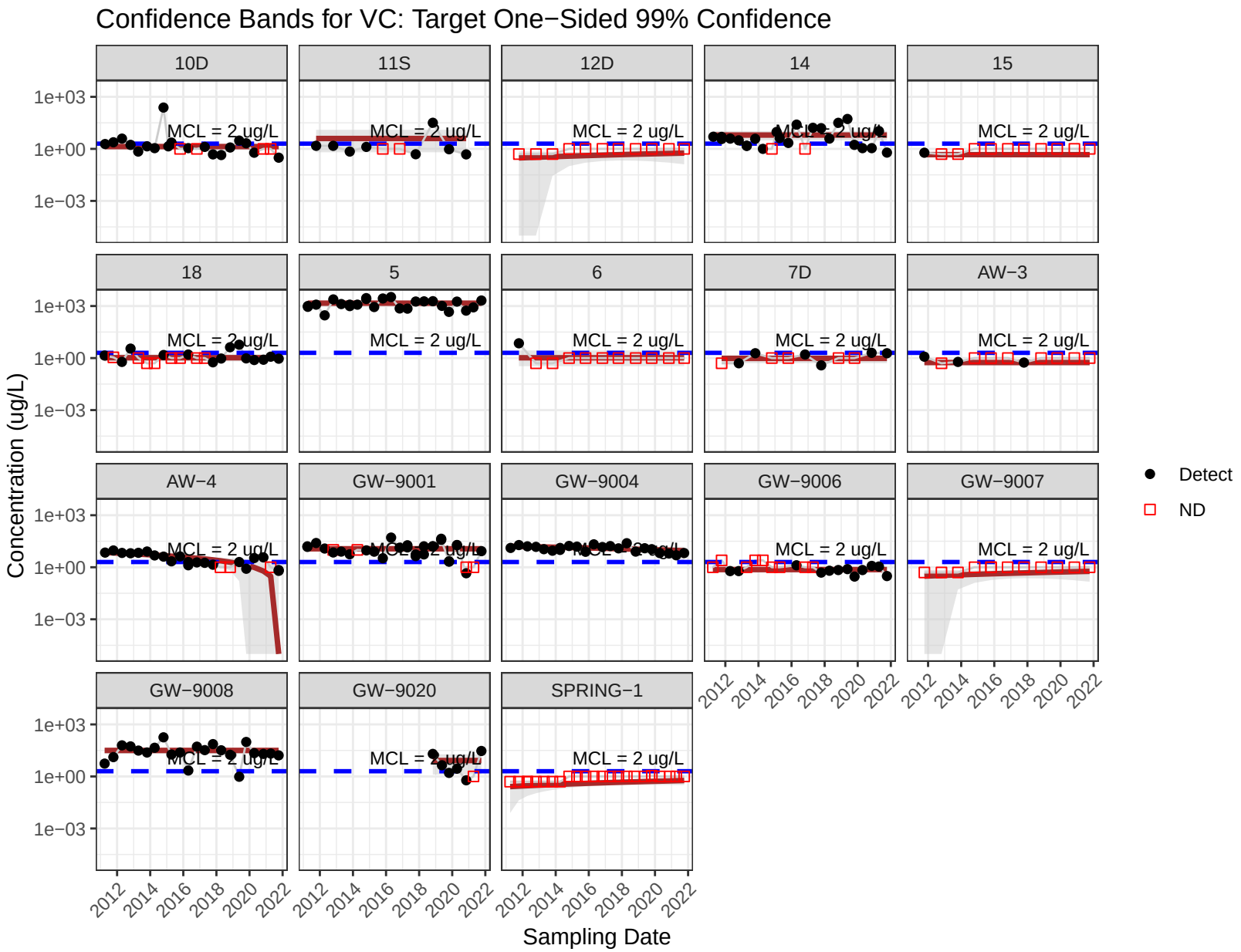
Confidence Band Plots




Confidence Bands for PCE: Target One−Sided 99% Confidence
10D
11S
12D
14
15
18
5
6
7D
AW−3
AW−4
GW−9001
GW−9004
GW−9006
GW−9007
GW−9008
GW−9020
SPRING−1
MCL = 5 ug/L
1e+00
1e−02
1e−04
Concentration (ug/L)
2012
2014
2016
2018
2020
2022
Sampling Date
Detect
ND


Confidence Bands for TCE: Target One−Sided 99% Confidence
10D
11S
12D
14
15
18
5
6
7D
AW−3
AW−4
GW−9001
GW−9004
GW−9006
GW−9007
GW−9008
GW−9020
SPRING−1
MCL = 5 ug/L
1e+03
1e+00
1e−03
Concentration (ug/L)
2012
2014
2016
2018
2020
2022
Sampling Date
Detect
ND


Confidence Bands for TVOC: Target One−Sided 99% Confidence
10D
11S
12D
14
15
18
5
6
7D
AW−3
AW−4
GW−9001
GW−9004
GW−9006
GW−9007
GW−9008
GW−9020
SPRING−1
1e+03
1e+00
1e−03
2012
2014
2016
2018
2020
2022
Concentration (ug/L)
Sampling Date
Detect
ND


Confidence Bands for VC: Target One−Sided 99% Confidence
10D
11S
12D
14
15
18
5
6
7D
AW−3
AW−4
GW−9001
GW−9004
GW−9006
GW−9007
GW−9008
GW−9020
SPRING−1
MCL = 2 ug/L
1e+03
1e+00
1e−03
Concentration (ug/L)
2012
2014
2016
2018
2020
2022
Sampling Date
Detect
ND