

Horicon, WI NATTS Network Assessment Review

- Established 2009 (Relocated from Mayville, WI): Carbonyls, Chromium VI, PAHs, PM₁₀ Metals, and VOCs
 - Chromium VI ended in in 2013
 - Site ended NATTS full operations in 2022
- For the NATTS Network Assessment (2009-2022):
 - 15 of 17 Method Quality Objective (MQO) Core HAPs were included in the national trends
 - Carbon tetrachloride and Tetrachloroethylene: Reported MDL to NATTS Target MDL ratio was greater than 2.0 in 2020.
 - 187 of 221 pollutant datasets were suitable for trends analysis
 - Annual Average and 3-Year Rolling Average Concentrations were decreasing for nickel (PM10); most pollutants were exhibiting flat trends.
 - 100% Reporting of Datasets
- Method Quality Objectives (MQO): 2009-2022
 - Completeness: Met 85% completeness in 221 of 221 pollutant datasets
 - Method Detection Limits: Met MDL Target Ratio of 1.00 in 185 of 238 pollutant datasets
 - Bias: Met ±25% for 182 of 206 pollutant datasets
 - Overall Method Precision: Met ≤15% CV for 83 of 119 pollutant datasets
 - Analytical Method Precision: Met ≤15% CV for 57 of 163 pollutant datasets
- Analytical Laboratories for 2022

VOC	Carbonyl	PM ₁₀ Metals	PAHs
ERG	WSLH	WSLH	WSLH

- Equipment Year Deployed

Equipment Type	VOC	Carbonyl	PM ₁₀ Metals	PAHs
Sampler	2009	1999	2015	2017
Analytical	2019	2012	2015	2004
Preconcentrator	2019	NA	NA	NA
Standards Preparation	1985	NA	NA	NA
Canister Cleaning	2010	NA	NA	NA
Extraction	NA	NA	2016	2000

National Summary: NATTS data were collected at 27 locations across the United States, with sites beginning in 2003 or later (Figure 1) for 20 core HAPs. Over 670,000 concentrations (primary, secondary, and replicate) were generated and analyzed for this assessment. Pollutant datasets were scored to assess whether they were suitable for trends analysis. Each pollutant dataset was evaluated against four MQOs: Completeness; Sensitivity; Bias; and Precision. Datasets that were suitable (A- or B-rated) for six consecutive years were used for national trends analysis (Table 1).

National trends were determined by comparing the most recent 3-year blocked averages (e.g., 2017-2019 vs. 2020-2022) to determine if the NATTS Trends DQO was being met:

To be able to detect a 15 percent difference (trend) between the annual mean concentrations of successive 3-year periods within acceptable levels of decision error.

Of the 20 core HAPs, 17 were assessed for the NATTS Trends DQO. Due to sampling and analytical issues, acrolein was not considered for trends analysis (Table 2). Additionally, hexavalent chromium was discontinued as a required pollutant and ethylene oxide became an official MQO pollutant beginning in 2021. The assessment showed that across the network, 11 of those 17 pollutants were decreasing between the 3-year blocks, while four of those pollutants were increasing between the 3-year blocks. Two pollutants did not exhibit a noticeable trend.

Figure 1. NATTS Site and Year Established

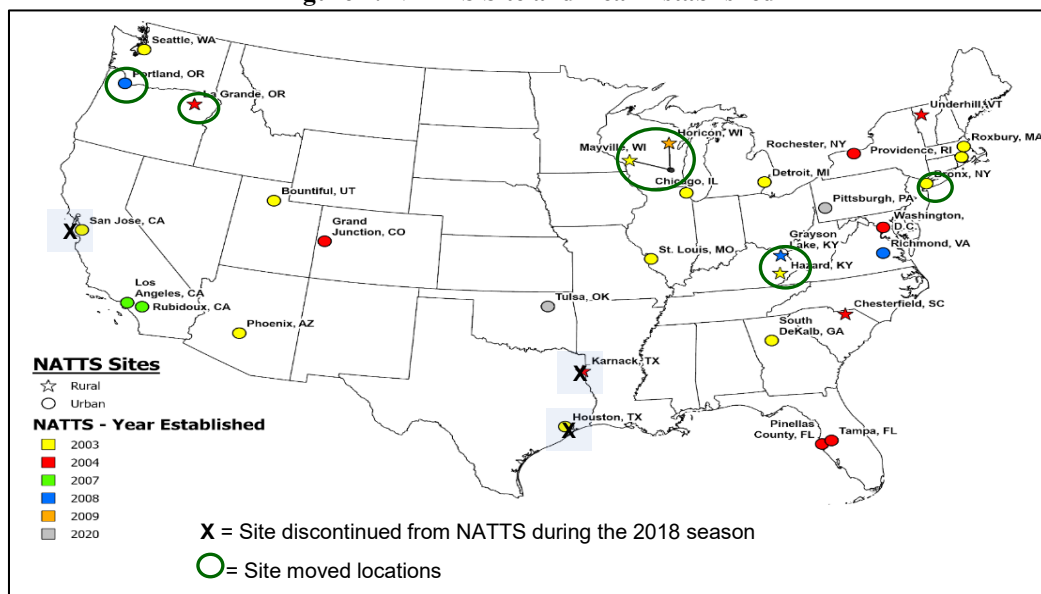


Table 1. NATTS Network Assessment: Count and Percentage of Suitable Datasets by Pollutant Group

Pollutant Group	A-rated		B-rated		Does Not Meet	
	#	%	#	%	#	%
VOCs	1,968	58%	864	25%	572	17%
Carbonyls	668	68%	231	24%	77	8%
PM ₁₀ Metals	1,906	66%	775	27%	217	7%
PAHs	571	77%	144	19%	29	4%
Total = 8,704	5,113	64%	2,014	25%	895	11%

Table 2. Three-Year Block Averages for National Trends

Pollutant ^{a,b,c}	Units	# Sites	Block 1	Block 2	% Difference
Acetaldehyde	µg/m ³	16	1.48	1.34	-9.2%
Arsenic (PM ₁₀)	ng/m ³	18	0.68	0.64	-6.6%
Benzene	µg/m ³	16	0.529	0.525	-0.8%
Benzo(a)pyrene	ng/m ³	18	0.086	0.072	-16.6%
Beryllium (PM ₁₀)	ng/m ³	18	0.008	0.010	15.0%
Butadiene, 1,3-	µg/m ³	15	0.057	0.054	-5.1%
Cadmium (PM ₁₀)	ng/m ³	20	0.087	0.090	3.7%
Carbon Tetrachloride	µg/m ³	15	0.53	0.50	-5.3%
Chloroform	µg/m ³	16	0.173	0.165	-4.8%
Formaldehyde	µg/m ³	15	2.809	2.482	-11.7%
Lead (PM ₁₀)	ng/m ³	20	2.44	2.43	-0.5%
Manganese (PM ₁₀)	ng/m ³	20	6.69	7.31	9.2%
Naphthalene	ng/m ³	17	42.00	35.10	-16.4%
Nickel (PM ₁₀)	ng/m ³	19	0.87	0.83	-3.7%
Tetrachloroethylene	µg/m ³	15	0.12	0.12	1.5%
Trichloroethylene	µg/m ³	14	0.019	0.022	16.3%
Vinyl Chloride	µg/m ³	16	0.004	0.001	-69.0%

^a Acrolein was not assessed due to sampling and analytical issues

^b Sampling for ethylene oxide formally began in 2021 and is not assessed

^c Hexavalent chromium (not assessed) was discontinued in 2013

NATTS Monitoring Site Report: Horicon, WI

Site Information

Region	5
NATTS Site Type	Rural
County	Dodge
AQS Site Code	55-027-0001
NATTS Operating Agency	WI Dept. of Natural Resources
Latitude	43.466111
Longitude	-88.621111
AQS Land Use	Agricultural
AQS Location Setting	Rural
County Population (2023)	88,231

Figure 2. NATTS Site Location



Pollutant Datasets Evaluation: Suitable for Trends (Y=yes; Y(T)=yes, and used for DQO Trends; N=No; "--"=not rated)

Final Pollutant Name	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Acetaldehyde	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Arsenic (PM ₁₀)	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Benzene	--	N(a)	N(a)	N(a)	N(a)	N(a)	N(a,b)	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Benzo(a)pyrene	--	Y	Y	N(b,c)	Y	N(b,c)	Y	N(b,c)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Beryllium (PM ₁₀)	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Butadiene, 1,3-	--	N(c)	N(c)	N	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Cadmium (PM ₁₀)	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Carbon tetrachloride	--	N(a)	N(a)	N(a,b)	N(a)	N(a,b)	N(a,b)	N(b,c)	Y	Y	Y	N(a)	Y	Y
Chloroform	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Formaldehyde	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Lead (PM ₁₀)	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Manganese (PM ₁₀)	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Naphthalene	--	Y	Y	Y	Y	Y	Y	N(b,c)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Nickel (PM ₁₀)	--	Y	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Tetrachloroethylene	--	N(a)	N(a)	N(a,b)	N(a,b)	N(a,b)	N(a,b)	Y	Y	Y	Y	N(a)	Y	Y
Trichloroethylene	--	Y	Y	Y	N(a,b)	N(a,b)	N(a,b)	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Vinyl chloride	--	N(a)	N(c)	N	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)

^a: Reported MDL to NATTS Target Ratio greater than 2.0

^b: Analytical precision data (required since 2012) was not reported to EPA or AQS for this pollutant.

^c: Bias % Difference was outside ± 35%.

Table 3. NATTS Network Assessment Data (2003-2022) - National Distribution Statistics By Type^a

Analyte	Units	Site Type	# Data Records	% Detections	Arithmetic Mean ^b	Percentile Value ^c						
						5th	10th	25th	50th	75th	90th	95th
Acetaldehyde	µg/m ³	Urban	22,000	100%	1.73 ± 0.02	0.50	0.65	0.95	1.42	2.15	3.19	3.96
	µg/m ³	Rural	6,392	100%	1.17 ± 0.03	0.36	0.45	0.65	0.92	1.35	1.98	2.67
	µg/m ³	All Sites	28,392	100%	1.61 ± 0.02	0.45	0.58	0.85	1.29	1.97	2.99	3.79
Arsenic (PM ₁₀)	ng/m ³	Urban	21,944	95%	0.87 ± 0.03	0.03	0.16	0.32	0.56	0.96	1.65	2.37
	ng/m ³	Rural	6,385	96%	0.49 ± 0.02	0.03	0.08	0.16	0.35	0.58	0.93	1.30
	ng/m ³	All Sites	28,329	96%	0.78 ± 0.02	0.03	0.13	0.27	0.51	0.87	1.51	2.16
Benzene	µg/m ³	Urban	22,246	99%	0.85 ± 0.01	0.23	0.29	0.42	0.64	1.02	1.62	2.20
	µg/m ³	Rural	5,932	90%	0.52 ± 0.01	ND	0.06	0.20	0.38	0.67	1.08	1.51
	µg/m ³	All Sites	28,178	97%	0.78 ± 0.01	0.16	0.23	0.36	0.58	0.95	1.52	2.07
Benzo(a)pyrene	ng/m ³	Urban	17,810	73%	0.10 ± 0.01	ND	ND	ND	0.04	0.10	0.23	0.35
	ng/m ³	Rural	4,735	37%	0.07 ± 0.01	ND	ND	ND	ND	0.02	0.19	0.38
	ng/m ³	All Sites	22,545	65%	0.09 ± 0.01	ND	ND	ND	0.03	0.09	0.22	0.35
Beryllium (PM ₁₀)	ng/m ³	Urban	21,786	77%	0.042 ± 0.004	ND	ND	0.0005	0.005	0.015	0.043	0.098
	ng/m ³	Rural	6,062	49%	0.018 ± 0.002	ND	ND	ND	ND	0.004	0.012	0.041
	ng/m ³	All Sites	27,848	71%	0.037 ± 0.003	ND	ND	ND	0.003	0.011	0.038	0.083
Butadiene, 1,3-	µg/m ³	Urban	22,220	78%	0.092 ± 0.002	ND	ND	0.018	0.051	0.110	0.215	0.317
	µg/m ³	Rural	5,940	29%	0.017 ± 0.001	ND	ND	ND	ND	0.011	0.054	0.104
	µg/m ³	All Sites	28,160	68%	0.076 ± 0.002	ND	ND	ND	0.039	0.092	0.190	0.283
Cadmium (PM ₁₀)	ng/m ³	Urban	21,954	93%	0.184 ± 0.014	ND	0.019	0.043	0.081	0.160	0.354	0.572
	ng/m ³	Rural	6,067	89%	0.092 ± 0.005	ND	ND	0.026	0.055	0.099	0.179	0.270
	ng/m ³	All Sites	28,021	92%	0.164 ± 0.011	ND	0.012	0.039	0.075	0.143	0.300	0.518
Carbon Tetrachloride	µg/m ³	Urban	22,202	98%	0.556 ± 0.002	0.336	0.423	0.486	0.550	0.638	0.725	0.784
	µg/m ³	Rural	5,909	84%	0.494 ± 0.010	ND	ND	0.342	0.533	0.629	0.728	0.807
	µg/m ³	All Sites	28,111	95%	0.543 ± 0.003	ND	0.363	0.475	0.547	0.636	0.726	0.788
Chloroform	µg/m ³	Urban	22,218	88%	0.243 ± 0.016	ND	ND	0.094	0.129	0.205	0.398	0.630
	µg/m ³	Rural	5,942	56%	0.062 ± 0.002	ND	ND	ND	0.049	0.098	0.134	0.228
	µg/m ³	All Sites	28,160	82%	0.205 ± 0.013	ND	ND	0.076	0.110	0.187	0.342	0.543

Table 3. NATTS Network Assessment Data (2003-2022) - National Distribution Statistics By Type^a

Analyte	Units	Site Type	# Data Records	% Detections	Arithmetic Mean ^b	Percentile Value ^c						
						5th	10th	25th	50th	75th	90th	95th
Formaldehyde	µg/m ³	Urban	22,024	100%	3.03 ± 0.04	0.69	1.00	1.57	2.42	3.72	5.47	6.95
	µg/m ³	Rural	6,432	100%	2.16 ± 0.04	0.49	0.64	1.03	1.67	2.69	4.12	5.34
	µg/m ³	All Sites	28,456	100%	2.83 ± 0.03	0.61	0.86	1.42	2.25	3.50	5.22	6.65
Lead (PM ₁₀)	ng/m ³	Urban	21,955	100%	3.97 ± 0.10	0.70	0.95	1.46	2.49	4.34	7.87	11.16
	ng/m ³	Rural	6,066	99%	1.93 ± 0.14	0.34	0.45	0.75	1.27	2.14	3.59	4.96
	ng/m ³	All Sites	28,021	100%	3.53 ± 0.09	0.53	0.75	1.22	2.17	3.88	6.99	10.10
Manganese (PM ₁₀)	ng/m ³	Urban	21,906	100%	9.76 ± 0.25	1.06	1.49	2.53	4.96	10.43	20.40	30.79
	ng/m ³	Rural	6,067	99%	3.79 ± 0.12	0.48	0.74	1.34	2.48	4.49	8.08	11.64
	ng/m ³	All Sites	27,973	100%	8.47 ± 0.20	0.84	1.22	2.16	4.19	8.99	18.13	27.27
Naphthalene	ng/m ³	Urban	17,811	100%	67.25 ± 0.97	13.42	18.03	28.73	49.00	84.13	136.42	180.00
	ng/m ³	Rural	4,732	98%	21.76 ± 1.02	2.79	4.04	6.84	12.47	23.51	45.68	69.01
	ng/m ³	All Sites	22,543	100%	57.70 ± 0.83	5.92	9.77	20.41	40.15	74.11	124.40	167.26
Nickel (PM ₁₀)	ng/m ³	Urban	21,958	98%	1.76 ± 0.05	0.29	0.40	0.62	1.02	1.86	3.32	5.05
	ng/m ³	Rural	5,989	85%	0.56 ± 0.07	ND	ND	0.10	0.26	0.53	0.96	1.63
	ng/m ³	All Sites	27,947	95%	1.50 ± 0.04	0.00	0.17	0.45	0.84	1.59	2.92	4.47
Tetrachloroethylene	µg/m ³	Urban	22,209	84%	0.24 ± 0.05	ND	ND	0.05	0.12	0.22	0.43	0.68
	µg/m ³	Rural	5,936	38%	0.07 ± 0.02	ND	ND	ND	ND	0.04	0.12	0.31
	µg/m ³	All Sites	28,145	75%	0.21 ± 0.04	ND	ND	ND	0.08	0.20	0.38	0.61
Trichloroethylene	µg/m ³	Urban	22,204	43%	0.040 ± 0.008	ND	ND	ND	ND	0.043	0.096	0.152
	µg/m ³	Rural	5,922	19%	0.019 ± 0.003	ND	ND	ND	ND	ND	0.029	0.124
	µg/m ³	All Sites	28,126	38%	0.036 ± 0.006	ND	ND	ND	ND	0.033	0.085	0.148
Vinyl Chloride	µg/m ³	Urban	22,021	18%	0.0046 ± 0.0003	ND	ND	ND	ND	ND	0.0126	0.0251
	µg/m ³	Rural	5,940	13%	0.0070 ± 0.0008	ND	ND	ND	ND	ND	0.0125	0.0304
	µg/m ³	All Sites	27,961	17%	0.0051 ± 0.0003	ND	ND	ND	ND	ND	0.0126	0.0253

^a Statistics presented are from pollutant datasets which were suitable for trends.

^b The arithmetic mean is the average of all samples results which include actual measured values. If no chemical was registered, then a value of zero is used when calculating the mean.

^c ND: No results of this chemical were registered by the laboratory analytical equipment.

Table 4. Summary Statistics for Horicon, WI

Analyte	Units	# Data Records	% Detection	Arithmetic Mean ^a	Percentile Value ^b						
					5th	10th	25th	50th	75th	90th	95th
Acetaldehyde	µg/m ³	793	100%	0.97 ± 0.03	0.45	0.52	0.69	0.89	1.16	1.47	1.77
Arsenic (PM ₁₀)	ng/m ³	778	99%	0.59 ± 0.04	0.11	0.15	0.24	0.44	0.75	1.15	1.50
Benzene	µg/m ³	773	80%	0.41 ± 0.03	ND	ND	0.14	0.32	0.59	0.93	1.09
Benzo(a)pyrene	ng/m ³	770	25%	0.07 ± 0.01	ND	ND	ND	ND	ND	0.30	0.38
Beryllium (PM ₁₀)	ng/m ³	782	3%	0.0004 ± 0.0002	ND	ND	ND	ND	ND	ND	ND
Butadiene, 1,3-	µg/m ³	773	13%	0.003 ± 0.001	ND	ND	ND	ND	ND	0.01	0.01
Cadmium (PM ₁₀)	ng/m ³	780	97%	0.08 ± 0.01	0.02	0.02	0.04	0.06	0.10	0.14	0.17
Carbon Tetrachloride	µg/m ³	773	58%	0.33 ± 0.02	ND	ND	ND	0.41	0.53	0.65	0.74
Chloroform	µg/m ³	773	41%	0.04 ± 0.01	ND	ND	ND	ND	0.08	0.12	0.17
Formaldehyde	µg/m ³	793	100%	1.53 ± 0.06	0.55	0.65	0.89	1.34	1.98	2.67	3.04
Lead (PM ₁₀)	ng/m ³	778	100%	2.25 ± 0.45	0.43	0.59	0.97	1.58	2.56	4.13	5.28
Manganese (PM ₁₀)	ng/m ³	778	99%	3.70 ± 0.23	0.75	1.01	1.72	2.93	4.70	7.11	9.57
Naphthalene	ng/m ³	763	99%	12.76 ± 0.73	2.70	3.94	5.89	9.56	16.50	26.03	33.35
Nickel (PM ₁₀)	ng/m ³	781	70%	0.39 ± 0.03	ND	ND	ND	0.39	0.56	0.72	0.87
Tetrachloroethylene	µg/m ³	773	32%	0.07 ± 0.02	ND	ND	ND	ND	0.04	0.15	0.29
Trichloroethylene	µg/m ³	773	20%	0.02 ± 0.01	ND	ND	ND	ND	ND	0.03	0.05
Vinyl Chloride	µg/m ³	773	2%	0.001 ± 0.001	ND	ND	ND	ND	ND	ND	ND

^a: The arithmetic mean is the average of all samples results which included actual measured values. If no chemical was registered, then a value of zero is used.

^b ND: No results of this chemical were registered by the laboratory analytical equipment.

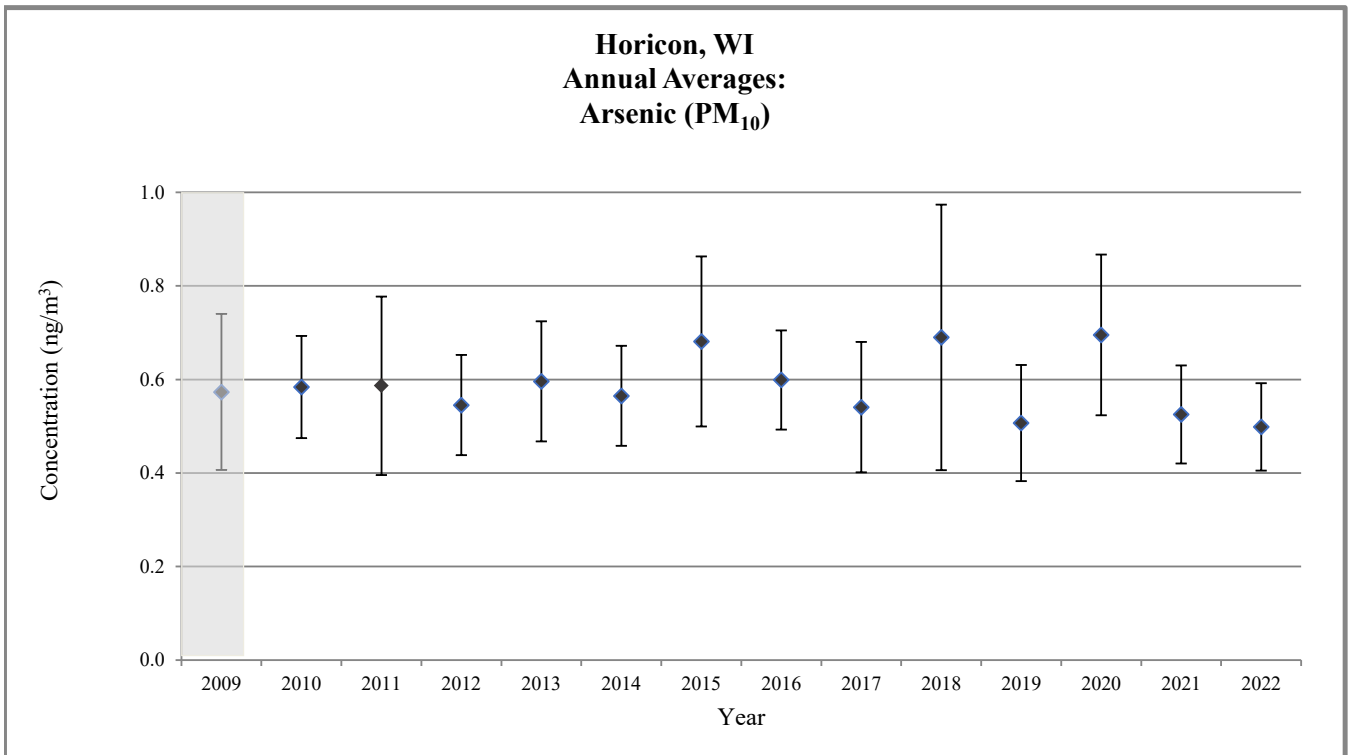
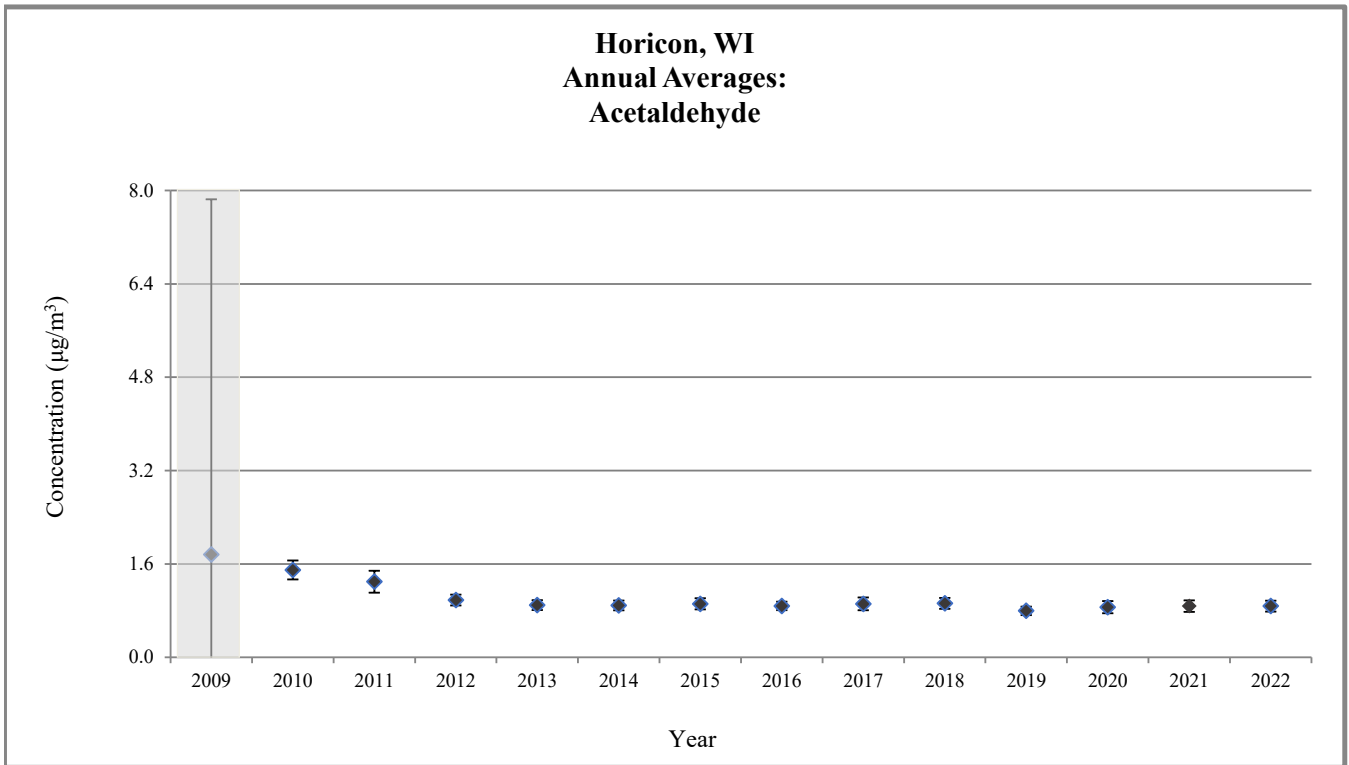
Table 5. Analytical Labs Supporting this Site

Pollutant Group	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
VOCs	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	ERG	ERG
Carbonyls	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH
PM ₁₀ Metals	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH
PAHs	ERG	ERG/WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH	WSLH

WSLH: Wisonson State Laboratory of Hygiene

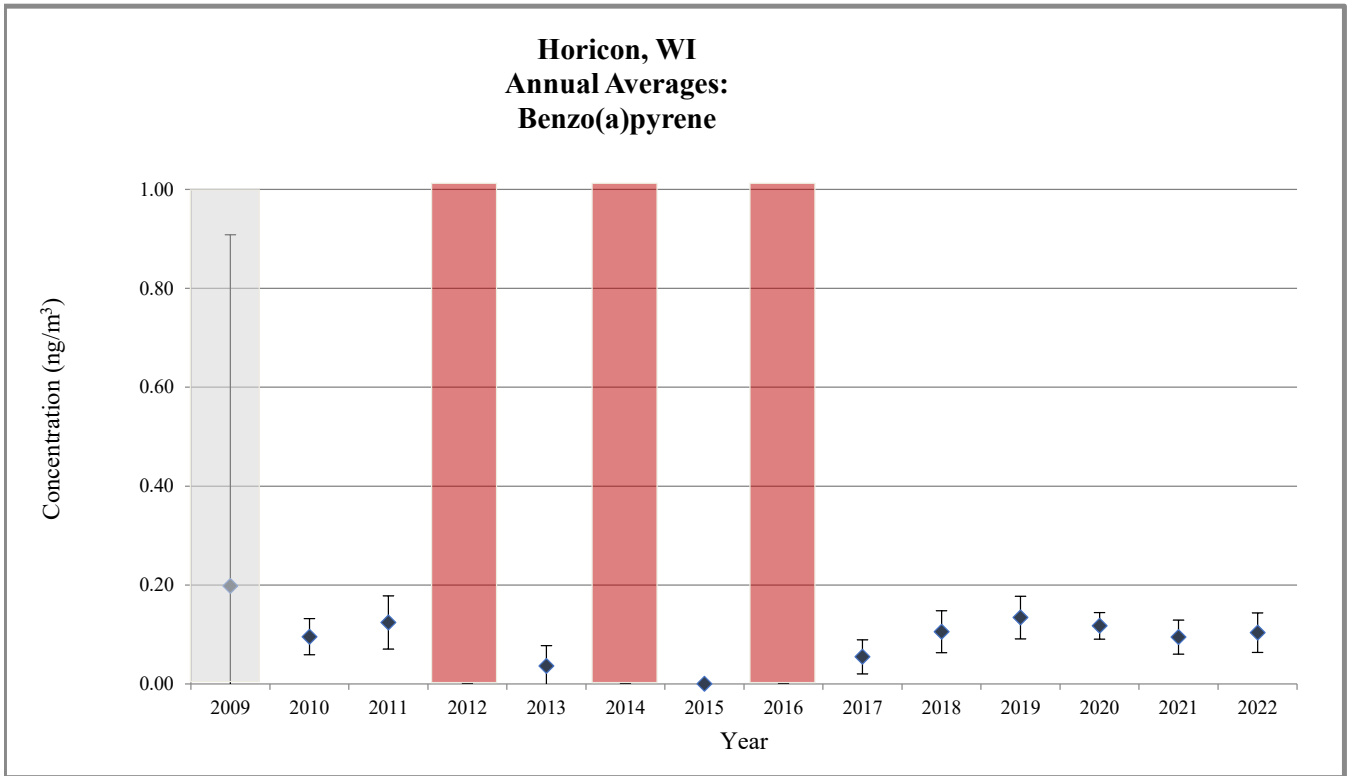
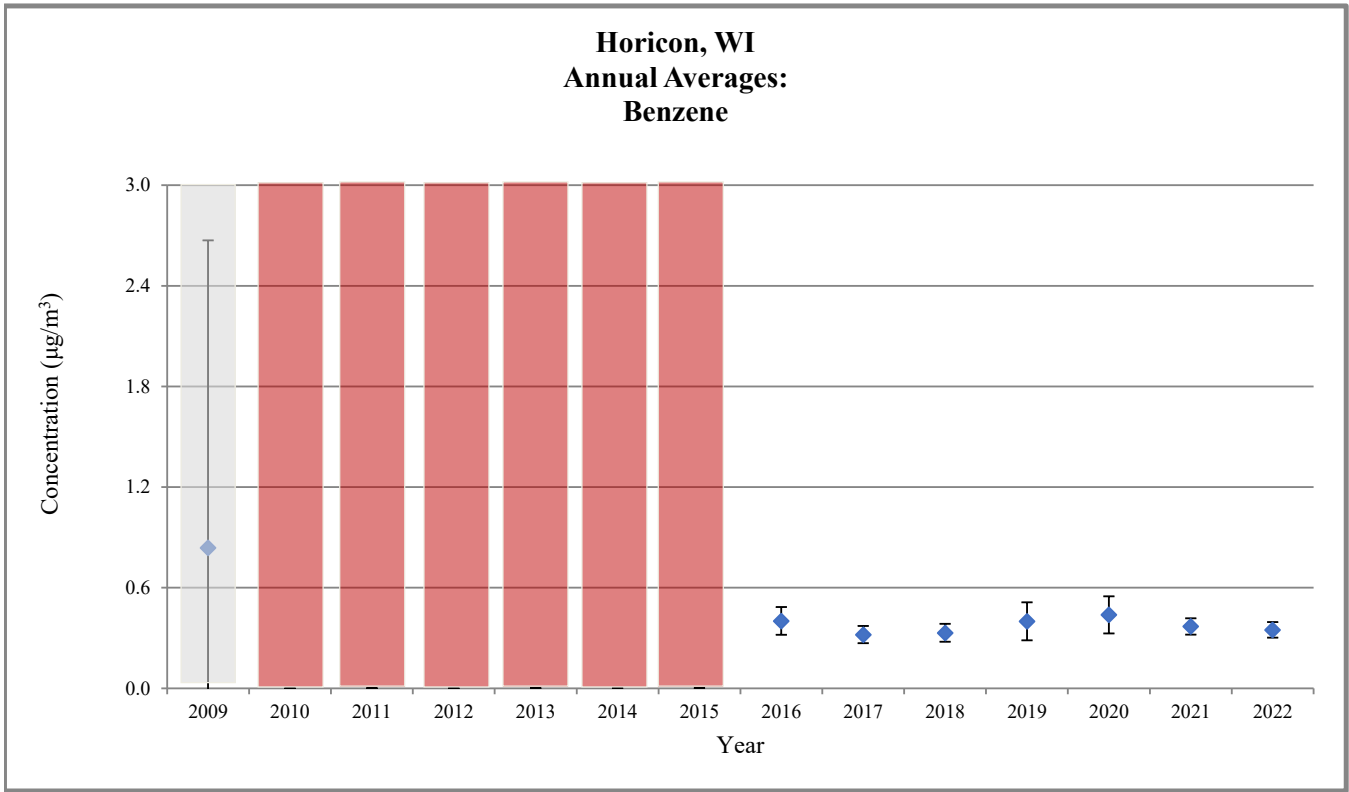
ERG: Eastern Research Group, Inc.

Figure 3. Horicon, WI Annual Average Concentrations



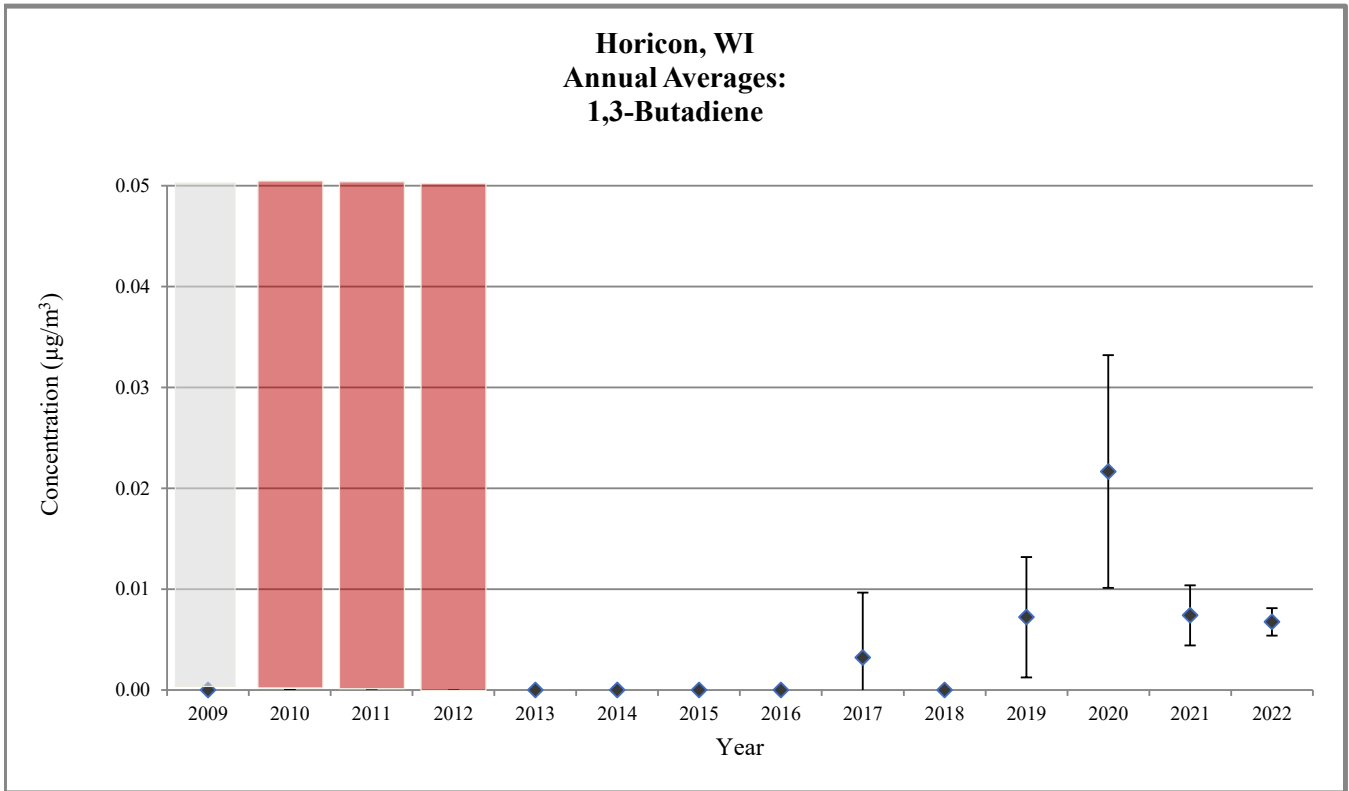
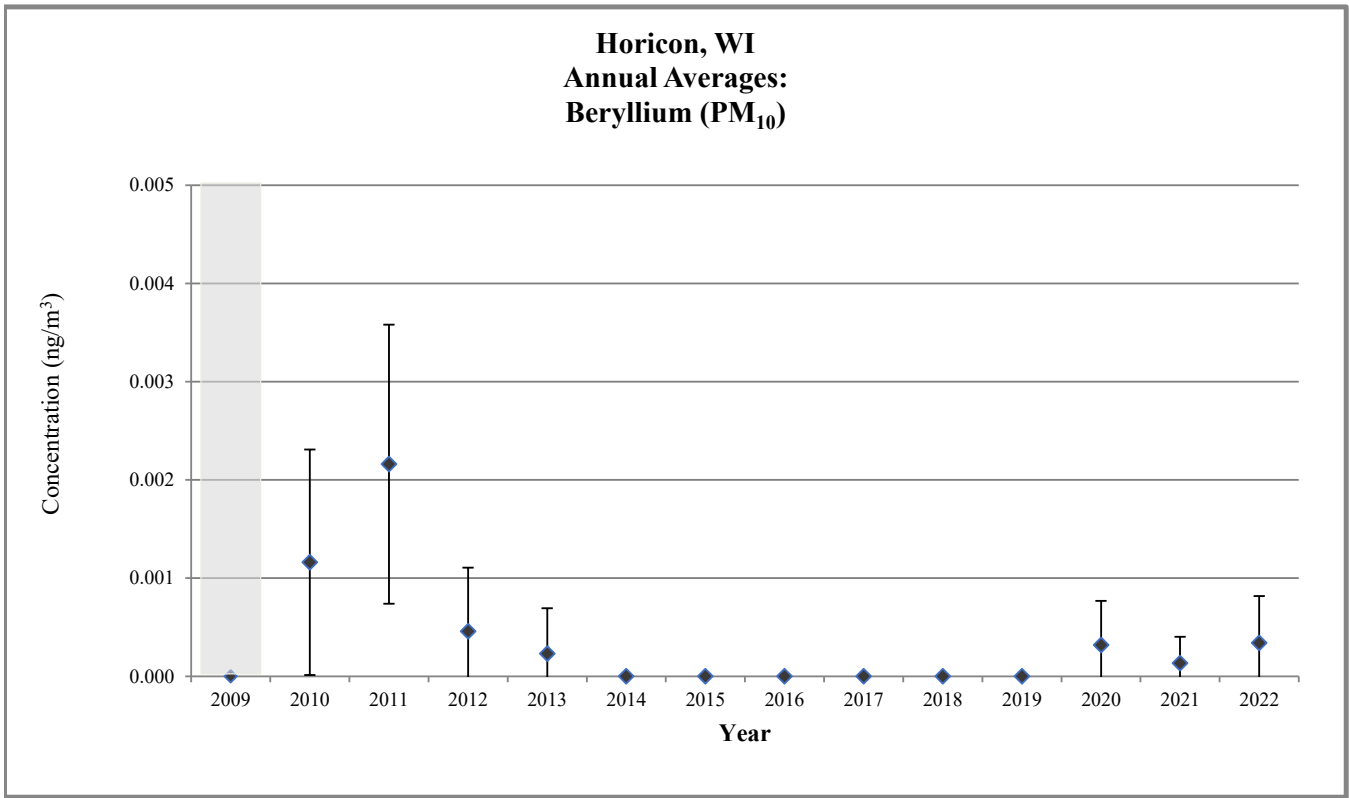
Sampling began midway through the year.
 Does not meet MQO

Figure 3. Horicon, WI Annual Average Concentrations



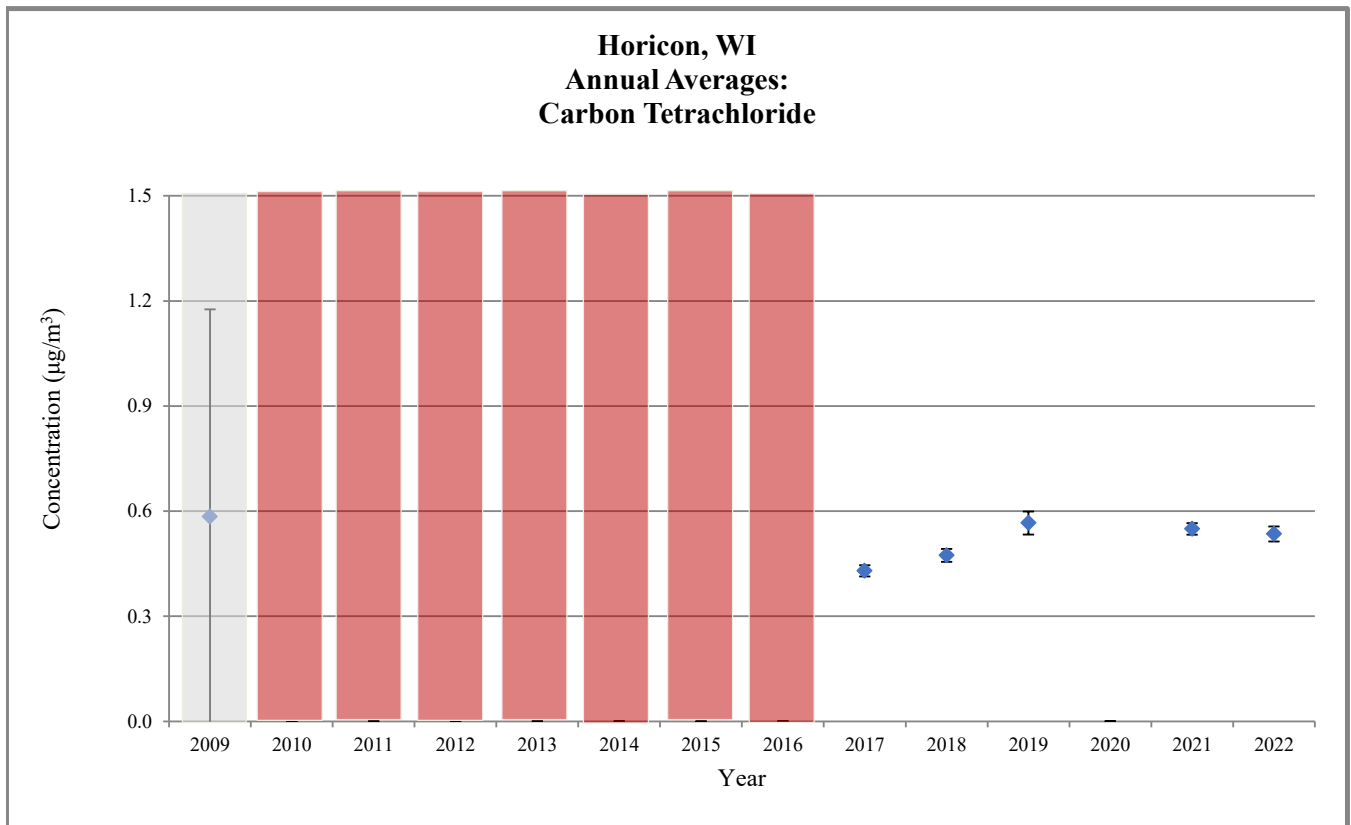
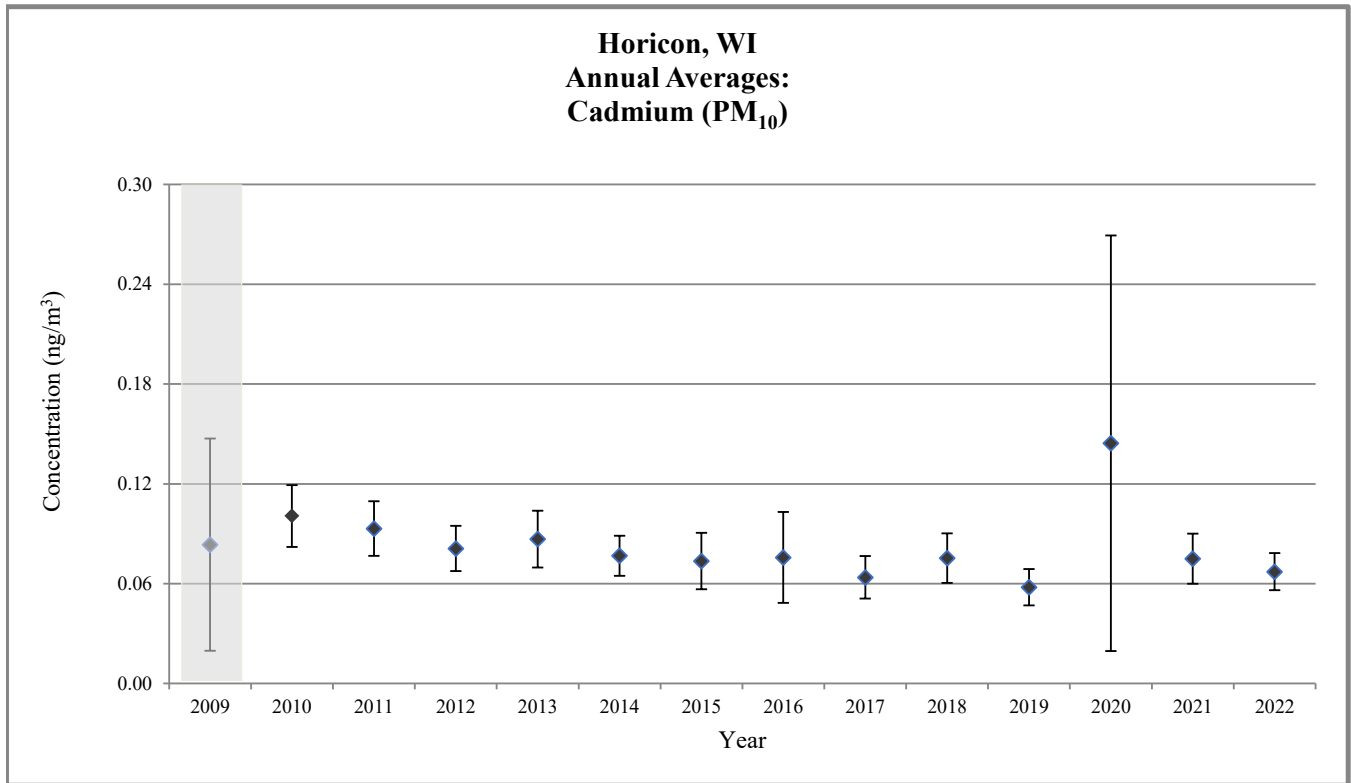
Sampling began midway through the year.
 Does not meet MQO

Figure 3. Horicon, WI Annual Average Concentrations



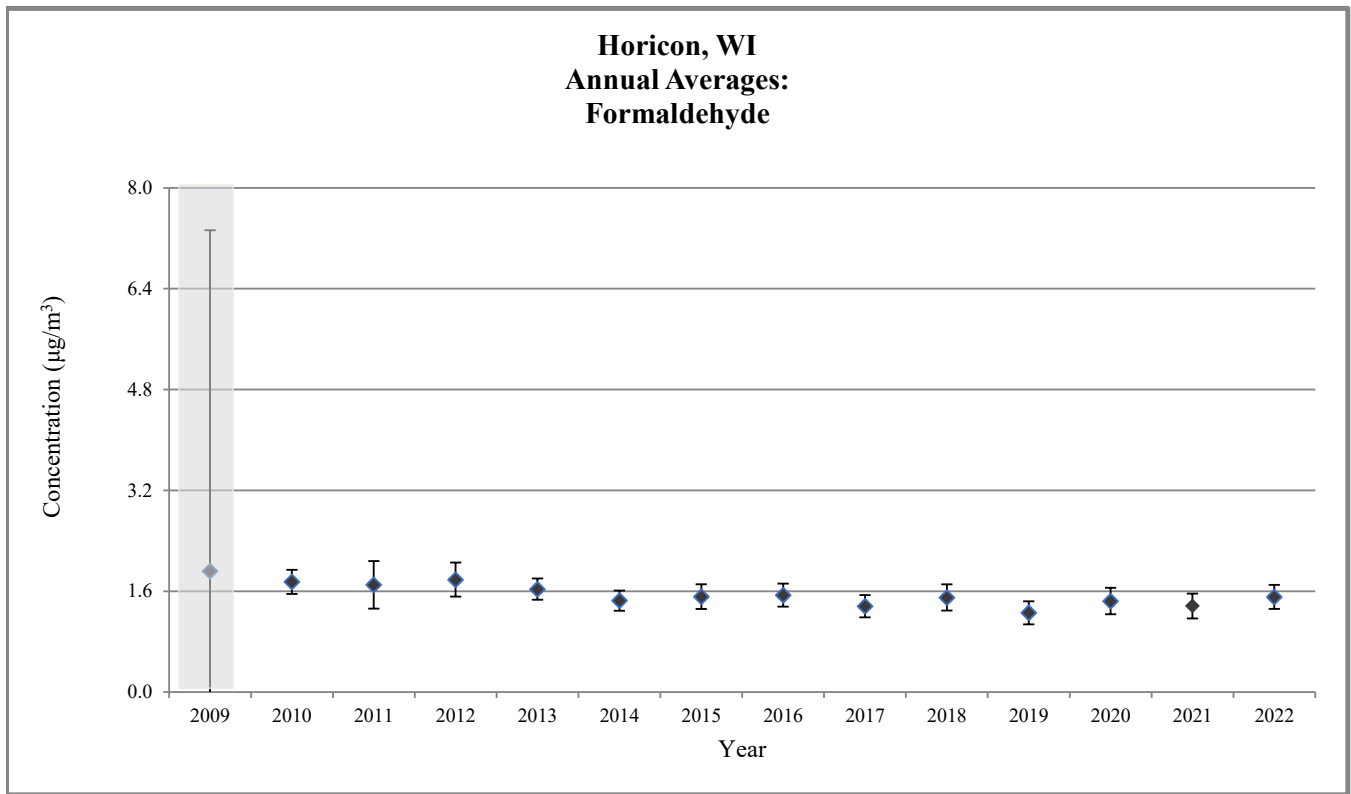
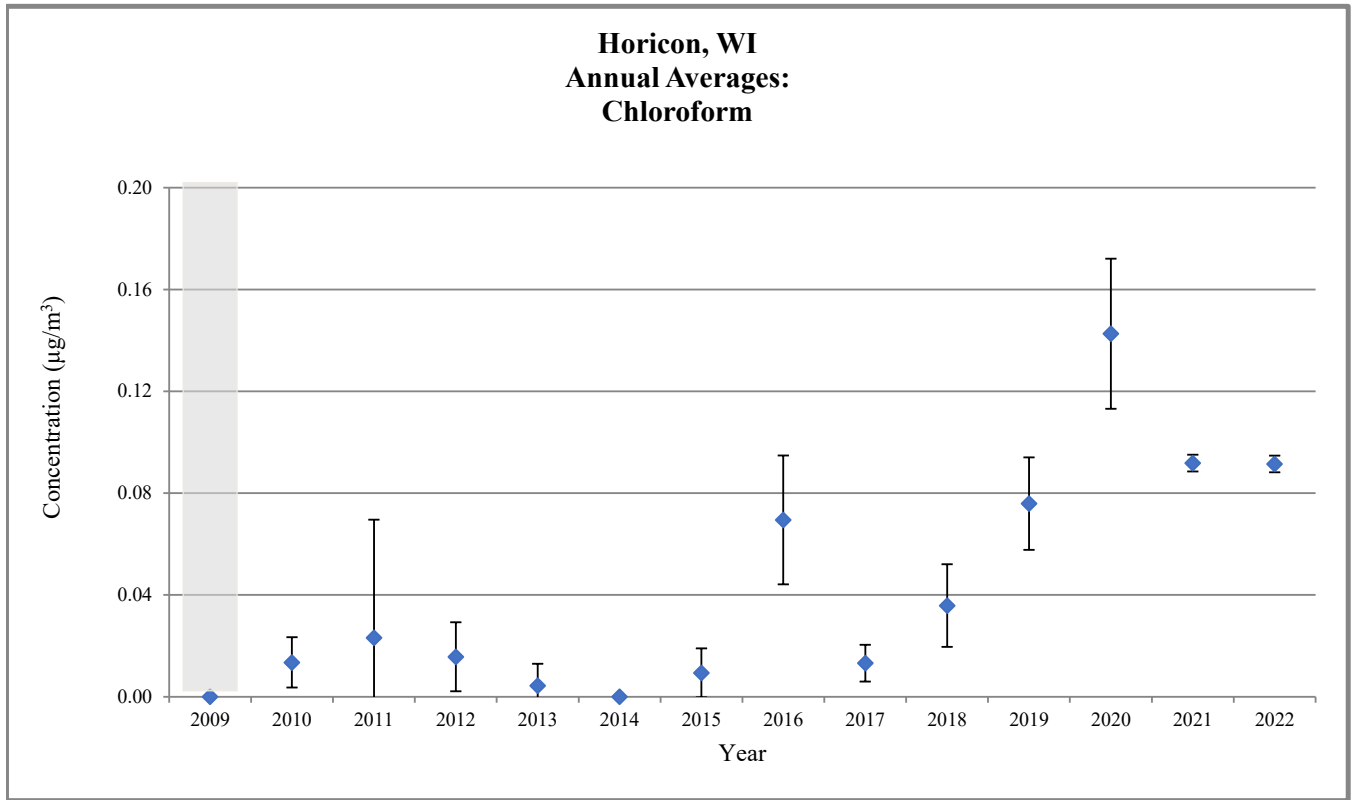
Sampling began midway through the year.
 Does not meet MQO

Figure 3. Horicon, WI Annual Average Concentrations



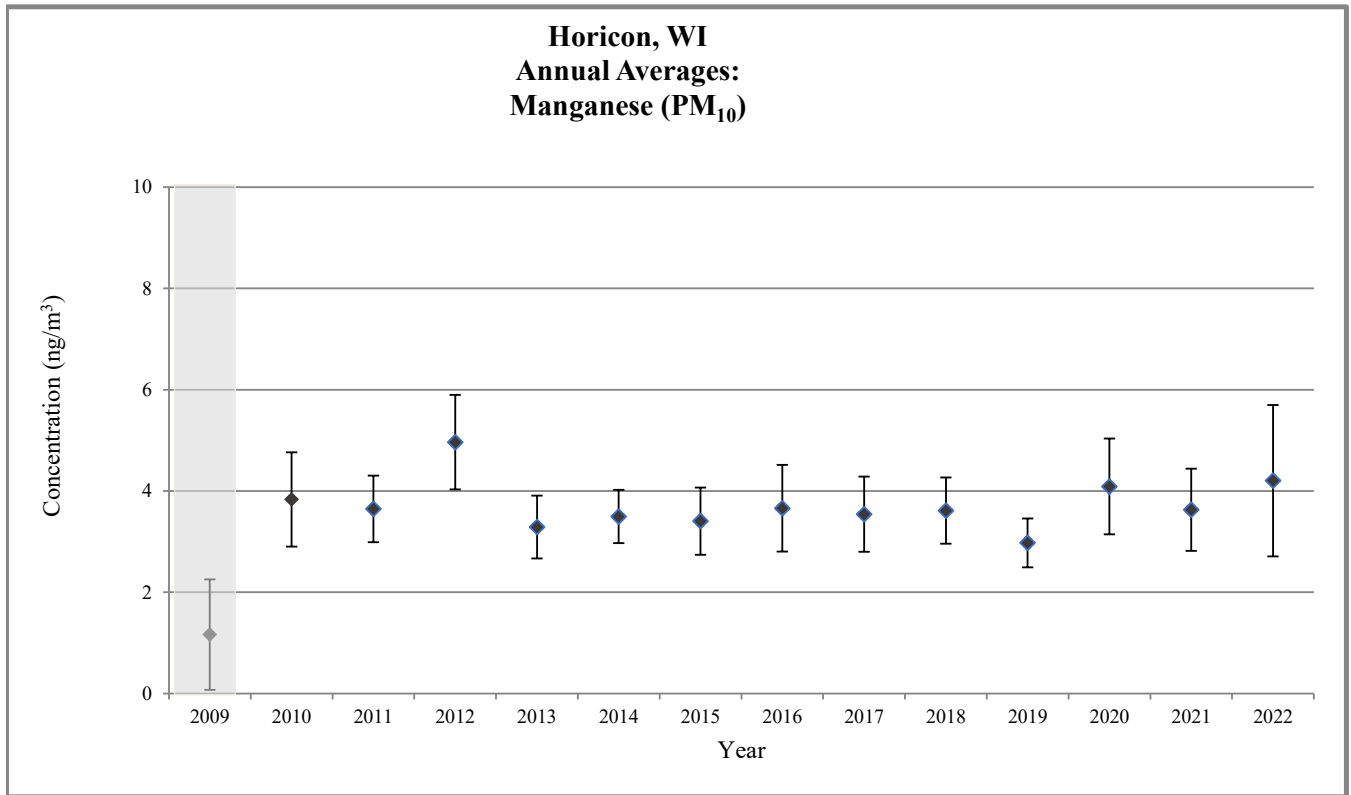
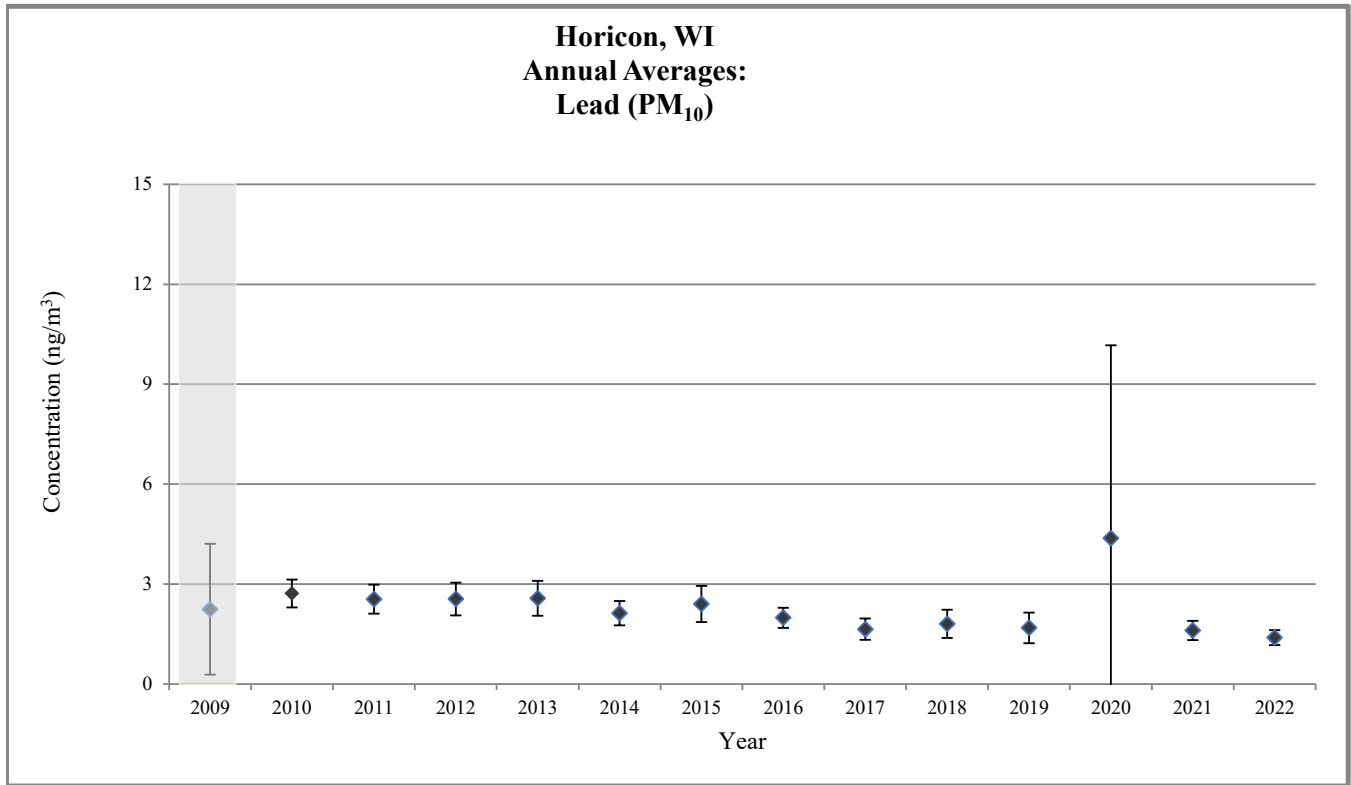
Sampling began midway through the year.
 Does not meet MQO

Figure 3. Horicon, WI Annual Average Concentrations



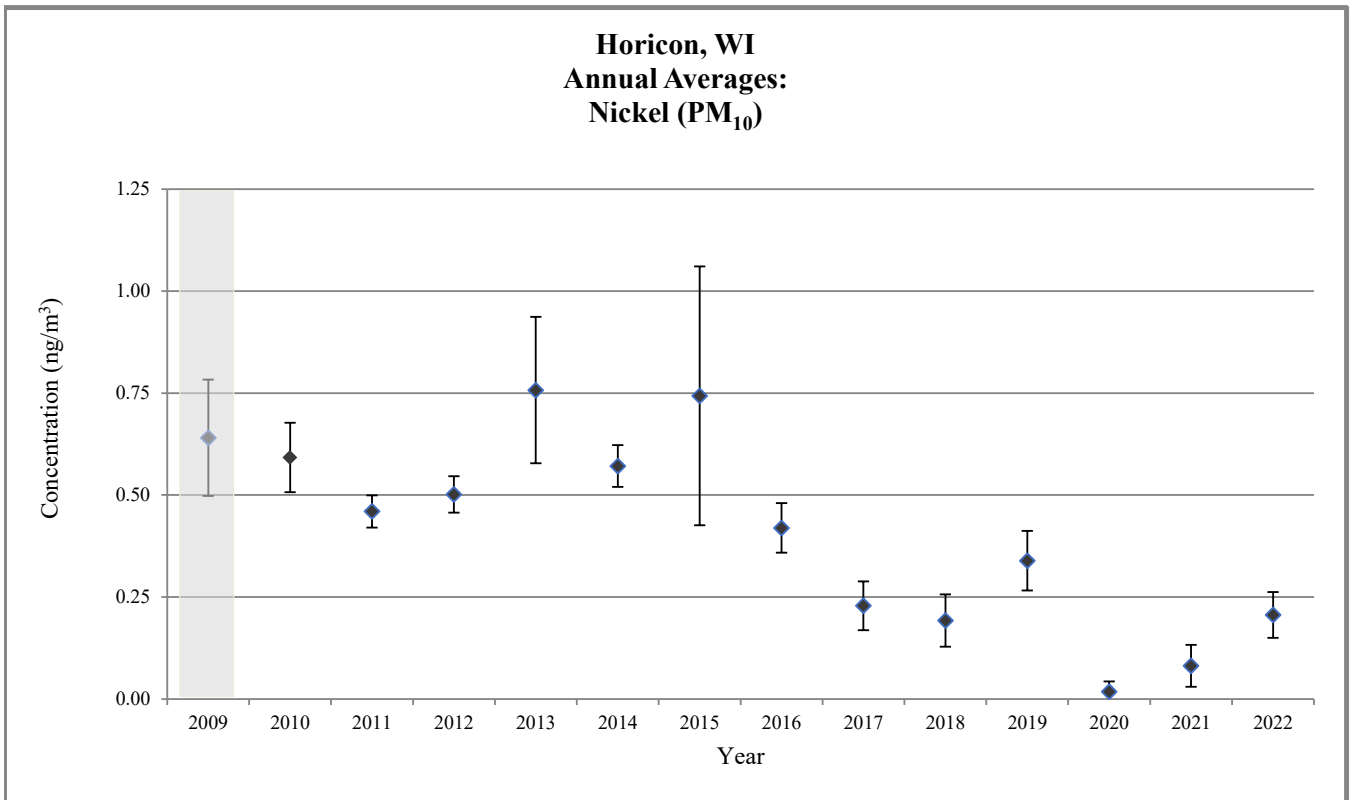
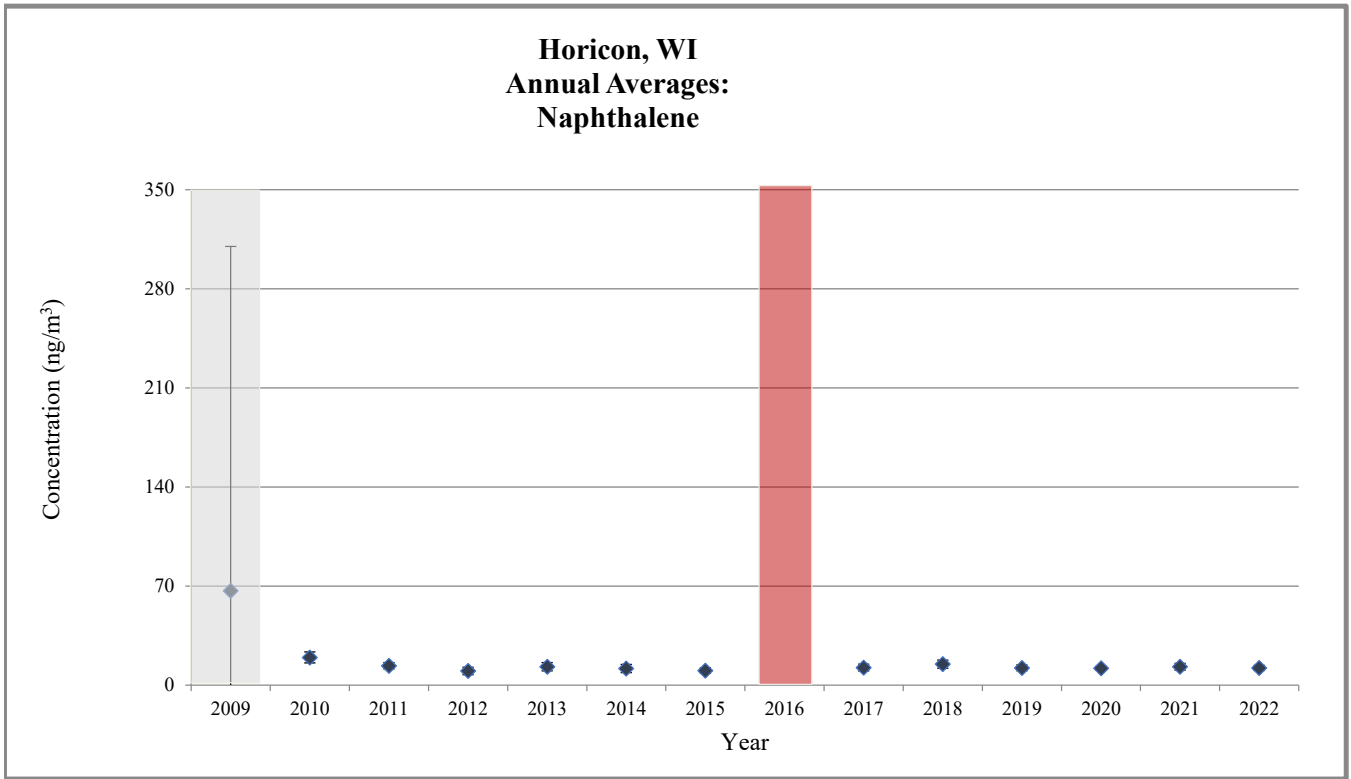
Sampling began midway through the year.
 Does not meet MQO

Figure 3. Horicon, WI Annual Average Concentrations



Sampling began midway through the year.
 Does not meet MQO

Figure 3. Horicon, WI Annual Average Concentrations





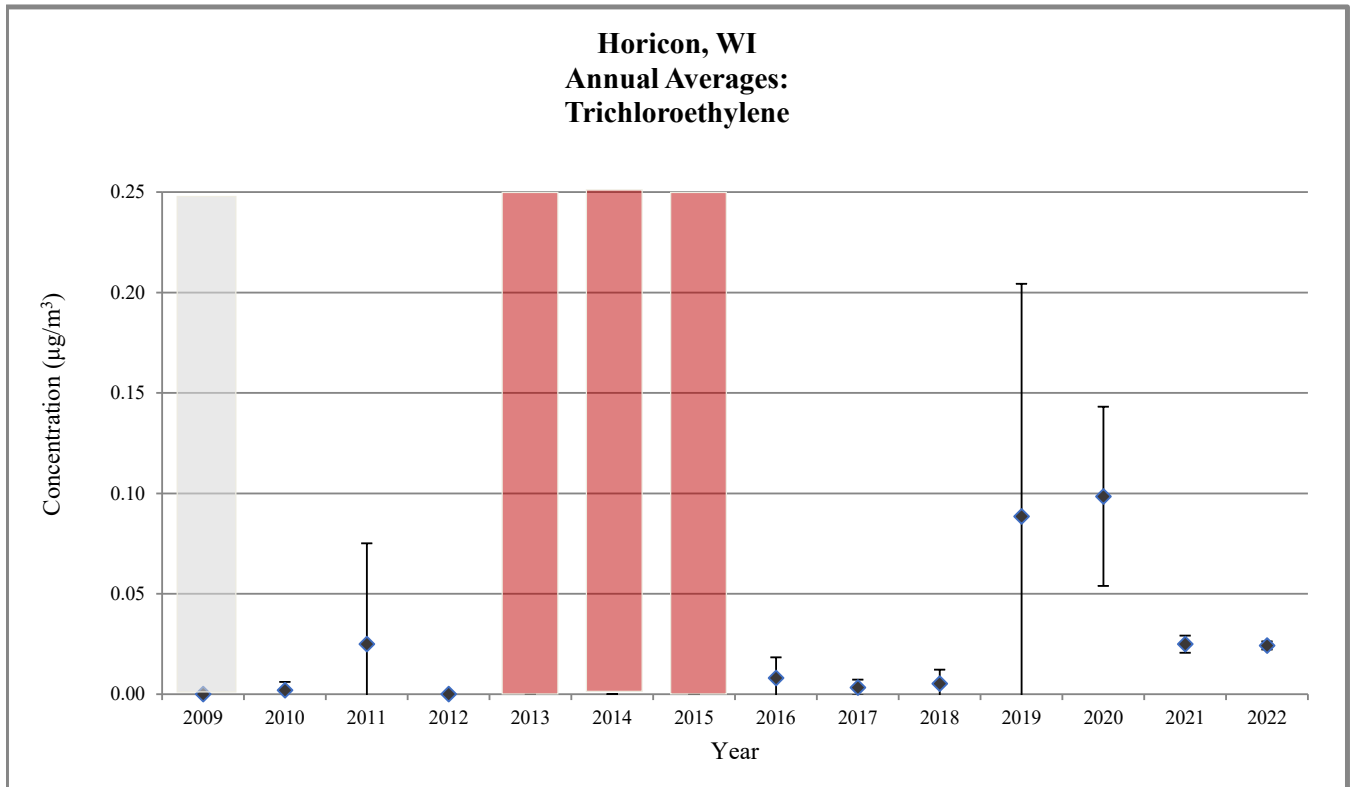
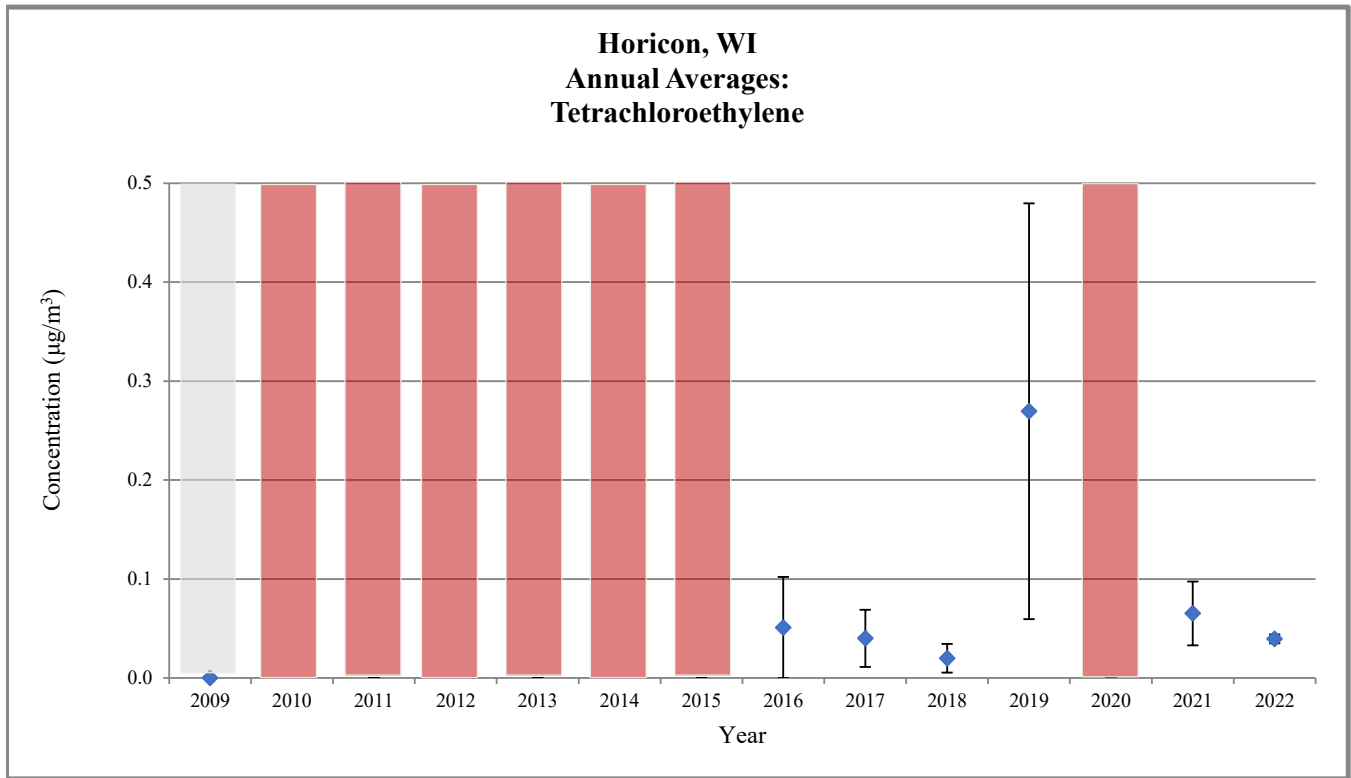
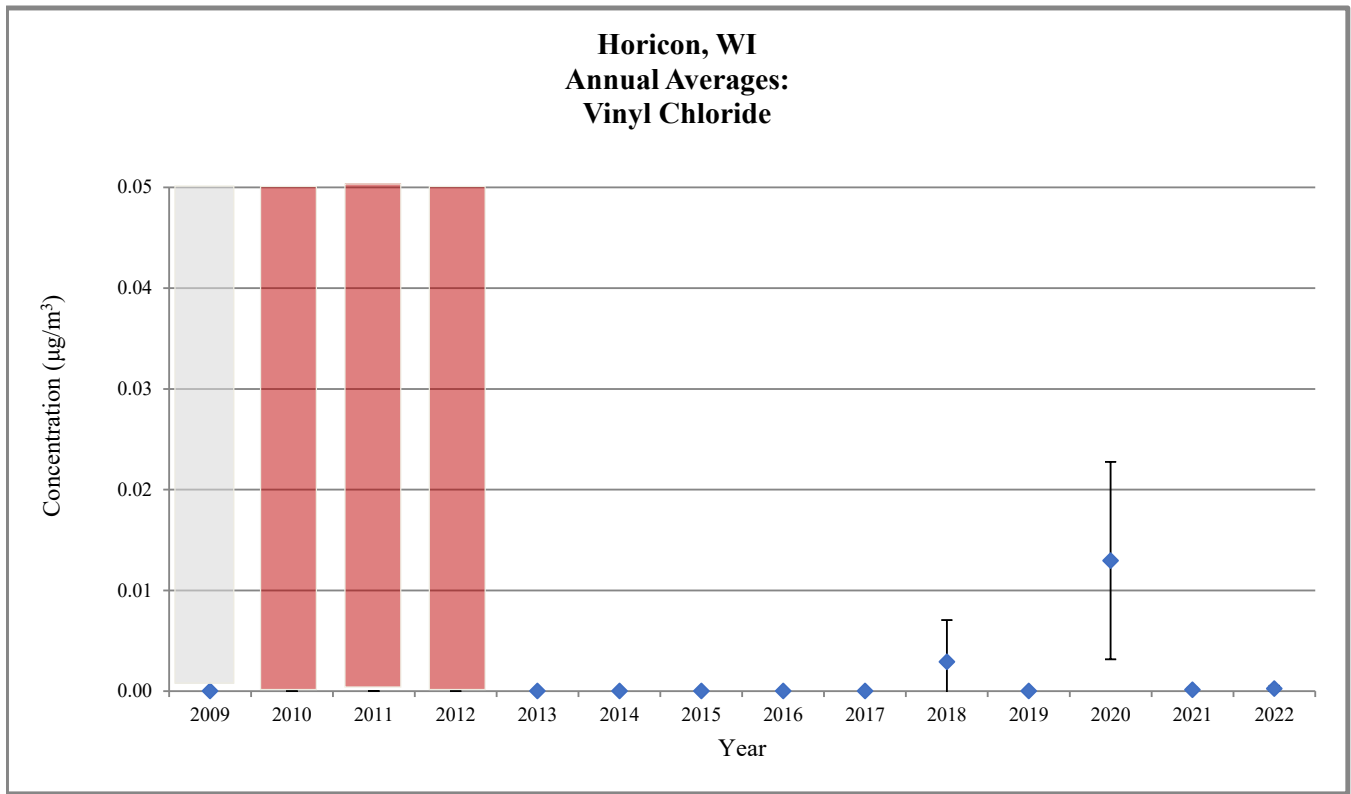
 Sampling began midway through the year.
 Does not meet MQO

Figure 3. Horicon, WI Annual Average Concentrations



Sampling began midway through the year.
 Does not meet MQO

Figure 3. Horicon, WI Annual Average Concentrations





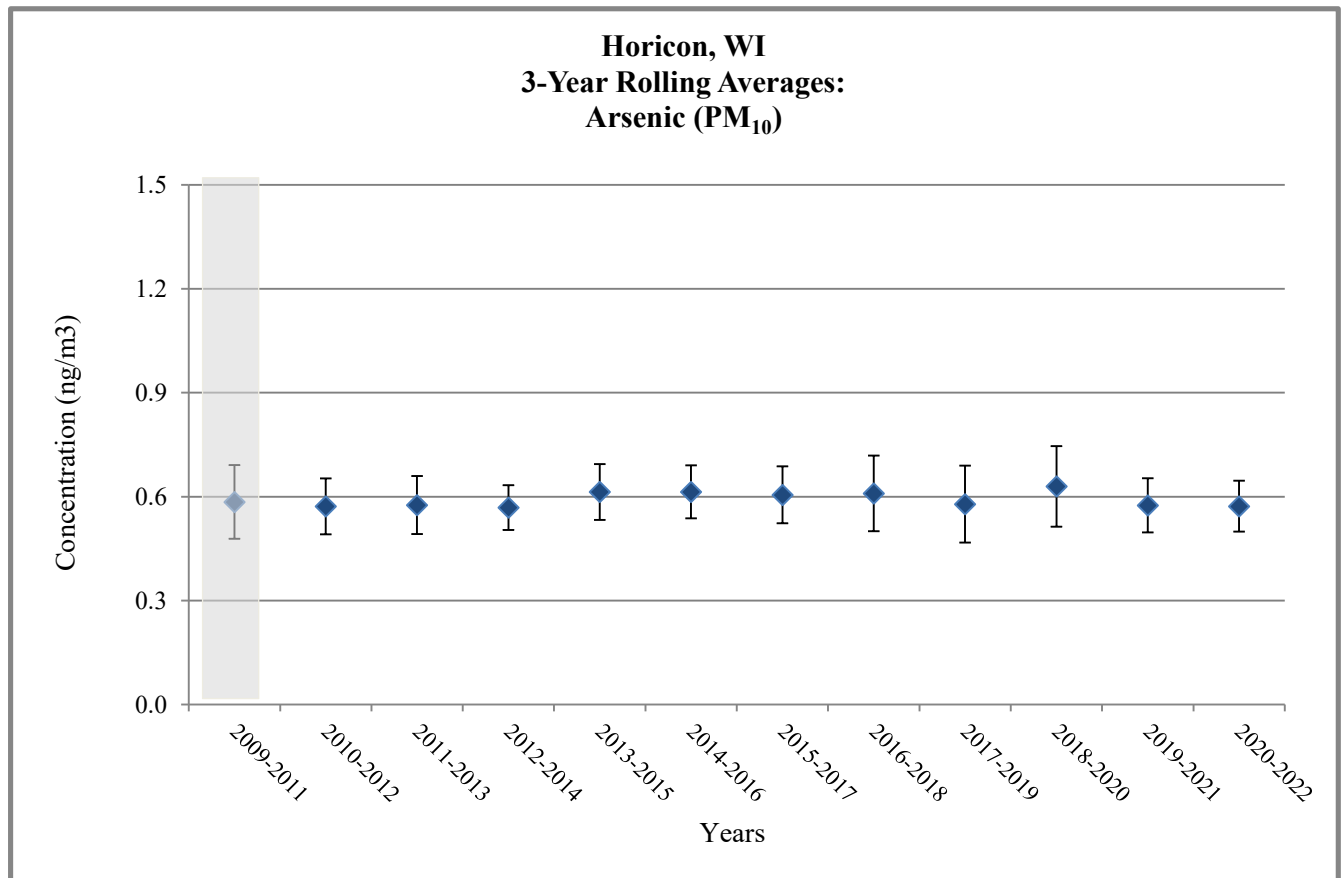
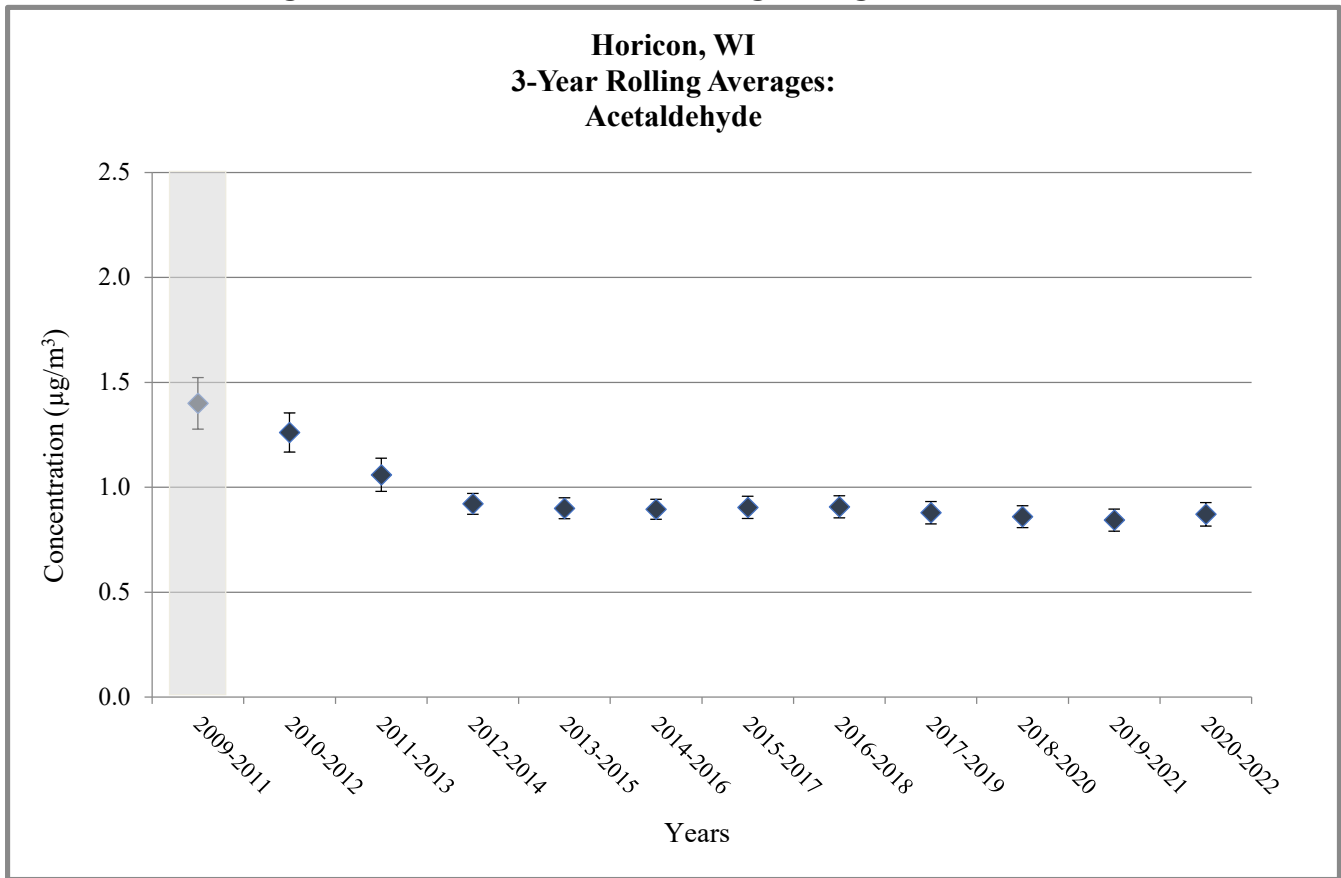
 Sampling began midway through the year.
 Does not meet MQO

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations




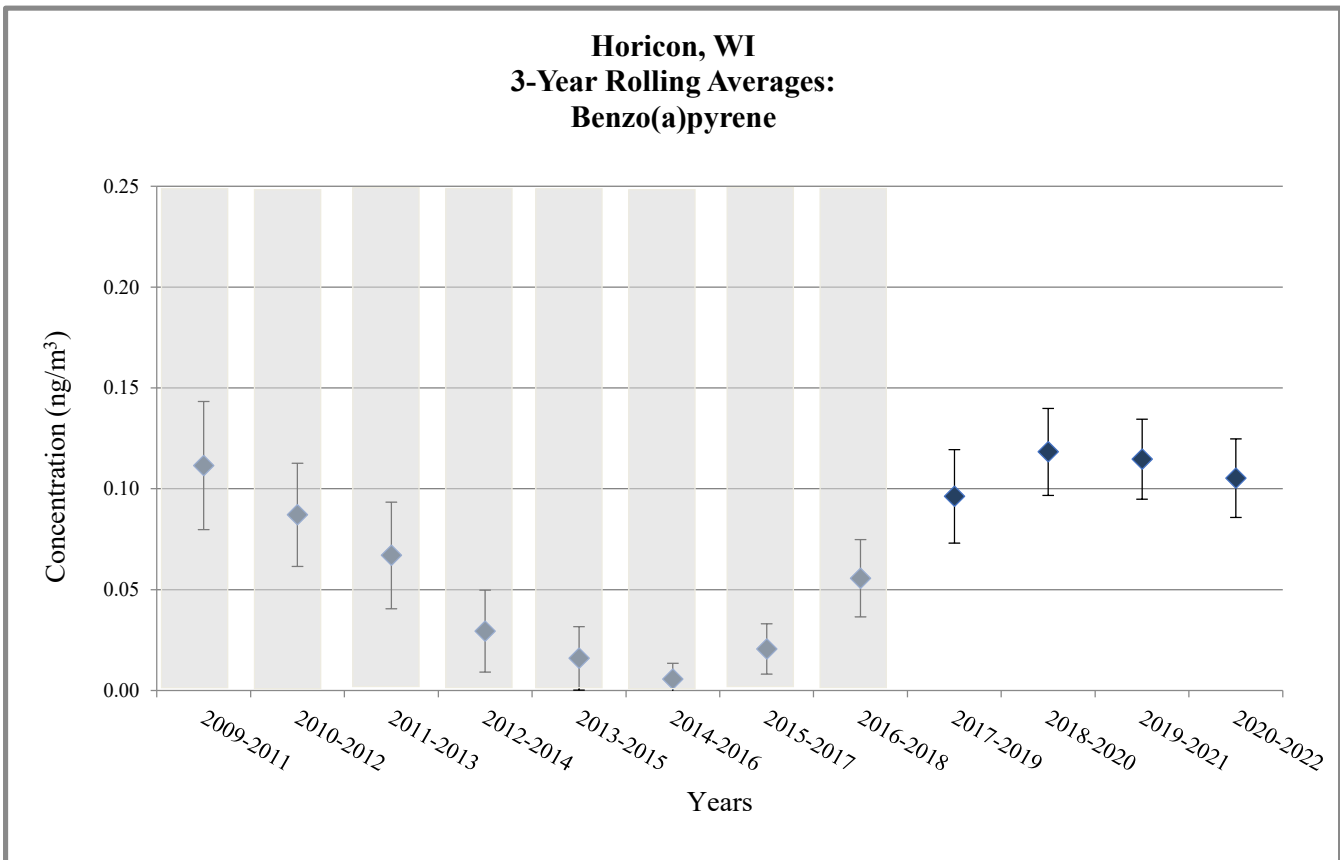
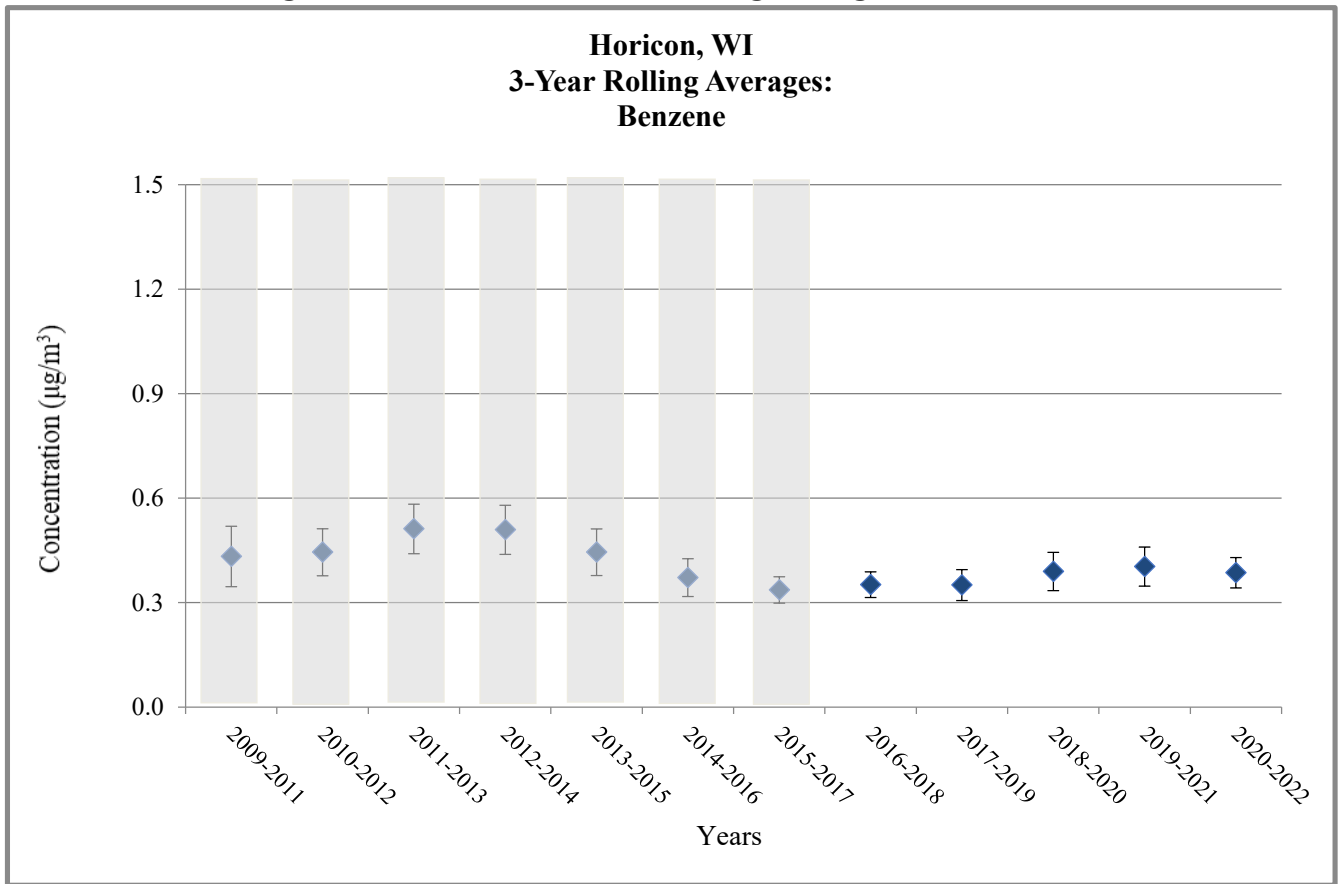
 Does not meet MQO or wasn't able to collect enough samples

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations




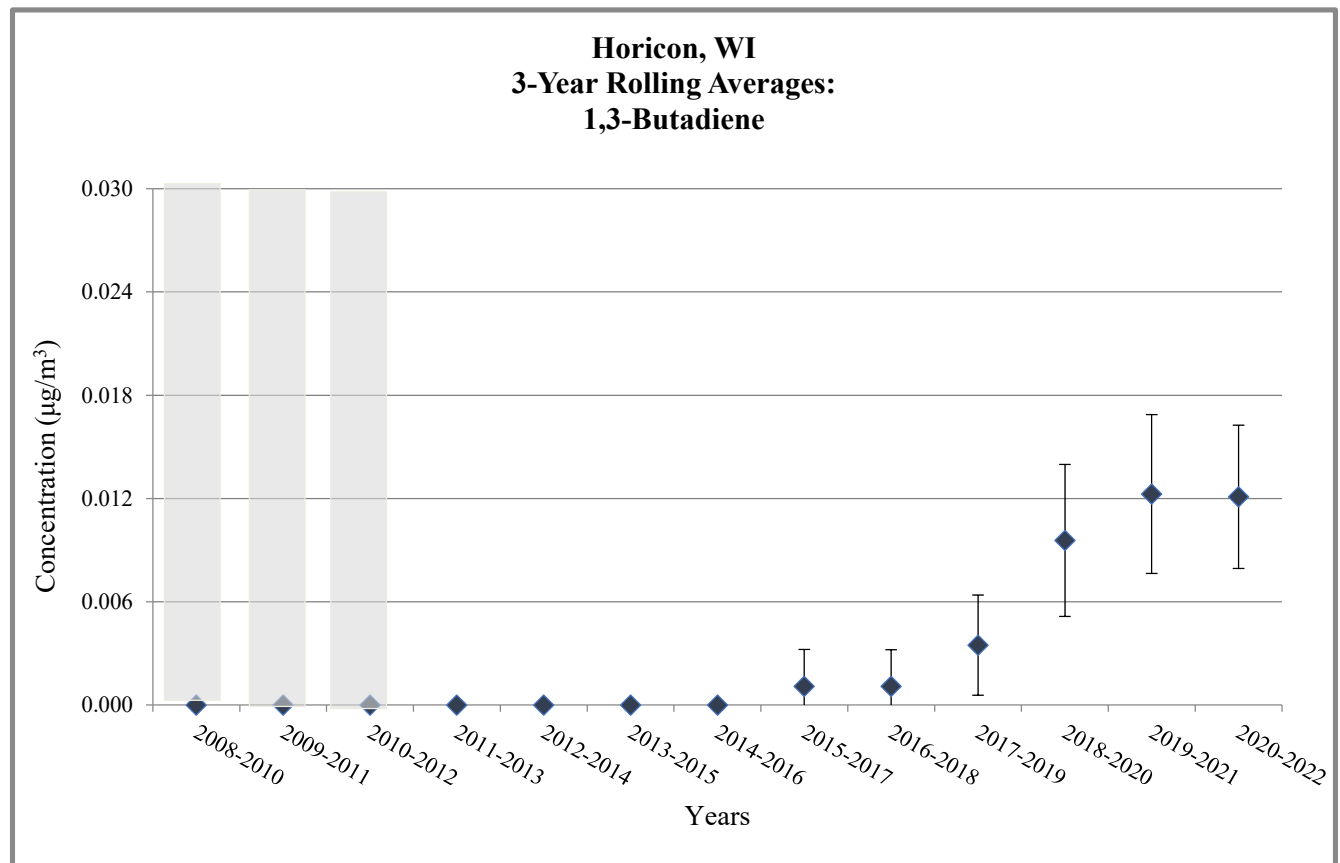
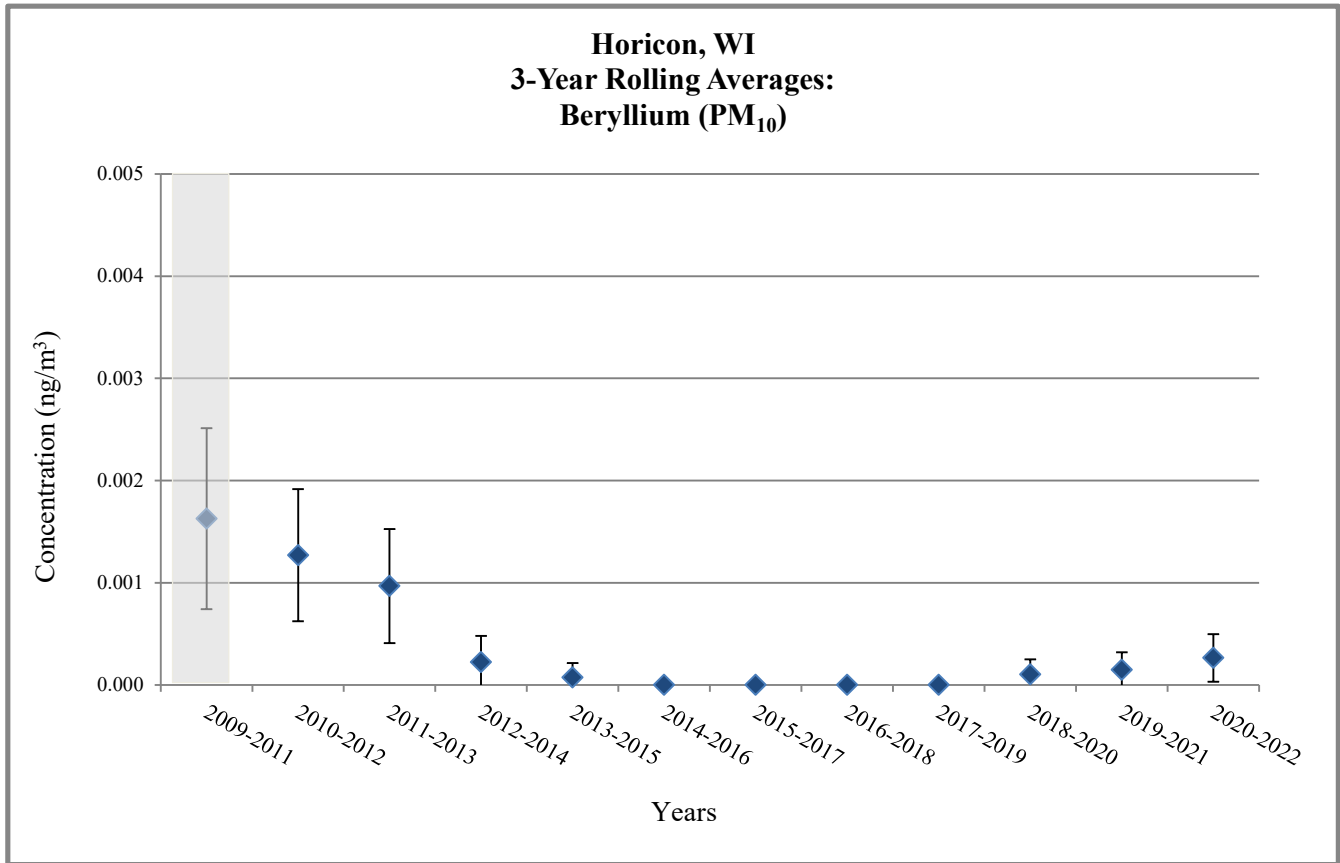
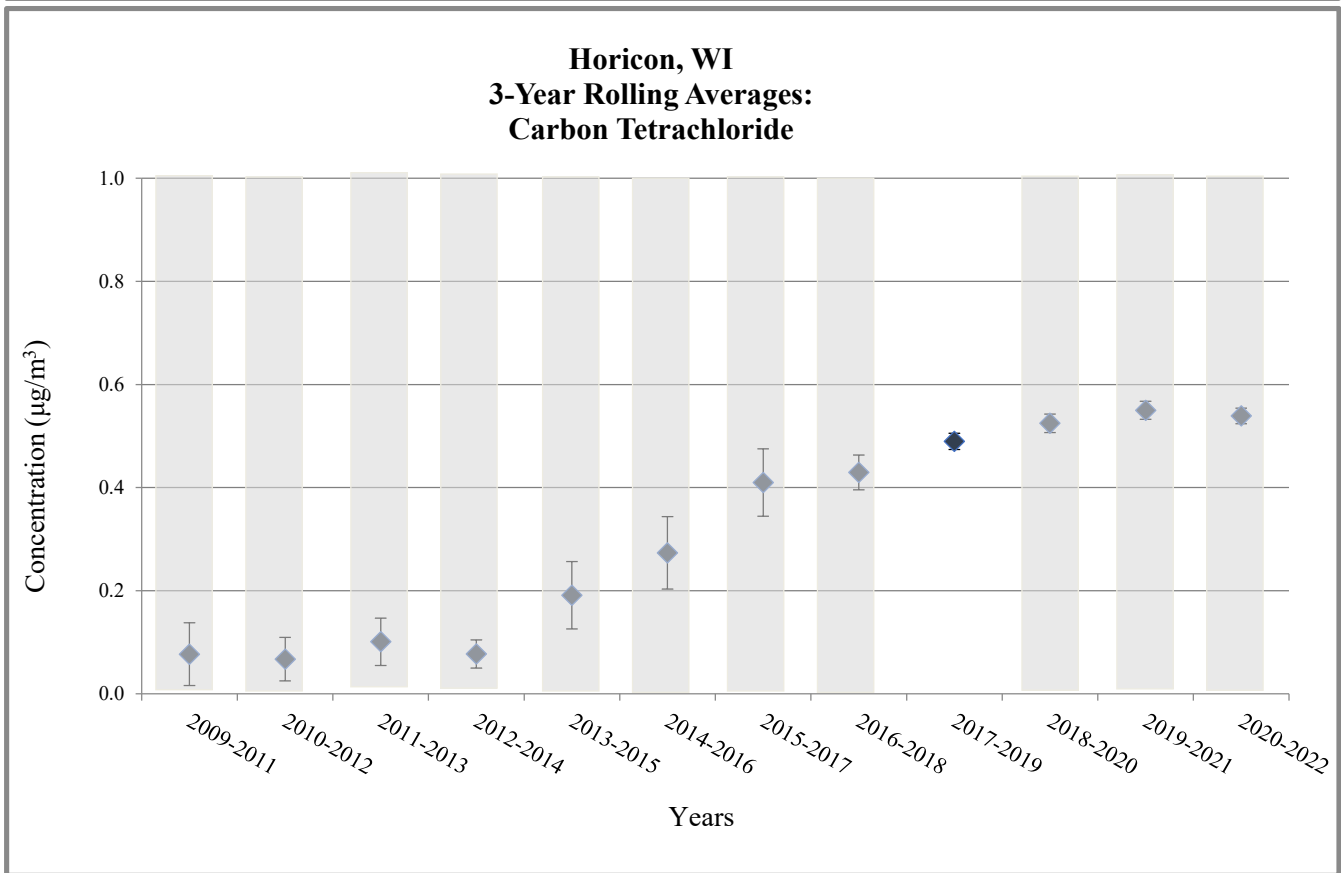
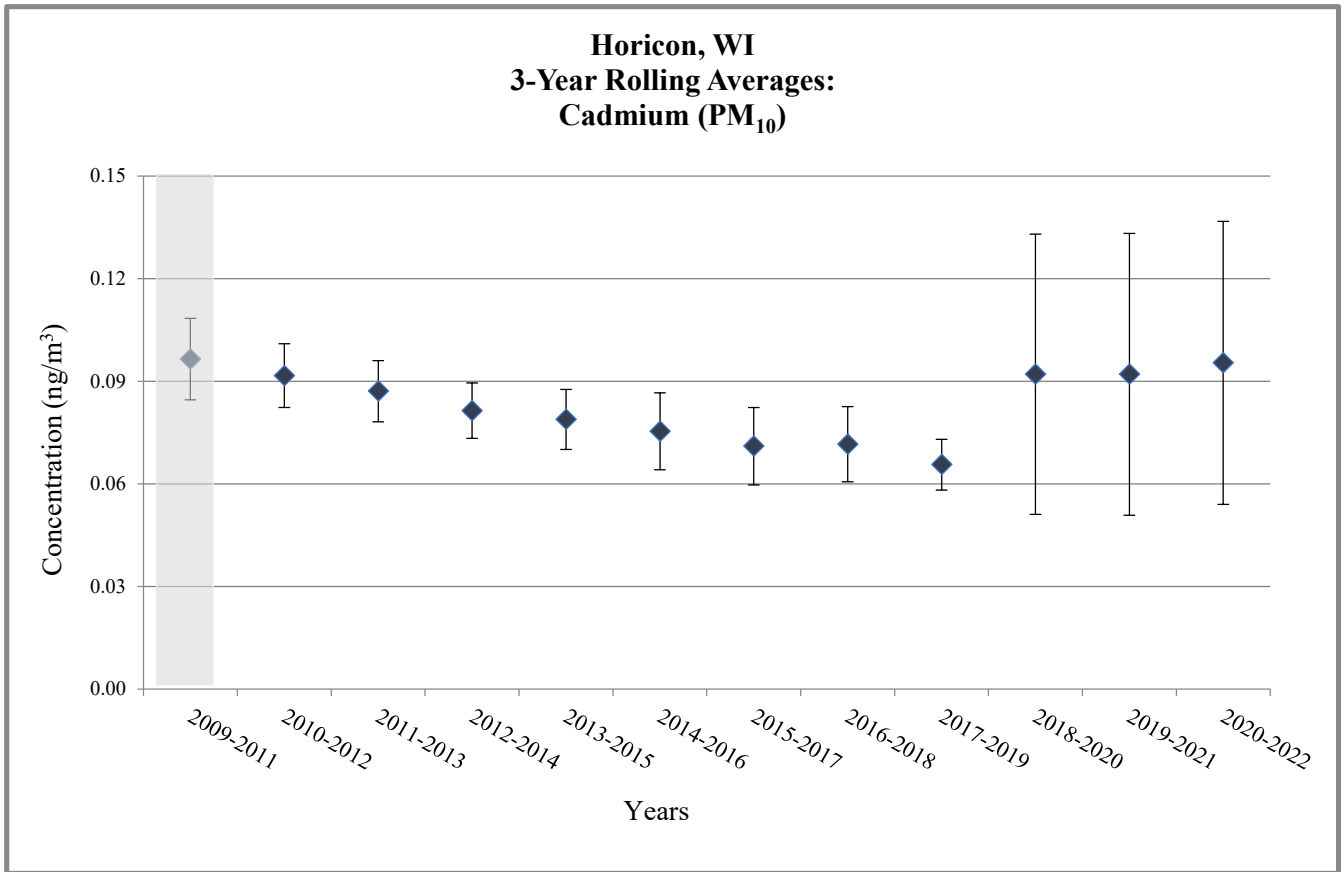
 Does not meet MQO or wasn't able to collect enough samples

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations



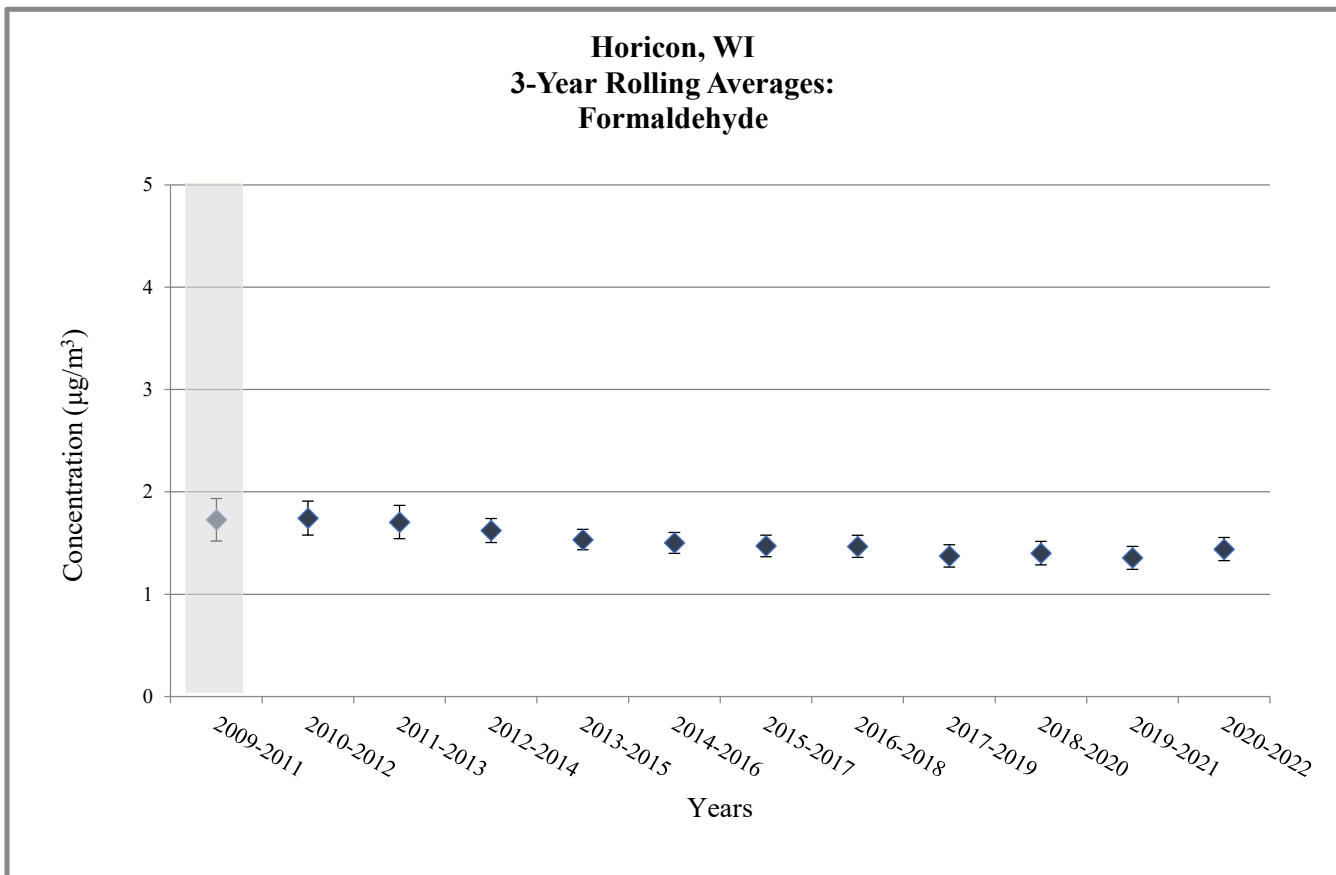
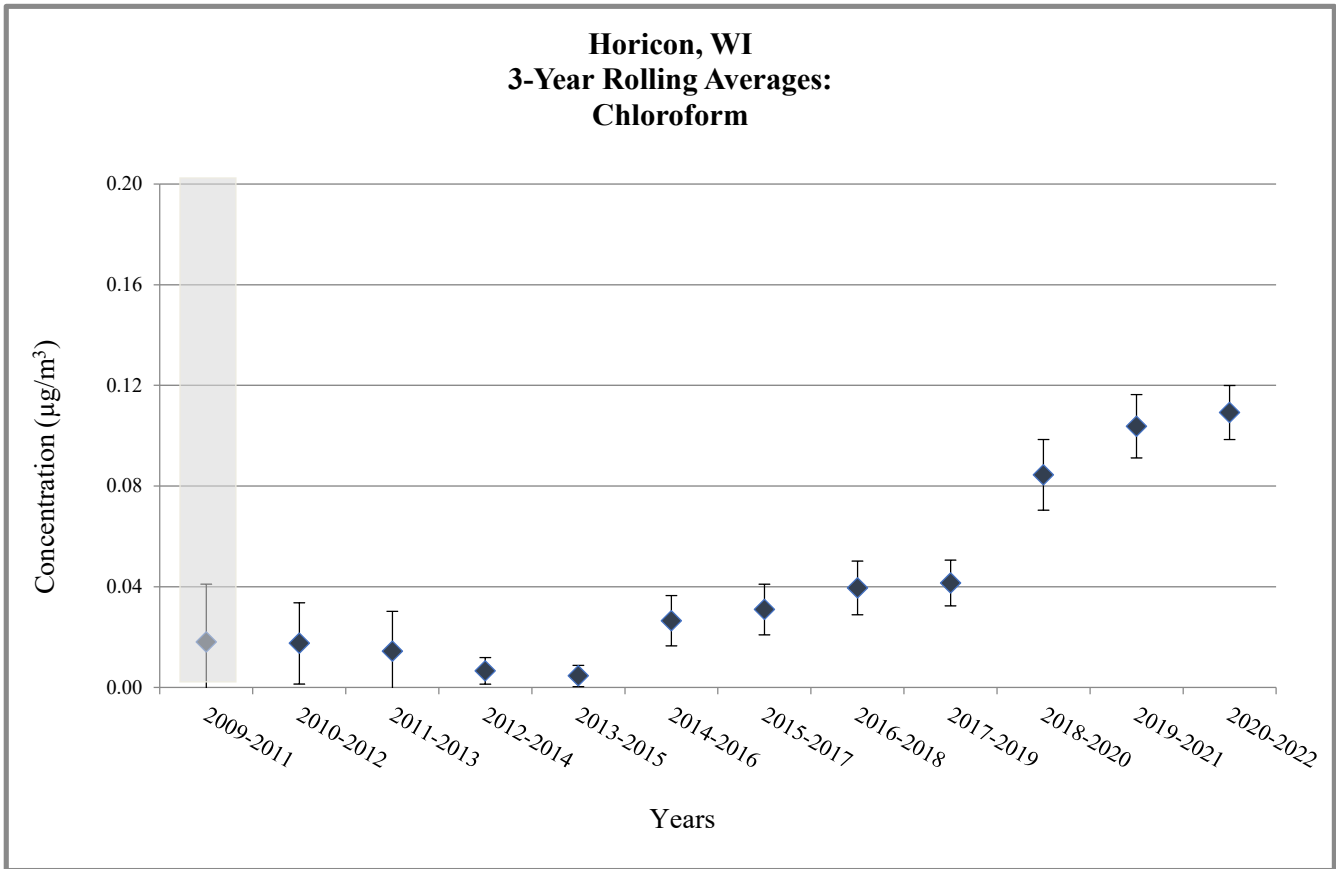
Does not meet MQO or wasn't able to collect enough samples

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations



Does not meet MQO or wasn't able to collect enough samples

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations




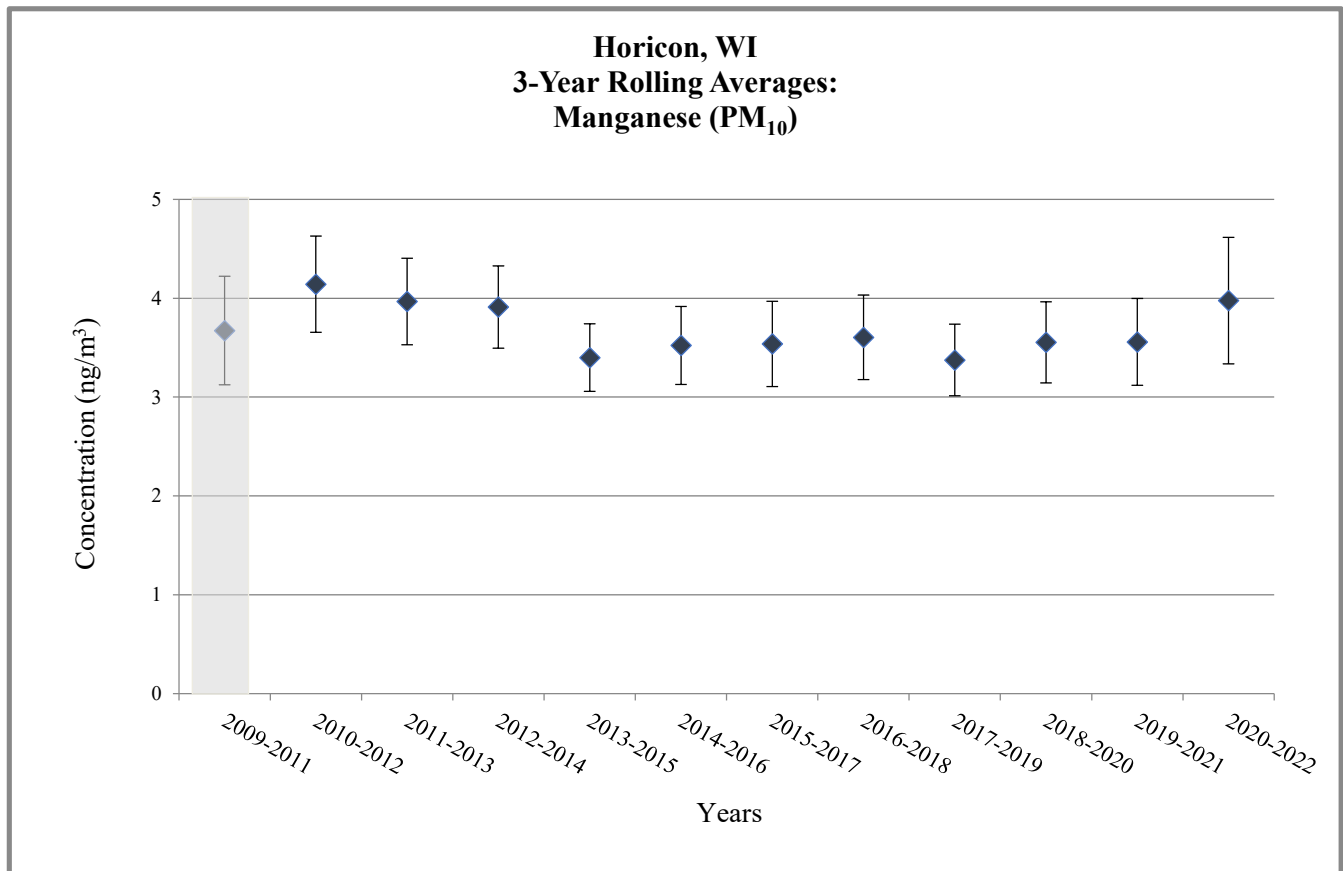
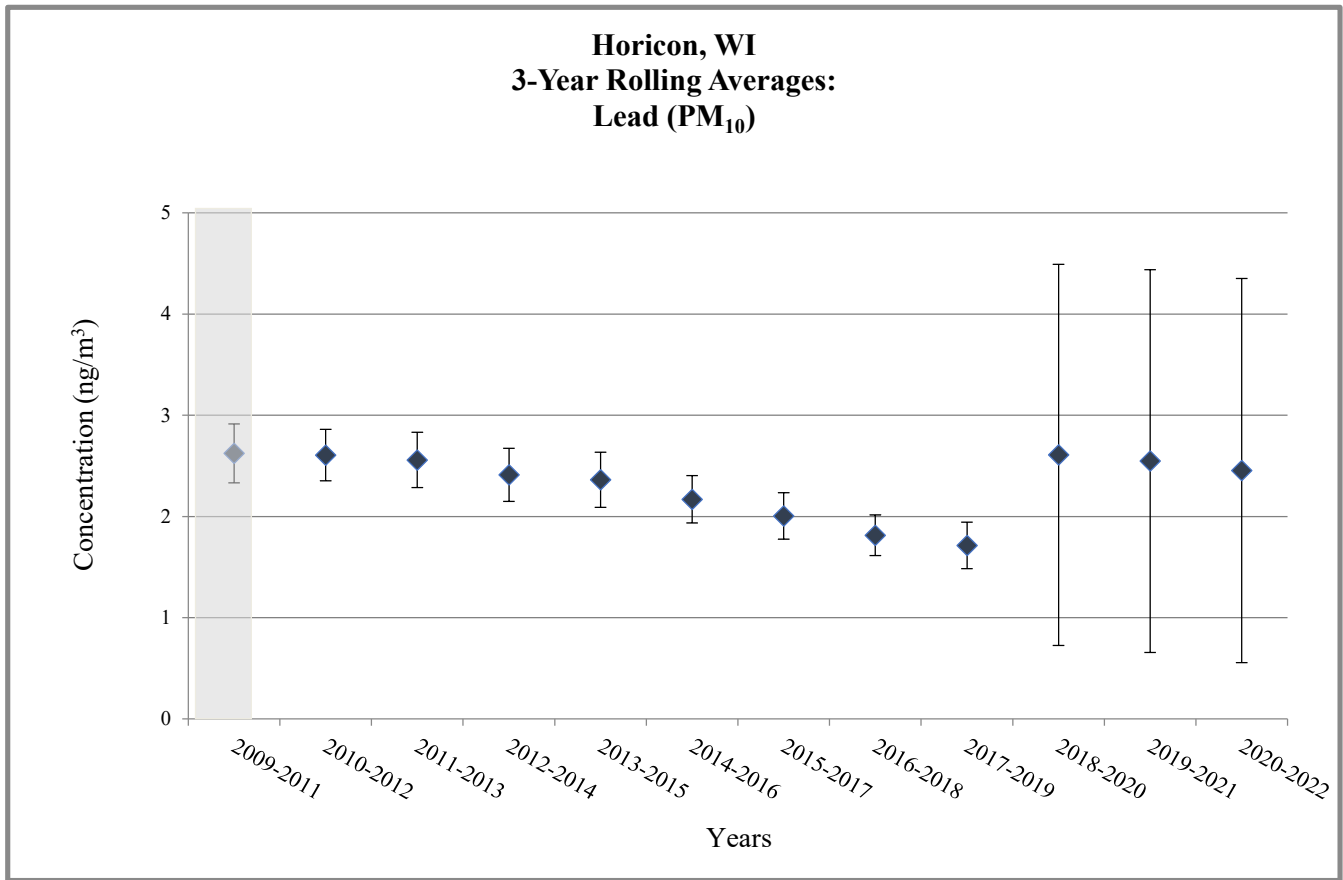
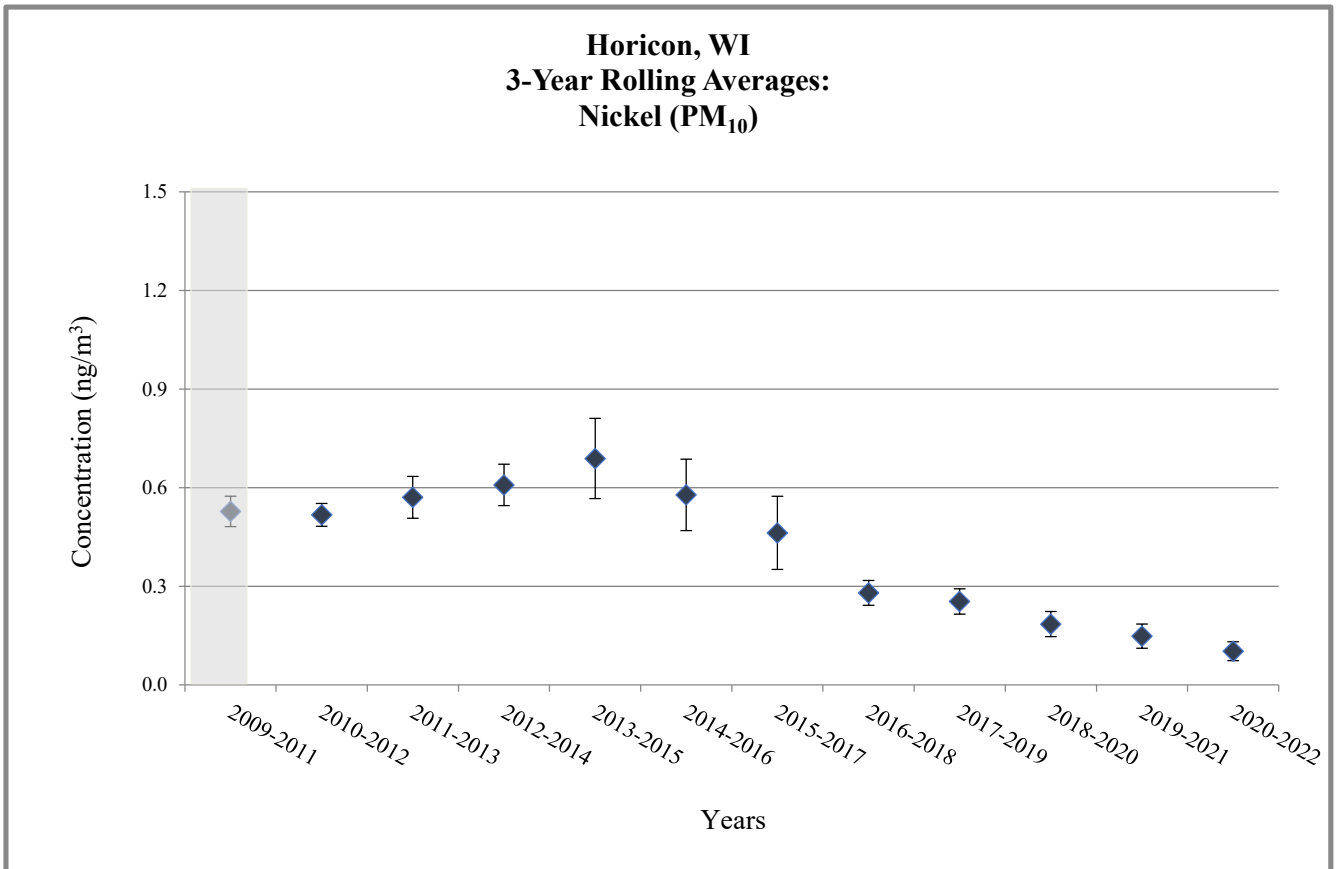
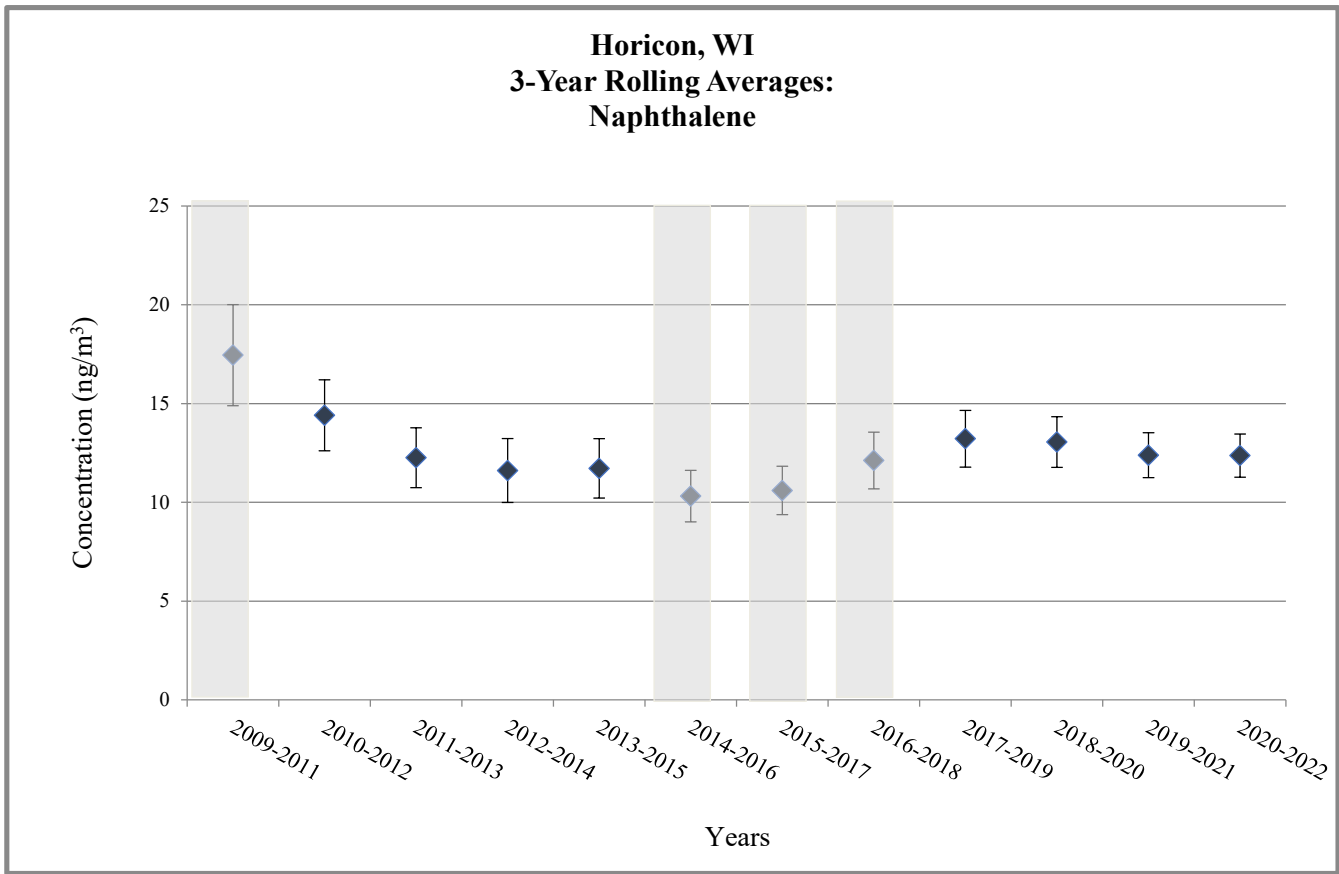
 Does not meet MQO or wasn't able to collect enough samples

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations



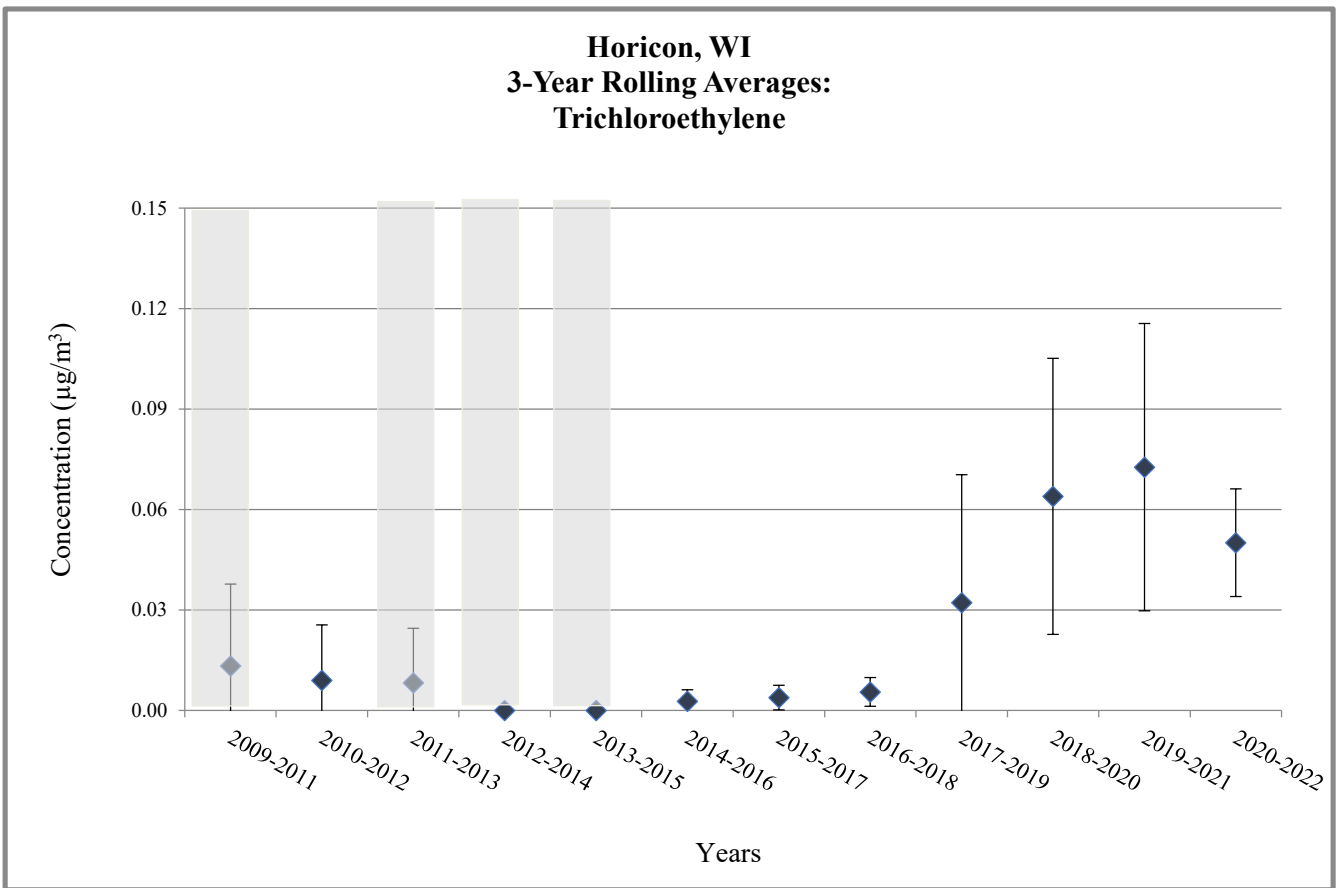
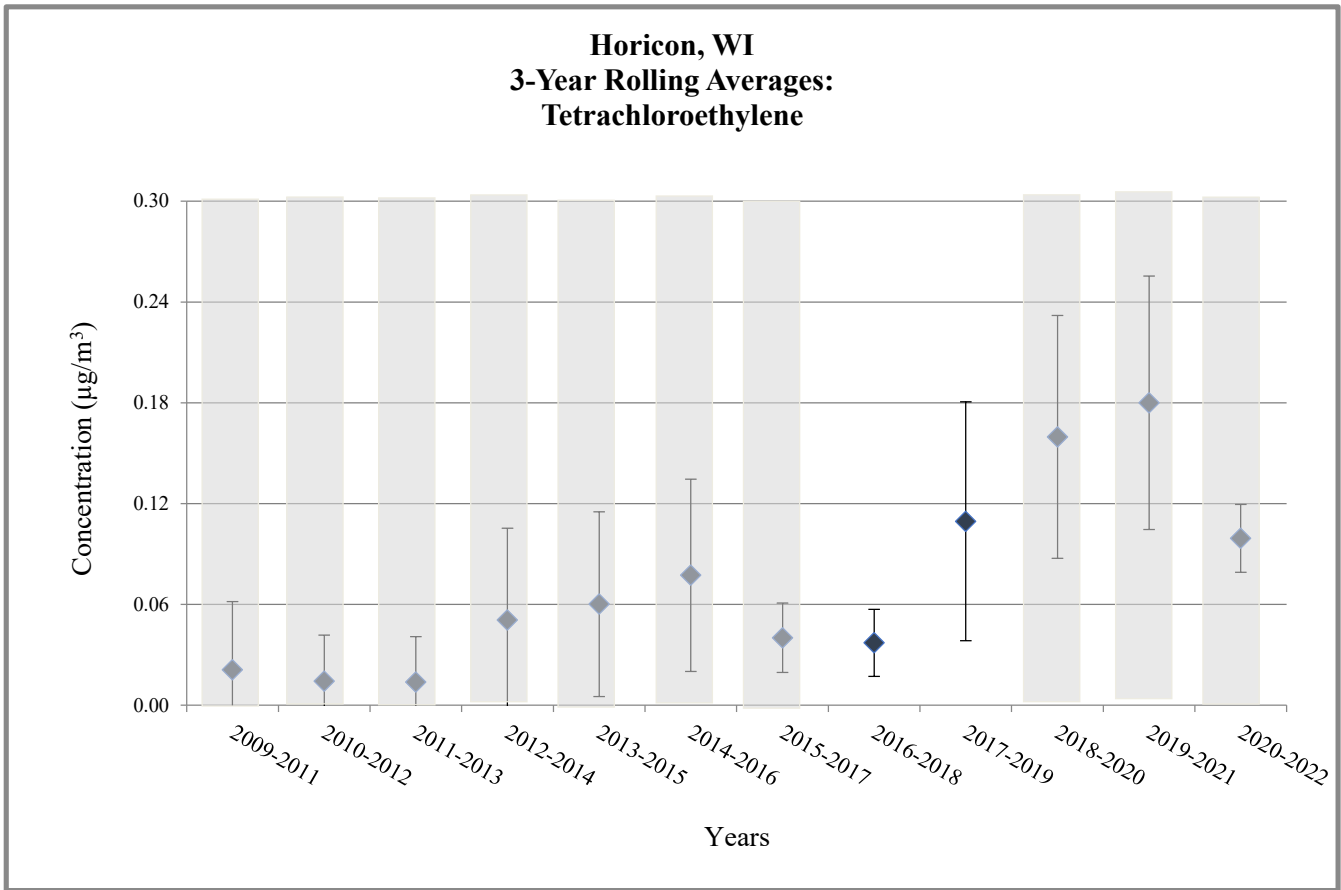
Does not meet MQO or wasn't able to collect enough samples

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations



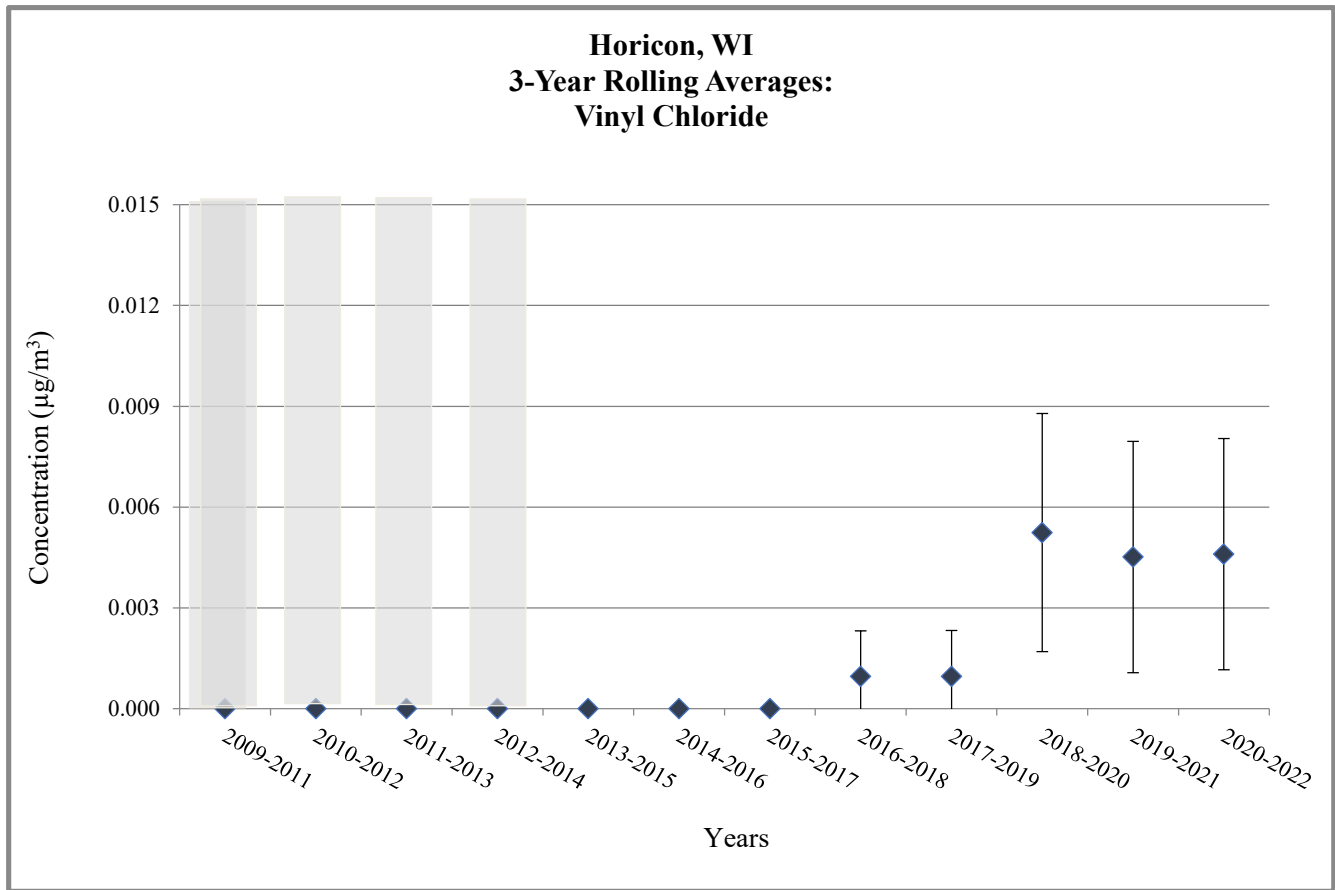
Does not meet MQO or wasn't able to collect enough samples

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations



Does not meet MQO or wasn't able to collect enough samples

Figure 4. Horicon, WI - 3-Year Rolling Average Concentrations




 Does not meet MQO or wasn't able to collect enough samples

Table 6. NATTS Network Assessment: MQO#1 - Completeness Percentage at Horicon, WI

Year	Benzene	Butadiene, 1,3-	Carbon tetrachlorid	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs							Carbonyls		PM10 Metals						PAHs	
<i>Horicon, WI (AQS Site Code: 55-027-0001)</i>																	
2009	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a
2010	97	97	97	97	97	97	97	100	100	93	93	93	93	93	93	95	95
2011	97	97	97	97	97	97	97	103	103	97	97	97	97	97	97	97	97
2012	97	97	97	97	97	97	97	97	97	93	93	93	93	93	93	97	97
2013	100	100	100	100	100	100	100	102	102	92	92	92	92	92	92	100	100
2014	100	100	100	100	100	100	100	98	98	100	100	100	100	100	100	98	89
2015	98	98	98	98	98	98	98	98	98	97	103	100	97	97	102	97	97
2016	100	100	100	100	100	100	100	102	102	100	100	100	100	100	100	98	98
2017	100	100	100	100	100	100	100	100	100	102	102	102	102	102	102	100	100
2018	98	98	98	98	98	98	98	102	102	100	100	100	100	100	100	100	100
2019	98	98	98	98	98	98	98	100	100	102	102	102	102	102	102	85	85
2020	97	97	97	97	97	97	97	98	98	98	98	98	98	98	98	97	95
2021	85	85	85	85	85	85	85	97	97	98	98	98	98	98	98	97	97
2022	98	98	98	98	98	98	98	102	102	100	100	100	100	100	100	100	100

	A-rated: ≥85%
	B-rated: Between 75% to 85%
	Does not meet: ≤75%
	-- No data available

^a: Scheduled sampling began midway through the year, thus, the site did not have the opportunity to collect enough samples to meet the 85% MQO.

Table 7. NATTS Network Assessment: MQO#2 - Reported Method Detection Limits (MDLs) at Horicon, WI

Year	Benzene	Butadiene, 1,3-	Carbon tetrachlorid	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs							Carbonyls		PM10 Metals						PAHs	
<i>Horicon, WI (AQS Site Code: 55-027-0001)</i>																	
2009	2.46	2.21	3.70	0.98	3.99	1.07	2.32	2.22	0.39	0.13	0.02	0.03	0.00	0.02	0.04	0.07	0.01
2010	2.46	2.21	3.70	0.98	3.99	1.07	2.32	0.12	0.07	0.126	0.024	0.029	0.00	0.02	0.04	0.02	0.00
2011	2.46	2.21	3.70	0.98	3.99	1.07	2.32	0.10	0.06	0.13	0.02	0.03	0.002	0.02	0.04	0.02	0.004
2012	2.46	2.21	3.70	0.98	3.99	1.07	2.32	0.10	0.06	0.13	0.02	0.03	0.00	0.02	0.04	0.31	0.005
2013	2.09	1.88	3.15	0.83	3.39	2.28	1.98	0.24	0.80	0.13	0.02	0.03	0.00	0.02	0.04	0.31	0.00
2014	2.09	1.88	3.15	0.83	3.39	2.28	1.98	0.07	0.59	0.13	0.02	0.03	0.002	0.02	0.04	0.31	0.00
2015	2.09	1.88	3.15	0.83	3.39	2.28	1.98	0.06	1.88	0.13	0.02	0.03	0.001	0.02	0.04	0.31	0.00
2016	0.37	0.55	0.52	0.24	1.44	0.40	0.40	0.06	0.70	0.16	0.03	0.03	0.001	0.06	0.09	0.24	0.01
2017	0.34	0.53	0.48	0.22	1.36	0.40	0.37	0.02	0.16	0.16	0.03	0.03	0.001	0.06	0.09	0.26	0.01
2018	0.34	0.53	0.48	0.22	1.04	0.40	0.37	0.11	0.75	0.11	0.02	0.02	0.001	0.02	0.04	0.32	0.01
2019	0.24	0.24	0.40	0.08	0.57	0.32	0.24	0.11	0.75	0.20	0.024	0.020	0.002	0.03	0.15	0.23	0.04
2020	1.55	1.35	2.66	0.66	2.87	1.91	1.32	0.11	0.75	0.05	0.015	0.002	0.002	0.02	0.19	0.23	0.04
2021	0.25	0.26	0.41	0.07	0.49	0.24	0.20	0.09	0.59	0.05	0.015	0.002	0.002	0.02	0.19	0.13	0.13
2022	0.25	0.37	0.41	0.07	0.73	0.33	0.18	0.11	0.75	0.05	0.015	0.002	0.002	0.01	0.13	0.13	0.15

	A-rated: MDL to Target MDL ratio ≤ 1
	B-rated" MDL to Target MDL ratio between 1 and 2
	Does Not Meet MDL to Target MDL ratio >2
	-- No data available

Table 8. NATTS Network Assessment: MQO#3 - Bias Percent Difference at Horicon, WI

Year	Benzene	Butadiene, 1,3-	Carbon tetrachlorid	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs							Carbonyls		PM10 Metals						PAHs	
<i>Horicon, WI (AQS Site Code: 55-027-0001)</i>																	
2009	-12.2	-12.8	10.9	-19.3	-18.2	-9.5	-1.3	-9.1	-5.4	-4.0	10.5	9.1	-14.1	-28.3	-13.1	-1.7	-7.7
2010	18.7	50.0	36.7	8.2	7.5	29.4	31.8	2.0	2.0	-15.5	-6.0	-17.0	-18.9	-17.3	-13.7	---0.8a	---26.4a
2011	43.4	36.8	25.4	9.1	20.8	20.0	37.7	-4.6	-5.8	-2.7	3.7	-4.6	-0.3	8.1	-5.1	--b	--b
2012	--c	--c	--c	--c	--c	--c	--c	--c	--c	10.8	14.7	12.0	16.8	16.5	5.2	45.6	8.0
2013	11.9	10.4	16.1	1.5	-14.1	7.3	1.3	-2.4	-2.7	-4.2	4.1	-2.2	1.6	-5.4	-2.3	-4.7	7.1
2014	8.9	2.7	-20.6	-7.8	-26.7	-8.3	14.5	-11.9	-8.9	1.3	--d	--d	3.9	--d	--e	-36.0	-16.8
2015	-3.5	-2.2	--f	-16.4	-13.0	-11.6	3.4	--c	--c	--c	--c	--c	--c	--c	--c	-28.3	-33.6
2016	25.2	10.8	120.9	-0.5	14.8	14.8	4.2	-0.9	-10.4	0.8	5.6	4.2	4.5	3.4	32.0	-40.7	-40.0
2017	-7.8	-17.7	13.7	0.1	-7.0	-8.8	-10.6	10.6	-2.4	-2.2	2.5	0.2	2.3	2.0	18.9	-24.5	-40.1
2018	1.8	-37.5	-6.3	4.7	-3.5	-3.1	2.4	-4.2	3.7	-2.5	-7.6	-5.4	-4.2	-5.3	6.6	-11.9	-22.2
2019	-3.4	-12.6	-12.7	11.2	3.9	3.3	-4.1	-3.8	-5.8	3.4	3.6	1.8	7.2	1.1	-1.3	-10.0	5.2
2020	-29.5	-16.3	-10.5	-7.8	-10.7	-9.6	-9.3	-2.1	-4.2	-2.5	1.0	-1.4	-4.1	-4.7	-4.8	12.1	2.9
2021	1.5	1.2	12.1	9.0	10.3	5.9	6.7	1.8	-1.8	-4.8	0.0	-1.1	-6.1	-5.9	-7.1	12.5	26.0
2022	9.7	-19.3	6.9	2.0	5.6	-1.0	-8.6	-2.5	-5.2	--c	--c	--c	--c	--c	--c	--c	--c

	A-rated:±25%
	B-rated: Between 25% to 35% or between -25% to -35%
	Does not meet:>35% or <35%
	No data available

^a: Bias data presented is an average of the ERG and WSLH PT results.

^b: Pollutant was sampled at this site and year, but no bias data were reported.

^c: No Proficiency Test samples were sent for this pollutant and year.

^d: The Proficiency Test sample for this pollutant was 0; the site reported a concentration as "< MDL", rather than 0. EPA accepted this result.

^e: Although a Proficiency Test sample was sent to the lab supporting this site and year, the results were nullified by EPA due to QA issues.

^f: Bias data result was <0.085; this entry was deemed acceptable by EPA.

Table 9. NATTS Network Assessment: MQO#4 - Overall Method Precision %CV at Horicon, WI

Year	Benzene	Butadiene, 1,3-	Carbon tetrachlorid	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs							Carbonyls		PM10 Metals						PAHs	
<i>Horicon, WI (AQS Site Code: 55-027-0001)</i>																	
2009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2010	2.8	--a	--a	--a	--a	--a	--a	8.7	9.7	3.0	11.5	4.7	4.4	9.5	28.5	--	--
2011	0.3	--a	--a	--a	--a	--a	--a	10.0	10.5	24.1	16.7	30.2	21.6	15.6	18.3	5.8	9.8
2012	1.9	--a	--a	--a	--a	--a	--a	6.3	7.9	5.6	--a	61.5	21.4	1.6	3.4	--a	4.9
2013	0.2	--a	5.5	--a	--a	--a	--a	--	--	11.6	--a	16.1	5.3	1.0	25.0	--a	16.9
2014	2.3	--a	--a	--a	--a	--a	--a	3.1	8.4	3.5	--a	40.6	8.5	11.2	17.1	--a	31.6
2015	--	--	--	--	--	--	--	31.2	15.0	2.7	--a	8.8	11.1	13.4	31.2	--a	9.2
2016	--	--	--	--	--	--	--	--	--	9.8	--a	18.9	37.3	13.0	26.9	--	--
2017	--	--	--	--	--	--	--	--	--	18.5	--a	33.4	17.1	7.6	45.4	--a	7.3
2018	2.3	--a	5.5	--a	--a	--a	--a	0.9	2.3	18.9	--a	45.0	2.4	3.7	13.6	--a	7.3
2019	14.2	--a	6.2	36.2	31.0	--a	--a	0.9	2.6	10.9	--a	10.9	5.0	6.8	23.2	--a	12.7
2020	13.6	--a	8.4	--a	--a	--a	--a	1.8	3.1	6.0	0.7	7.5	4.1	3.0	--a	0.3	17.3
2021	0.0	0.0	0.0	0.0	0.0	--a	--a	--	--	14.2	--a	13.1	9.4	11.5	--a	5.0	11.5
2022	0.0	--a	0.0	0.0	--a	--a	--a	--	--	40.7	--a	44.3	25.9	18.9	17.0	0.3	2.9

Green = precision ≤ 15%
 Yellow = precision > 15% to ≤ 25%
 Red = precision > 25%
 Gray = dataset was not rated

^a: The primary and/or replicate value were less than the MDL, so no calculation could be made.

Table 10. NATTS Network Assessment: MQO#4 - Analytical Method Precision %CV at Horicon, WI

Year	Benzene	Butadiene, 1,3-	Carbon tetrachlorid	Chloroform	Tetrachloroethylene	Trichloroethylene	Vinyl chloride	Acetaldehyde	Formaldehyde	Arsenic (PM10)	Beryllium (PM10)	Cadmium (PM10)	Lead (PM10)	Manganese (PM10)	Nickel (PM10)	Benzo(a)pyrene	Naphthalene
	VOCs							Carbonyls		PM10 Metals						PAHs	
<i>Horicon, WI (AQS Site Code: 55-027-0001)</i>																	
2009	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2012	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a
2013	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a
2014	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a
2015	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a
2016	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a
2017	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--a	--b	0.8
2018	3.8	--b	3.6	--b	0.0	7.4	--b	0.9	0.6	2.4	--b	1.8	1.2	1.1	2.5	--b	1.3
2019	6.8	--b	3.3	7.0	1.7	3.9	--b	0.5	0.6	2.7	--b	4.3	4.6	2.9	7.1	0.6	0.6
2020	18.8	--b	18.1	--b	0.9	8.8	--b	1.3	0.5	2.5	--b	5.1	4.9	5.0	--b	0.6	0.3
2021	1.4	--b	1.4	3.5	--b	--b	--b	0.5	0.6	18.2	--b	18.4	16.4	16.8	--b	0.7	0.0
2022	1.0	--b	0.9	1.6	--b	--b	--b	1.8	0.5	6.1	11.1	1.7	1.0	1.2	3.2	0.4	2.0

	A-rated: ≤ 15% CV
	B-rated: Between 15%CV to 25% CV
	Does Not Meet: >25% CV or did not report Precision (required in the NATTS Workplan Template since 2012)
	-- No data available

^a: Per the NATTS Workplan template, analytical replicates were required to be reported to AQS for this sampling year.

^b: The primary and/or replicate value were less than the MDL, so no calculation could be made.

Appendix A. Equipment Inventory

Pollutant Type	Year(s)	Manufacturer/Model, Extraction Type, and Year
<i>Sampling Equipment</i>		
Carbonyls	2009-2022	Custom-built (Year Deployed: <1999)
PAHs	2009-2015	Thermo Andersen GPS-1 PUF Sampler (Year Deployed: 2009)
	2016	Thermo Andersen Hi-Vol; Thermo PS-1 Hi-Vol (Year Deployed: 2009)
	2017-2022	Tisch TE-1000 PUF+ Year Deployed: 2017)
PM ₁₀ Metals	2009-2011	Anderson housing and impactor, TISCH volumetric control (Year Deployed: 2008)
	2012-2015	Anderson Hi-Vol Model 321A sampler (2 units) (Year Deployed: 2008)
	2016-2022	Tisch Hi-Vol (Year Deployed: 2015)
VOCs	2009-2022	Custom-built (Year Deployed: 2009)
<i>Analytical Equipment</i>		
Carbonyls	2009	Waters Alliance 2695 HPLC /model 2996 PDA (Year Deployed: 2005)
	2010-2012	Waters Acquity UPLC/PDA detection (Year Deployed: 2006)
	2013-2022	Waters Acquity UPLC/PDA detection (Year Deployed: 2012)
PAHs	2009	HP/Agilent 5890/5971 GC/MS (Year Deployed: 2008)
	2010-2015	HP/Agilent 6890/5973 GC/MS (Year Deployed: 2004)
	2016-2021	HP/Agilent 6890N/5973 GC/MS (Year Deployed: 2004)
	2022	HP/Agilent 6890N/5973 GC/MS (Year Deployed: 2004) & Thermo Trace 1310/TSQ9000 GC/MS/MS (Year Deployed: 2019)
PM ₁₀ Metals	2009-2019	Thermo/VG Elemental PQ ExCell ICP-MS (Year Deployed: 2001)
	2020	Thermo/VG Elemental PQ ExCell ICP-MS (Year Deployed: 2001) & Thermo Fisher Scientific Element2 (Year Deployed 2004)
	2021	Thermo Fisher Scientific Element2 (Year Deployed 2004) & Element XR ICP-MS (Year Deployed 2015)
	2022	Thermo Fisher Scientific Element XR ICP-MS (Year Deployed 2015)
VOCs	2009-2022	HP/Agilent 6890N/5975 GC/MS (Year Deployed: 2006)
<i>Preconcentrator Equipment</i>		
VOCs	2009-2016	Entech 7100A (Year Deployed: 2006)
	2017-2022	Entech 7200 (Year Deployed: 2017)
<i>Standards Preparation Equipment</i>		
VOCs	2009-2016	Entech 4600 (dynamic dilution) (Year Deployed: 2004)
	2017-2022	Entech DDS PG7-50.00-PSIA (dynamic dilution) (Year Deployed: 2017)
<i>Canister Cleaning Equipment</i>		
VOCs	2009-2022	Entech 3100A (Hot) (Year Deployed: 2004)
<i>PM₁₀ Extraction Equipment</i>		
PM ₁₀ Metals	2009	Branson (Sonicator) (Year Deployed: 1980)
	2010-2015	Environmental Express (Hotblock) (Year Deployed: 1980)
	2016-2018	Environmental Express (Hotblock) (Year Deployed: 2016)
<i>PAHs Extraction Equipment</i>		
PAHs	2009	Dionex -300 (ASE) (Year Deployed: 2004)
	2010-2018	Lab Line (Soxhlet) (Year Deployed: <2000)