

PCB Concentration Trends Report

for

Seafood Sampled

between

2003 to 2025

from

New Bedford Harbor Superfund Site

by

Massachusetts Department of Environmental Protection

May 2026

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1. Introduction

This report documents the trends of the PCBs (polychlorinated biphenyls) measured in edible seafood species caught in New Bedford Harbor and surrounding Buzzards Bay in southeastern Massachusetts from 2003 to 2025. This seafood monitoring program is part of the ongoing PCB cleanup program for the New Bedford Harbor (NBH) Superfund Site and was a collaborative effort involving the MA Department of Marine Fisheries (DMF), the MA Department of Environmental Protection (MassDEP), and the U.S. Environmental Protection Agency Region I (EPA). The seafood sampling program has been on-going since 2002, the Annual Seafood Monitoring Reports can be found at the EPA's web site at www.epa.gov/new-bedford-harbor under "Technical Documents" (MassDEP, 2003-2025). The 2002 data are not included in this trend summary because only a subset (28 vs. 209) of the congeners were analyzed that year.

Due to the identification of high PCB levels in area seafood, the MA Department of Public Health in 1979 promulgated regulations restricting seafood consumption in three closure areas in and around NBH as shown on Figure 1 (MADPH, 1979). NBH was subsequently listed as a Superfund site in 1983. The Remedial Action for the Site resulted in over 1.1 million cubic yards (cy) of PCB-contaminated sediments remediated to date by dredging, shoreline excavation, and capping. The annual dredging started in 2003 and ended in March of 2020. The shoreline remediation and restoration were completed in 2024. This seafood monitoring program will aid in the evaluation of the overall effectiveness of the harbor cleanup, as well as assist in the implementation of institutional controls and seafood recommendations.

2. Seafood Monitoring Program Design

Based on previous investigations and risk assessments performed for the NBH Site, a variety of species were selected for this monitoring program that are considered locally caught seafood; are generally available for field collection; and which bracket potential worst case tissue levels (MassDEP, 2003a-2025a). The species collected and the dates the species were collected are shown on Table 1. The goal of this seafood monitoring program is to acquire annual collections of these species in sufficient numbers from all three closure areas to enable statistical comparisons between them, but with the understanding that some species will not necessarily be caught in sufficient numbers every year.

To meet this goal, the monitoring design calls for five composite samples for each species from each of the three closure areas. Based on previous site sampling experience, modifications have been made to the original sampling approach. Each composite sample consists of legally harvestable organisms.

Consistent with CERCLA and the NCP, the selected remedy for the Site (EPA, 1998, Section X) uses a site-specific risk-based seafood criteria of 0.02 ppm PCBs based on local patterns of seafood consumption which involve more frequent consumption of local PCB-contaminated seafood than that used by the FDA standard of 2 ppm PCBs.

In addition to seafood, surface water samples were also collected in 2011, 2023 to 2025 and analyzed for total PCBs. In 2024 and 2025, surface water samples were also analyzed for

dissolved PCBs. Water samples were collected at most of the quahog locations, and additional samples north of the Coggeshall Street Bridge were collected in 2024 and 2025. The water column PCB data is presented in Table 18. The target level for surface water PCBs, discussed in the 1998 ROD, is the Ambient Water Quality Criteria (AWQC) of 0.03 ug/l (or ppb).

3. Analytical Chemistry

In 2025, the seafood and water samples were analyzed for 209 PCB congeners by GC/MS-SIM (gas chromatography/mass spectrometry-selective ion monitoring) based on EPA Methods 680 and 8270D. The total number of PCB congeners analyzed in 2025 increased by 61 as compared to previous years (2017 to 2024) when 148 PCB congeners were analyzed, or an increase of 41.2% in the number of congeners. However, the increase in the number of PCB congeners analyzed only accounted for an approximate 2.3% increase to the total reported PCB concentrations when comparing 209 to 148 congeners from the 2025 dataset (MassDEP, 2026), and it was determined to be acceptable for comparisons with the previous years of data. In the sampling rounds between 2003 to 2016, 136 PCB congeners were analyzed. From 2017 to 2024, the analysis of twelve additional PCB congeners did not significantly add to the total PCB mass, allowing for comparisons with previous years of PCB congener data. The 136, 148, and 209 congener lists measured each included the eighteen National Oceanic and Atmospheric Administration (NOAA) list congeners and the twelve World Health Organization (WHO) 1998 list of dioxin-like congeners. Two congeners, BZ #105 and #118, appear on both lists. The NOAA congener list was used by the MA DMF in its analysis of Area III lobsters from 1988 - 1998, while PCB Aroclors had been analyzed and reported prior to 1988. The NOAA PCB congener list typically represents approximately 45% of the total PCB in marine tissue (NOAA, 1993).

The congeners quantitated in this effort are listed in the New Bedford Harbor Superfund Site Quality Assurance Project Plans (MassDEP, 2003b-2025b). The WHO '98 congeners were included to enable the evaluation of risks to human health due to the presence of any dioxin-like PCB congeners, if deemed necessary.

Tissue from the collected specimens was filleted, sub-sampled and/or composited as necessary for sample homogenization, extraction and analysis. Species included quahog, conch alewife, black sea bass, blue crab, blue fish, lobster, scup, striped bass, tautog, and oyster.

- The first step in the analytical process for the shellfish samples was the compositing of twelve to fifteen individual samples for quahog, conch, and oyster from each location; these were combined to form one composite sample per location and were homogenized using a tissuemizer.
- The first step in the analytical process for the bluefish and striped bass was to take the tissue for each sample location and homogenize using a tissuemizer. Bluefish fillets were processed with the skin on, with one split sample prepared with the skin off. Striped bass fillets with the skin off and striped bass stomach contents were processed as individual samples.
- The first step in the analytical process for the black sea bass, scup, and tautog was the compositing of the tissue from up to five specimens per location (if multiple caught) and homogenize using a tissuemizer to obtain one sample per location. Scup fillets were processed with the skin off, with one split sample prepared with the skin on. Tautog fillets

were processed with the skin on, with one split sample prepared with the skin off. Black sea bass fillets were processed with the skin off.

- The first step in the analytical process for the alewife was to take the tissue for the one sample location and homogenize using a tissuemizer. Alewife fillets with the skin off and alewife roe were processed as individual samples.
- The first step in the analytical process for the blue crab was the compositing of the tissue from up to five specimen per location (if multiple caught) and homogenize using a tissuemizer to obtain one sample per location. Blue crab consisted of leg and claw meat.
- The first step in the analytical process for the lobster was the compositing of the tissue from up to five specimens per location (if multiple caught) and homogenize using a tissuemizer to obtain one sample per location. Lobster meat, consisting of tail and claw, and lobster tomalley were processed as individual samples.

From each seafood group, approximately five grams of wet sample tissue were collected. This sample tissue was then extracted using EPA Method 3570 Microscale Solvent Extraction (MSE) techniques (spin extraction with acetone/methylene chloride in a sealed vessel).

The extracts were concentrated. The lipid portion of the extract was removed and separated from the PCB portion, which was cleaned up prior to analysis. Following sample cleanup, extracts were dried and concentrated using the Kuderna-Danish (K-D) method, brought up to final volume and analyzed. Extract cleanup was performed using Alumina Column Cleanup. Gel Permeation Chromatography (GPC), Sulfuric Acid Cleanup, and/or Silica Gel Cleanup are also employed as appropriate, based on the sample extracts and tissue species.

Sample analysis of water and tissue using GC/MS-SIM allowed identification and quantitation of congeners using selected PCB congeners from BZ1 to BZ209. The identification of the specific congeners was accomplished by comparing their mass spectra with the electron impact spectra of the calibration standards. Congener concentrations were determined using mean relative response factors from a multi-level calibration curve. Response factors for congeners were determined relative to internal standard technique. A multi-point curve was used for the individual congeners to demonstrate the linear range of the instrument.

Continuing calibrations assured linearity remained for the duration of the analysis. Laboratory SOPs are available in the Quality Assurance Project Plans (MassDEP, 2003b-2025b) should further details on chromatographic conditions, quality control criteria, and other elements of the analysis be needed. While lipid content was reported, the wet weight PCB concentrations reported herein are not lipid normalized.

The data validation summaries for the laboratory analysis are presented in Appendix B of the New Bedford Harbor Annual Seafood Monitoring Reports (AMEC/Wood/WSP, 2003-2026).

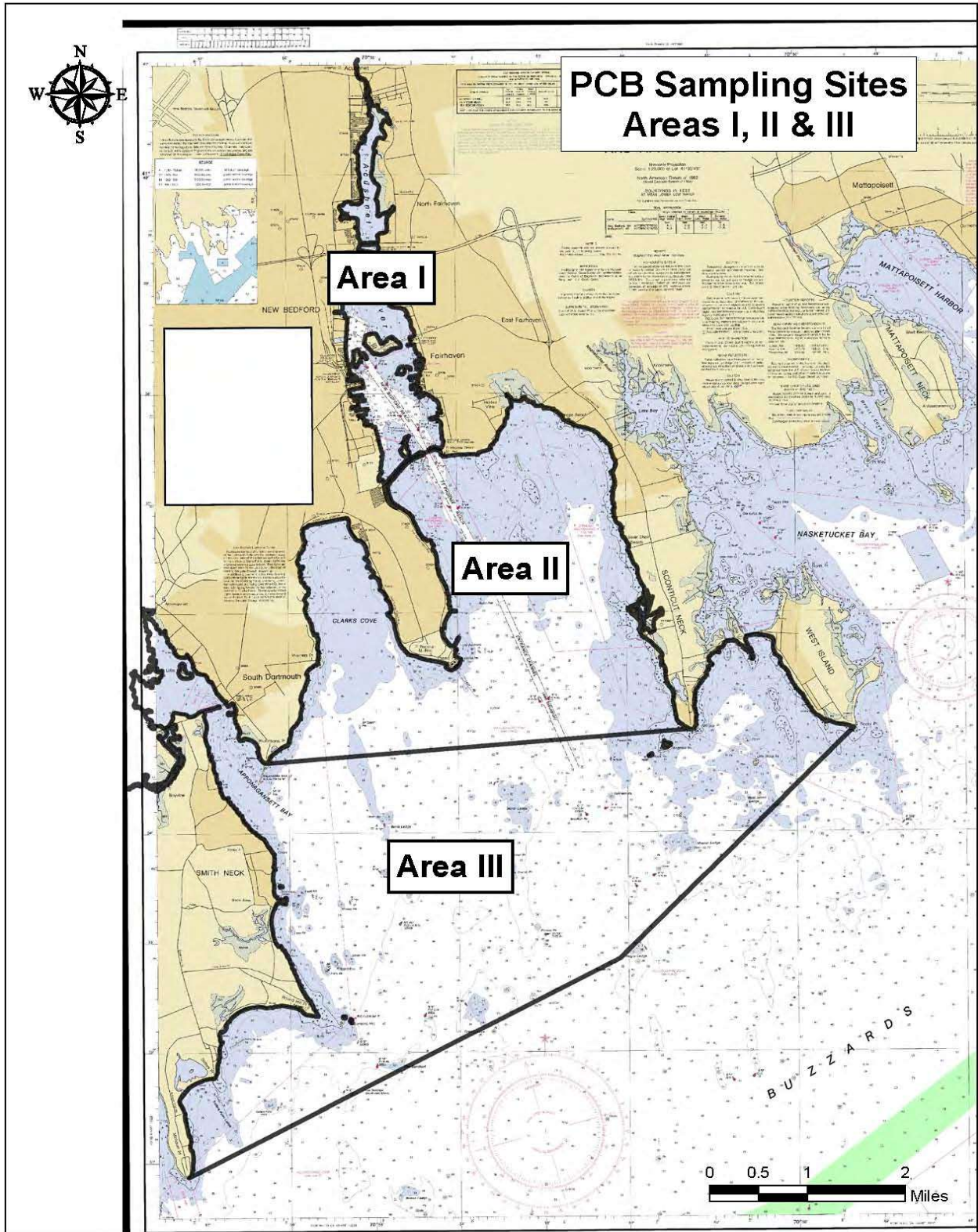


Figure 1 Fish Closure Areas I to III

Table 1: New Bedford Harbor Seafood Species Sampled - 2003 to 2025

Finfish/Shellfish Caught in the New Bedford Harbor Area				
Species	Years	Areas	Locations per Area	Fish per Location
Alewife	2005 - 2014 2019, 2024	1	1-2	5
American Eel	2004 - 2007 2012	1 & 2	3-5 for Area 1 1 for Area 2	1 - 3
Black Sea Bass	2003 - 2014 2019, 2024	2 & 3	2-5 for Area 2 5 for Area 3	1 - 5
Blue Crabs	2003 - 2007 2012, 2019, 2024	1	4	3
Bluefish	2008 - 2013 2019, 2022 - 2025	2 & 3	1-2 for Area 2 2 for Area 3	1 - 6
Summer Flounder	2003 - 2004	2 & 3	1	2 - 13
Winter Flounder	2003 - 2006	1 - 3	1-2 for Area 1 1 for Areas 2 & 3	1 - 2
Lobster	2003 - 2007 2012, 2019, 2024	1 - 3	1 for Area 1 5 for Areas 2 & 3	1 - 4
Quahogs - pre-spawn	2003 - 2025	1 - 3	5 for Area 1 5-7 for Area 2 4-5 Area 3	12 - 20
Quahogs - post spawn	2003 - 2014	1 - 3	5 for Area 1 5-7 for Area 2 4-5 Area 3	12 - 20
Scup	2003 - 2014 2019, 2024	2 & 3	4-5 for Area 2 5 for Area 3	3 - 6
Striped Bass	2010 - 2016 2019, 2022 - 2025	1 - 3	1-5	1
Tautog	2012 - 2014, 2019, 2024	2 & 3	1-5	1 - 5
Channel Whelk - Conch	2009 - 2014 2016 - 2025	2 & 3	1-5 for Area 2 3-5 for Area 3	4 - 14
Oyster	2025	1	3	14 to 17

4. Results and Discussion

Overall, most of the seafood species indicate a decrease in PCB congener concentration since the start of the dredging in 2003. The following are summaries for each species. Note that only the detected values (*i.e.*, “Hits”) are reported on this Trends Report. For the results with the ½ detection level used for non-detections, see the Annual Reports (MassDEP, 2003-2025). The figures were designed to include all the data values, so the Y-axis scale may differ in the three Areas for a particular species (*i.e.*, higher PCB levels in Area 1 seafood than in Area III). Overall, the 1998 ROD estimated that it could take approximately ten years from the completion of remediation to achieve the seafood tissue goal of 0.02 ppm PCBs in all species in all areas.”

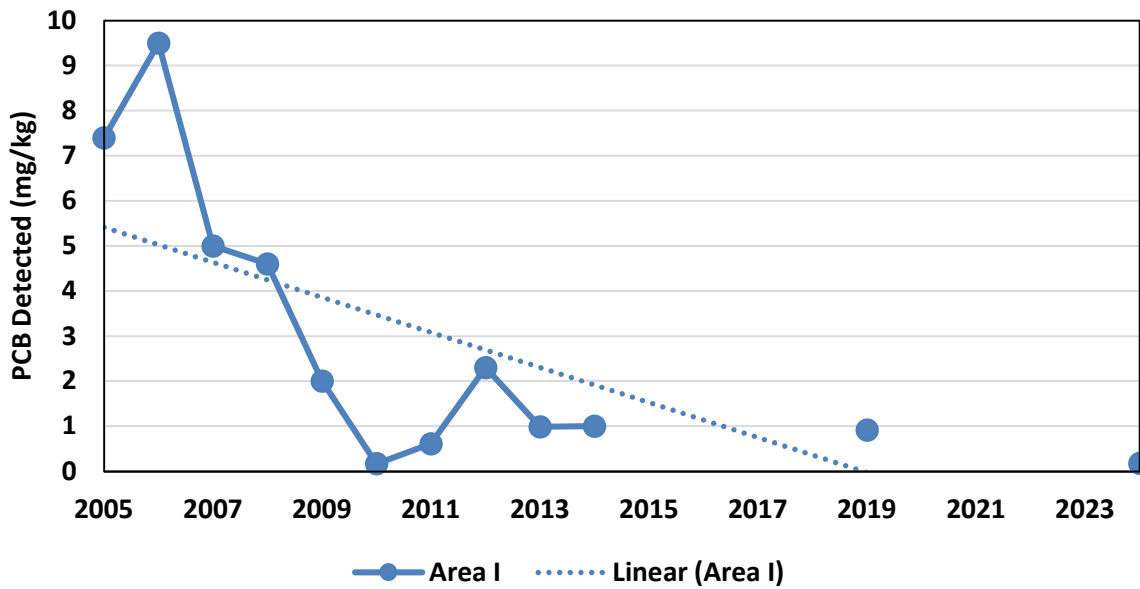
Alewife

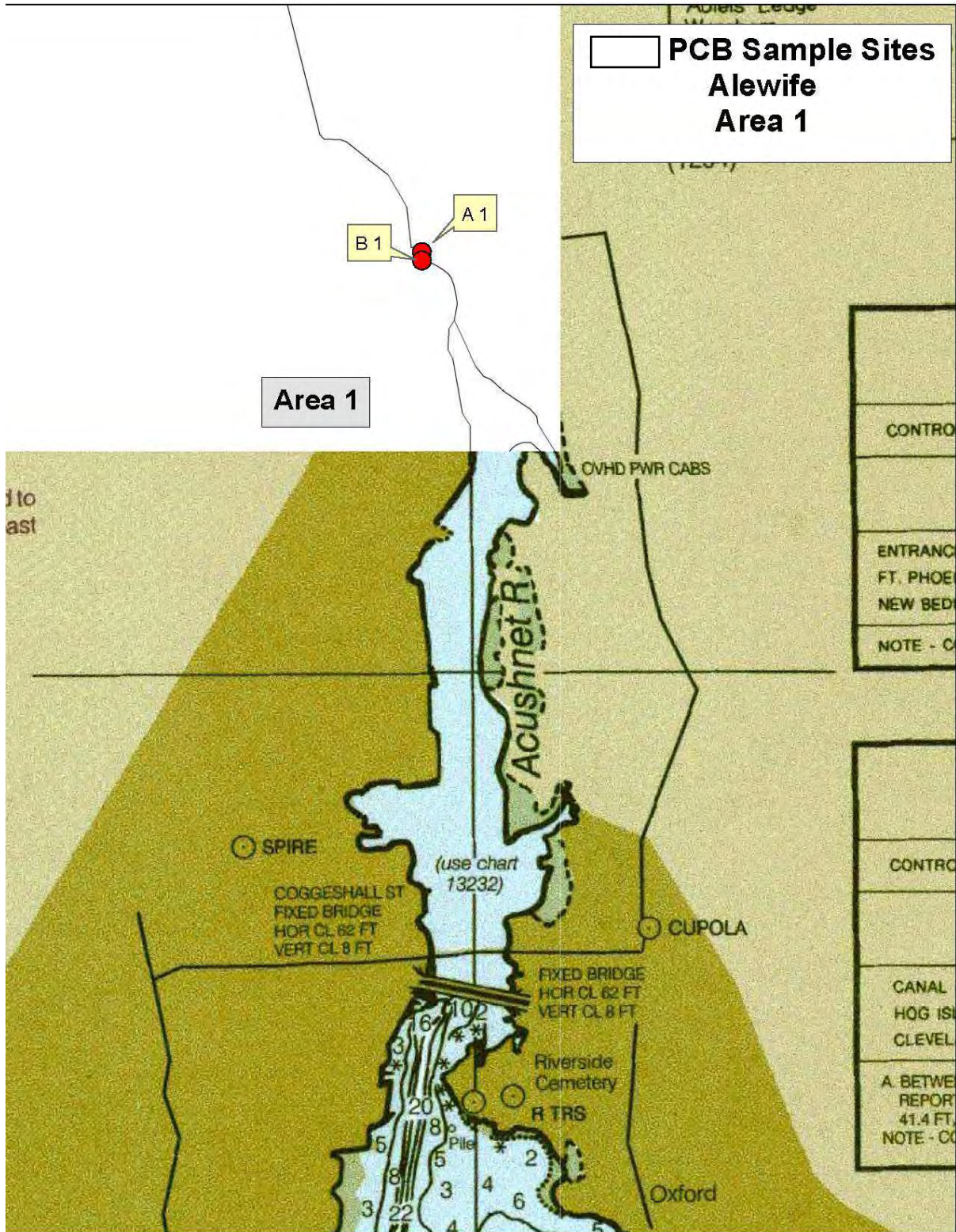
The trend for the PCB concentrations in Alewife has been decreasing from 2005 to 2024 as shown in Table 2 and Figure 2. The sample locations for the Alewife are shown on Figures 3 and 4.

Table 2: Alewife PCB Congener Detected Concentrations (mg/kg)

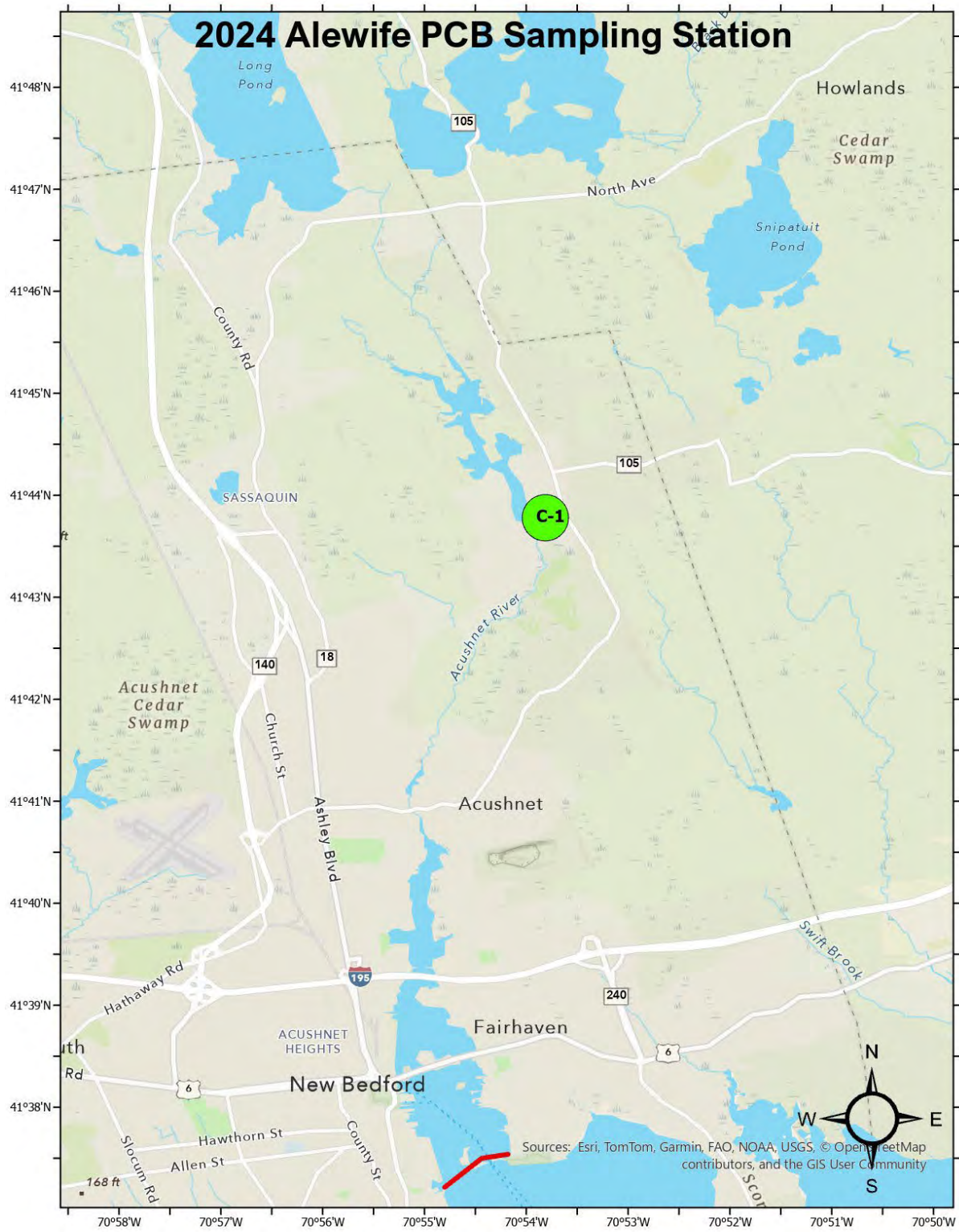
Station\ Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 to 2018	2019	2015 to 2018	2024	
1A	4.9	11	5.0	4.6	2.0						Not Sampled		Not Sampled		
1B	9.9	7.8													
1C						0.17	0.61	2.3	0.99	1.0				0.92	
Average	7.4	9.5	5.0	4.6	2.0	0.17	0.61	2.3	0.99	1.0		0.92		0.18	

Figure 2: Alewife PCB Congeners Concentration Trends





**Figure 3 Alewife Sample Locations - Area I
2005 to 2009**



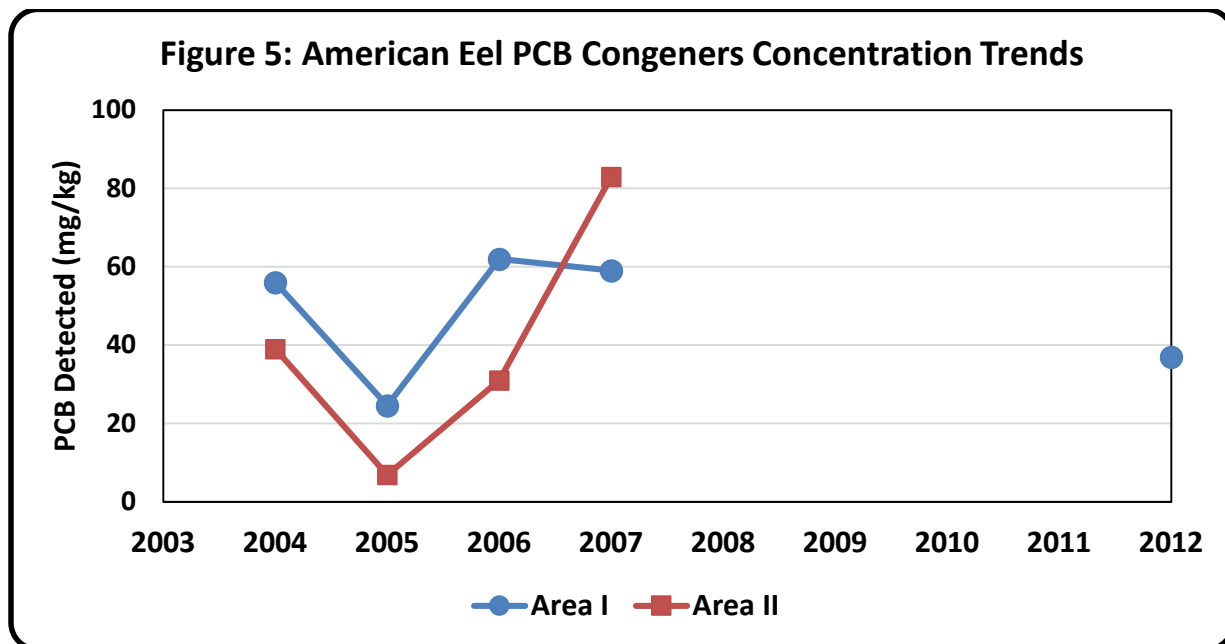
**Figure 4 Alewife Locations Area I
2010 to 2014, 2019, and 2024**

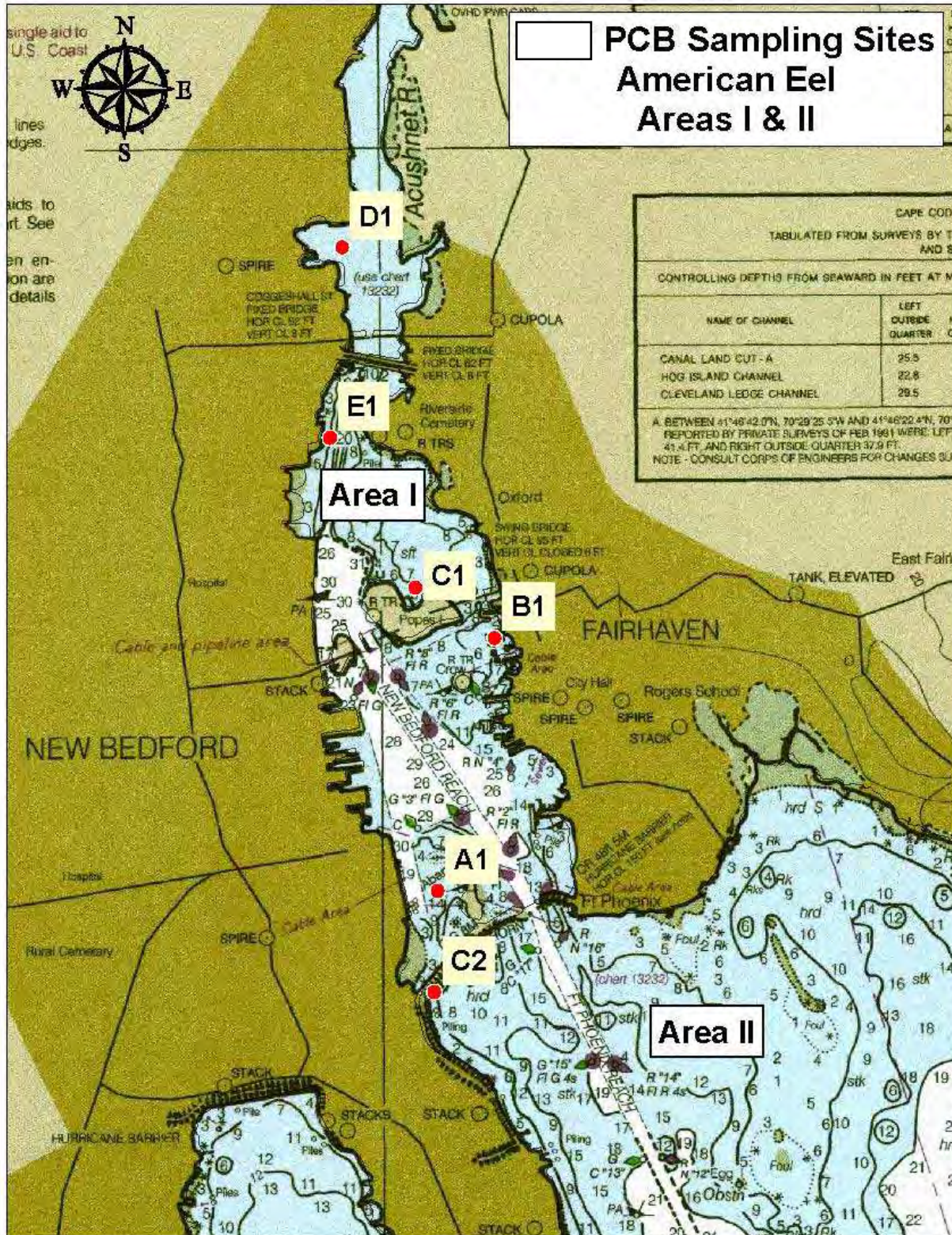
American Eel

The trend for the PCB concentrations in American Eel cannot be determined because of the limited number of samples collected. The data set is shown on Table 3 and Figure 5. The sample locations for the American Eel are shown on Figure 6.

Table 3: American Eel PCB Congener Detected Concentrations (mg/kg)

Area\Year	2004	2005	2006	2007	2008 to 2011	2012
1A	28	16	81	47	Not Sampled	53
1B	31	15	69	22		20
1C	22	29	37	66		
1D	132	35	70	102		37
1E	67	28	55	59		
Average	56	24.6	62	59		37
2C	39	6.9	31	83		





**Figure 6 American Eel Sample Locations -Area I & II
2004 to 2007, and 2012**

Black Sea Bass

The trend for the PCB concentrations in Black Sea Bass had been decreasing from 2003 to 2024 for Area III, and decreased from 2003 to 2014 in Area II, there was an increase in 2019, however the latest (2024) concentration in Area II is similar to the concentrations before 2015 as shown in Table 4 and Figure 7. The sample locations for the Black Sea Bass are shown on Figure 8.

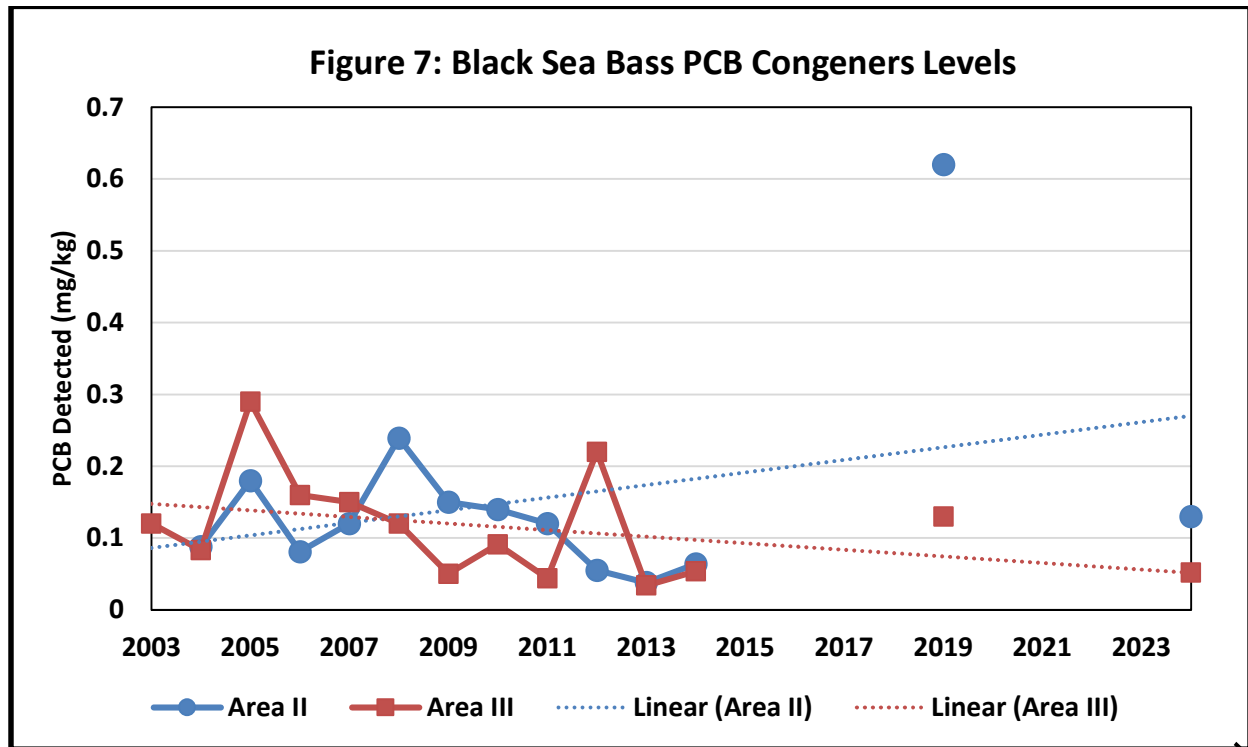
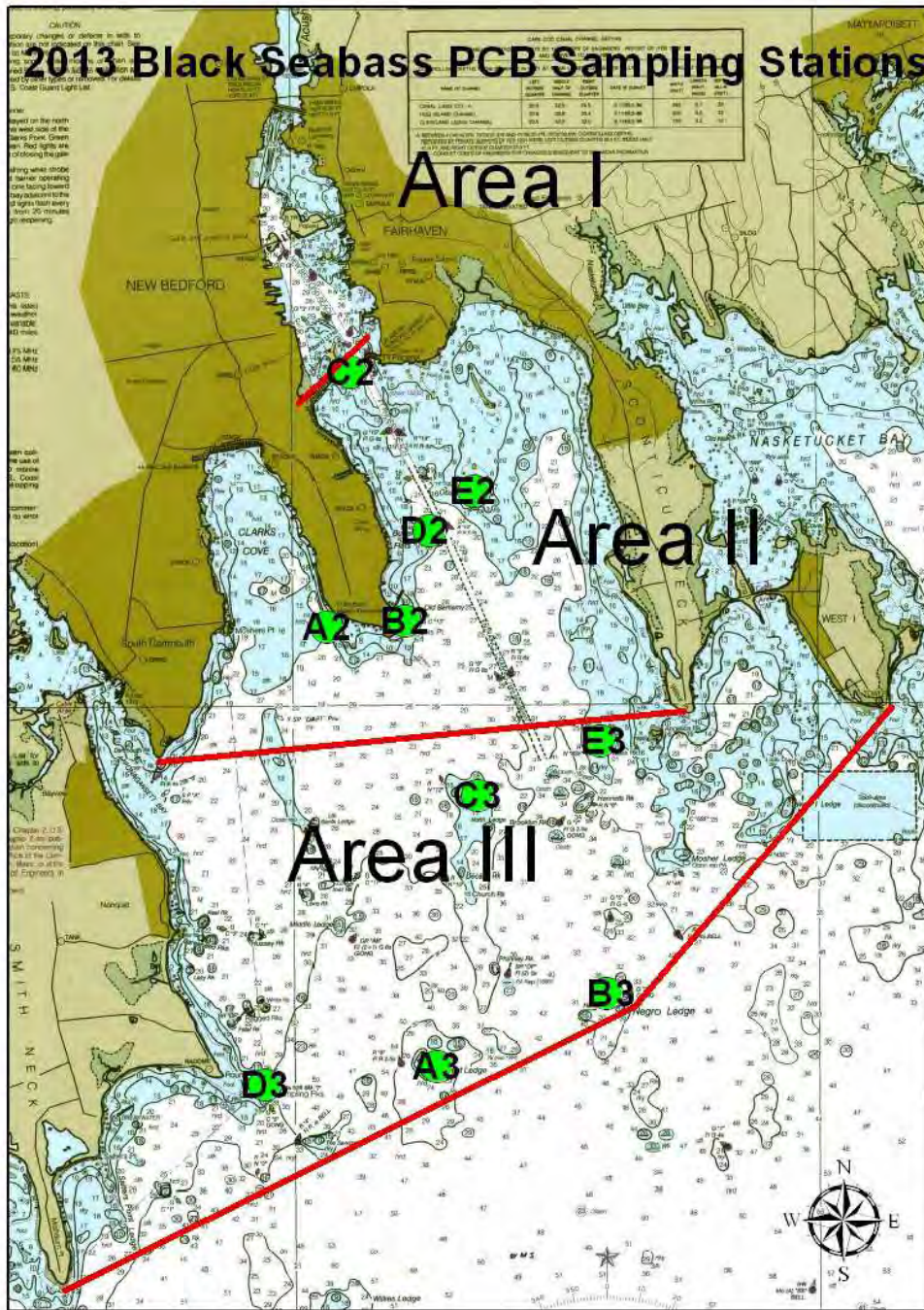


Table 4: Black Sea Bass PCB Congener Detected Concentrations (mg/kg)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 to 2018	2019	2020 to 2023	2024		
2A			0.12	0.05	0.27	0.026	0.018	0.34	0.16		0.069	0.027	Not Sampled	0.34	Not Sampled	0.11		
2B		0.077	0.23	0.08	0.023	0.47	0.036	0.18	0.077		0.024	0.038		0.23				
2C					0.079	0.18	0.042	0.11	0.29		0.018	0.13		0.57		0.037		
2D		0.099	0.10	0.07	0.058	0.14	0.63	0.051	0.035	0.06	0.028	0.065		1.8		0.24		
2E			0.27	0.13	0.15	0.38	0.023	0.036	0.053		0.053	0.057		0.14				
Average		0.088	0.18	0.08	0.12	0.24	0.15	0.14	0.12	0.06	0.038	0.064		0.62		0.13		
3A	0.12	0.075	0.13	0.08	0.10	0.12	0.087	0.052	0.036	0.024	0.016	0.035		Not Sampled		0.037	Not Sampled	0.049
3B		0.056	0.28	0.06	0.23	0.048	0.077	0.029	0.037		0.024	0.044				0.02		0.089
3C		0.096	0.42	0.17	0.093	0.25	0.034	0.026	0.083	0.59	0.081	0.037				0.2		0.036
3D		0.085	0.29	0.27	0.12	0.030	0.028	0.057	0.052	0.056	0.0086	0.057	0.31		0.035			
3E		0.10	0.32	0.23	0.19	0.12	0.025	0.29	0.010		0.042	0.096	0.1					
Average	0.12	0.083	0.29	0.16	0.15	0.11	0.05	0.091	0.044	0.22	0.034	0.054	0.13		0.052			

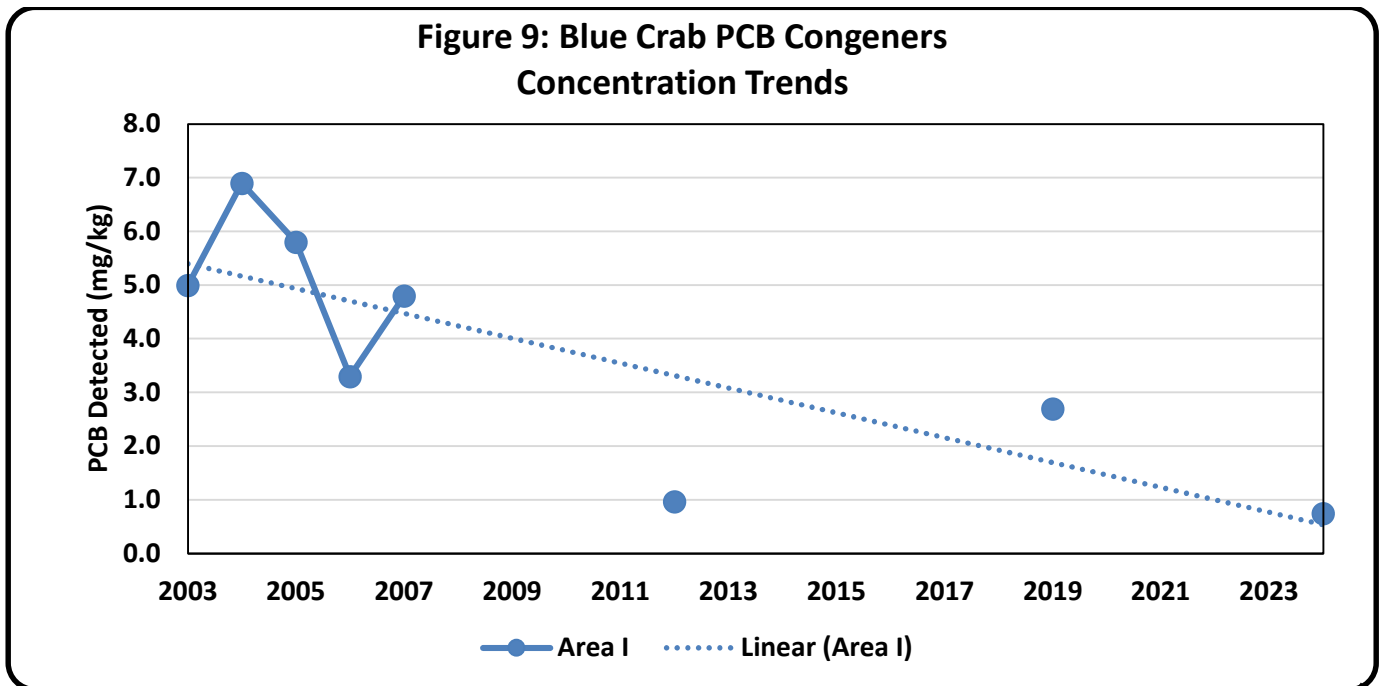


**Figure 8 Black Sea Bass Sample Locations -Area II & III
2003 to 2014, 2019, and 2024**

Blue Crab

The trend for the PCB concentrations in Blue Crab has been decreasing from 2003 to 2024 as shown in Table 5 and Figure 9. The sample locations for the Blue Crab are shown on Figure 10.

Table 5: Blue Crab PCB Congener Detected Concentrations (mg/kg)											
Station\ Year	2003	2004	2005	2006	2007	2008 to 2011	2012	2013 to 2018	2019	2020 to 2023	2024
1A	12	14	16	3.8	9.0	Not Sampled	0.64	Not Sampled	4.4	Not Sampled	0.89
1B	7.8	2.1	3.5	4.7	3.5		1.1		2.1		1.3
1C	1.4	5.9	2.7	3.1	2.7		0.90		1.5		0.46
1D	0.65	6.0	0.80	1.4	3.9		1.3				0.34
1E	3.0										
Average	5.0	6.9	5.8	3.3	4.8		0.97		2.7		0.75





**Figure 10 Blue Crab Sample Locations - Area I
2003 to 2007, 2012, 2019, and 2024**

Bluefish

The trend for the PCB concentrations in Bluefish has been relatively level for Areas II and III from 2008 to 2025 as shown in Table 6 and Figure 11. The trend in Area I cannot be determined because of limited number of years of sampling. The sample locations for the Bluefish are shown on Figure 12.

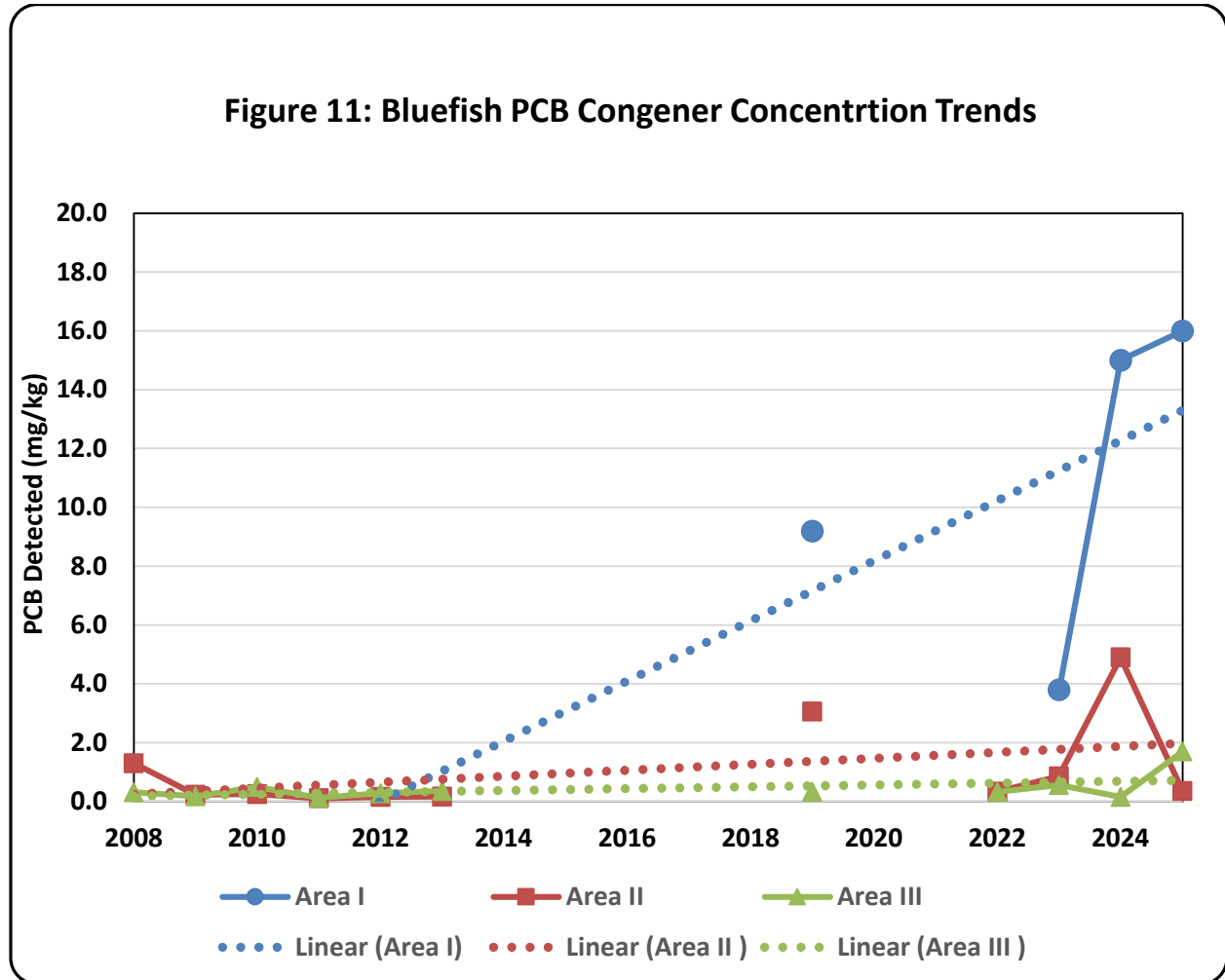
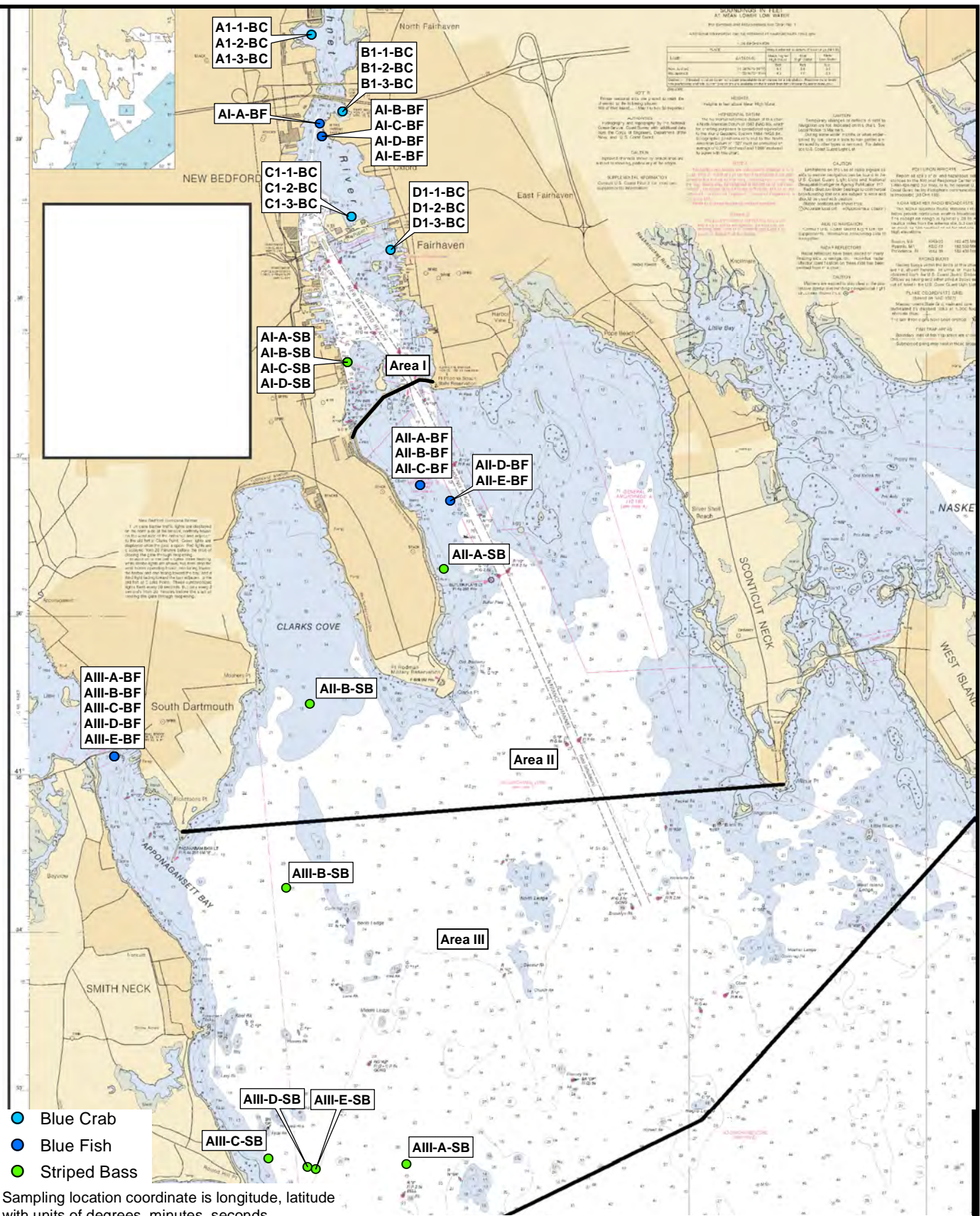


Table 6: Bluefish PCB Congener Detected Concentrations (mg/kg)

Station\Year	2008	2009	2010	2011	2012	2013	2014 to 2018	2019	2022	2023	2024	2025	
1A							Not Sampled	10.8		5.1	8.4	8.7	
1B								3.2		2.2	11	8.8	
1C								5.9		5.0	15	9.4	
1D								16.5		2.7	17	11	
1E								8.8			23	11	
1F													18
1G													46
Average									9.0		3.8	15	16
2A	1.5		0.13	0.12	0.21	0.13			9.4	0.26	2.3	0.91	0.27
2B	1.1	0.23	0.37	0.10	0.11	0.21			0.57	0.52	0.49	2.5	0.29
2C									2.1	0.34	0.61	3.4	0.42
2D									1.8	0.33	0.46	4.9	0.46
2E									1.4	0.25	0.44	13	
Average	1.3	0.23	0.25	0.11	0.16	0.17			3.1	0.34	0.86	4.9	0.36
3A	0.39	0.14	0.84	0.15	0.40	0.20			0.25	0.092	0.13	0.29	1.8
3B	0.24	0.22	0.16	0.11	0.16	0.51			0.12	0.24	0.38	0.19	1.7
3C									0.22	0.74	1.4	0.16	2.3
3D									0.94	0.41	0.47	0.13	1.5
3E									0.18	0.18	0.44	0.023	1.3
Average	0.32	0.18	0.50	0.13	0.28	0.36			0.34	0.33	0.56	0.16	1.7

Note: Samples collected between 2008 and 2013 had composited fish per location. Samples collected in after 2019 had one fish per location. The following stations are in the same location: Stations 1A and 1C; 1D and 1E; 2C, 2D, and 2E in 2019; and 1A, 1B, and 1D in 2023.

Document: \\comp.phycan.net\GIS\USP\Map\100-PLD2\Project\Projects\New Bedford Harbor Superfund Site\SARSS V(GIS)\MapDocuments\2024_Locations_8x11P
 PDF: \\comp.phycan.net\GIS\USP\Map\100-PLD2\Project\Projects\New Bedford Harbor Superfund Site\SARSS V(GIS)\Figures\Figure 1- 2024.pdf 2/21/2025 2:30 PM roy.barnett



Sampling location coordinate is longitude, latitude with units of degrees, minutes, seconds.
 NOAA Raster Navigational Chart # 13232 for New Bedford Harbor and Approaches obtained from Office of Coast Survey at: <http://www.nauticalcharts.noaa.gov/mcd/Raster>

Prepared/Date: REB 2/12/25
 Checked/Date: CHL 12/22/23

Mass DEP
 New Bedford Harbor Monitoring
 New Bedford, Massachusetts



Area I, Area II and Area III
 Sampling Locations
 Project 3626236242 Figure 12

Conch

The trend for the PCB concentrations in Conch has been level in Areas II (except for 2016 and 2017) and decreasing in Area III from 2009 to 2024 as shown in Table 7 and Figure 13. The sample locations for the Conch are shown on Figure 14.

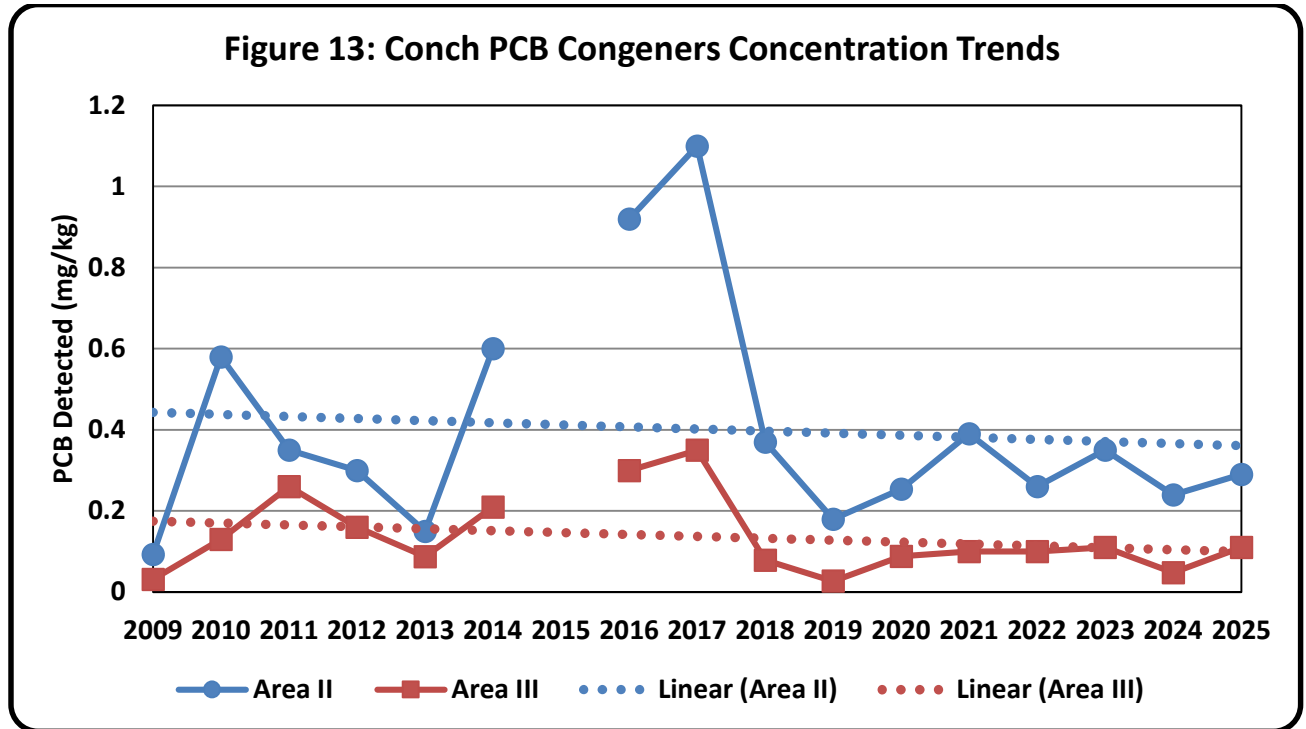
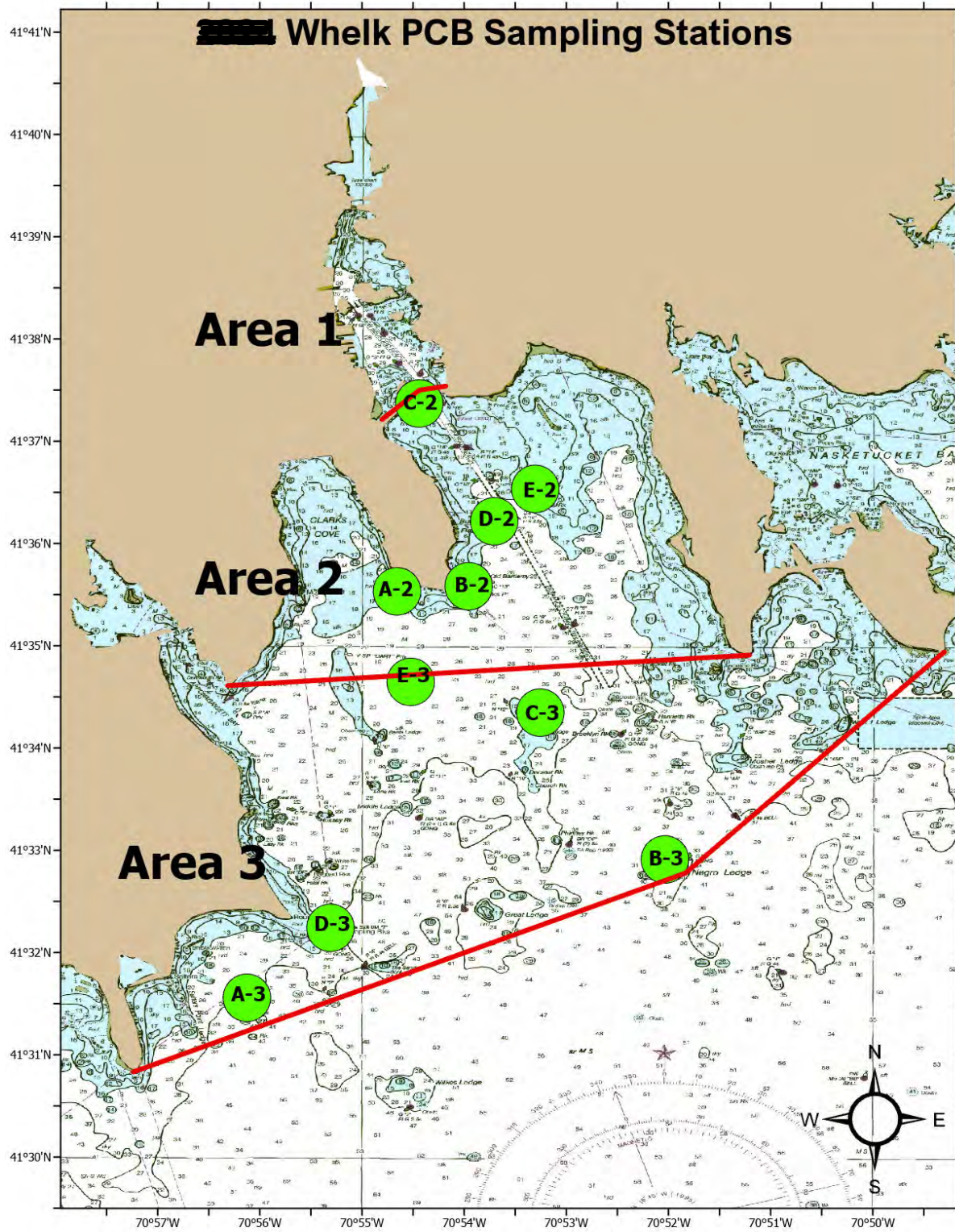


Table 7: Conch PCB Congener Detected Concentrations (mg/kg)

Station\ Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
2A	0.068		0.14	0.12	0.028	0.30	Not Sampled	0.55	0.36	0.18	0.068	0.15	0.17	0.16	0.15	0.28	0.12	
2B	0.11	0.58	0.22	0.25	0.12	0.88		0.76	1.4	0.26	0.23	0.23	0.35	0.26	0.41	0.12	0.33	
2C	0.16		0.56	0.67	0.40	0.65		1.4	2.3	0.74	0.33	0.41	0.73	0.32	0.53	0.21	0.40	
2D	0.040		0.63	0.23	0.14	0.44		1.5	1.3	0.45	0.17	0.25	0.34	0.40	0.41	0.28	0.29	
2E	0.089		0.21	0.22	0.078	0.72		0.41	0.26	0.20	0.10	0.23	0.34	0.15	0.27	0.31	0.32	
Average	0.093	0.58	0.35	0.30	0.15	0.60		0.92	1.1	0.37	0.18	0.25	0.39	0.26	0.35	0.24	0.29	
3A	0.035	0.13	0.13	0.21	0.066	0.14				0.40	0.058		0.023	0.070	0.092	0.082	0.036	0.079
3B	0.0093			0.098	0.023	0.043				0.15	0.033	0.021	0.069	0.066	0.10	0.067	0.038	0.033
3C	0.022	0.091	0.091	0.09	0.078	0.094			0.34	0.80	0.073	0.030	0.20	0.10	0.11	0.12	0.085	0.19
3D	0.013	0.17	0.72	0.23	0.21	0.43			0.25	0.13	0.079	0.022	0.050	0.081	0.072	0.16	0.036	0.09
3E	0.074		0.10	0.18	0.059	0.36				0.28	0.15	0.035	0.10	0.19	0.15	0.12	0.047	0.14
Average	0.031	0.13	0.26	0.16	0.087	0.21			0.3	0.35	0.079	0.027	0.088	0.10	0.10	0.11	0.048	0.11



**Figure 14 Conch Sample Locations - Area II & III
2009 to 2014, and 2016 to 2024**

Flounder

The trend for the PCB concentrations in Flounder cannot be determined because of the limited number of samples collected. The data set for Winter Flounder is shown on Table 8. The data set for Summer Flounder is shown on Table 9.

Table 8: Winter Flounder PCB Congener Detected Concentrations (mg/kg)

Station\Year	2003	2004	2005	2006
1A	1.8			
1B	3.9			
Average	2.8			
2C			2.0	0.042
3A	0.61			

Table 9: Summer Flounder PCB Congener Detected Concentrations (mg/kg)

Station\Year	2003	2004
2A		0.087
2E		0.81
Average		0.45
3A	0.097	

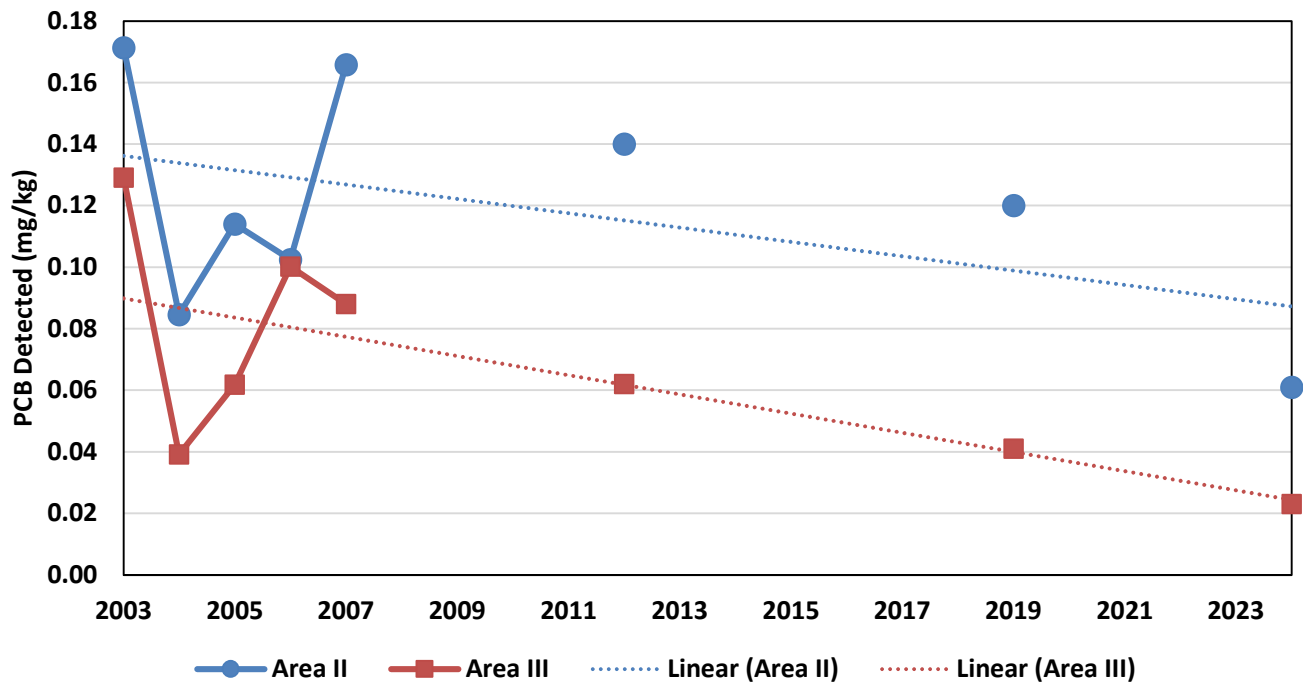
Lobster – Meat

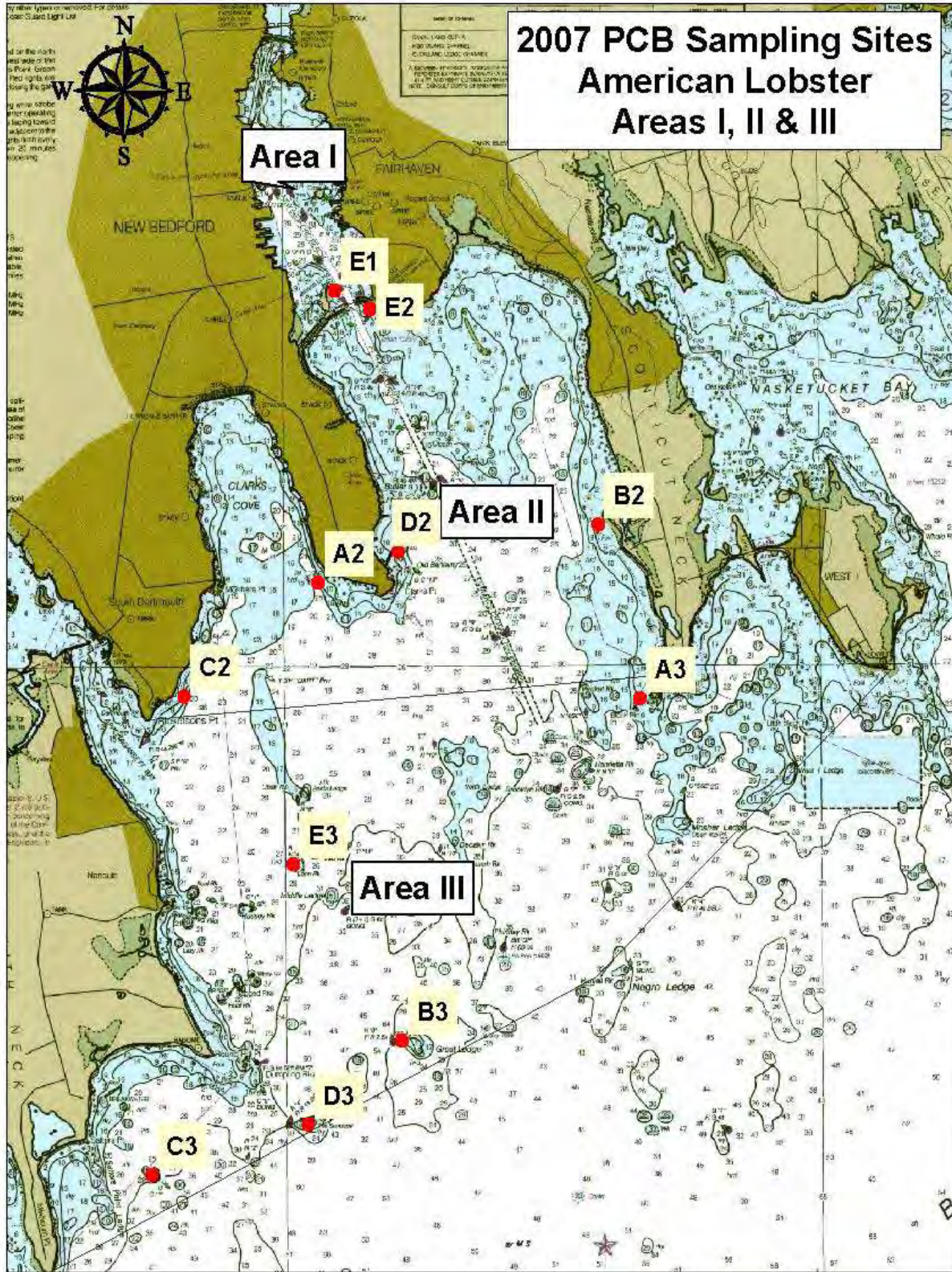
The trend for the PCB concentrations in Lobster meat decreases for Area II and III from 2009 to 2024 as shown in Table 10 and Figure 15. The sample locations for the Lobster are shown on Figure 16.

Table 10: Lobster Meat PCB Congener Detected Concentrations (mg/kg)

Station\ Year	2003	2004	2005	2006	2007	2008 to 2011	2012	2013 to 2018	2019	2020 to 2023	2024
1E		0.098	0.08	0.079	0.16	Not Sampled		Not Sampled		Not Sampled	
2A	0.11	0.043	0.13	0.10	0.25		0.23		0.14		0.071
2B	0.095	0.058	0.13	0.067	0.094		0.13		0.057		0.033
2C	0.31	0.14	0.10	0.12	0.13		0.074				0.030
2D	0.20	0.068	0.090	0.13	0.085		0.11		0.17		0.11
2E	0.14	0.11	0.12	0.095	0.27						
Average	0.17	0.085	0.11	0.10	0.17		0.14		0.12		0.061
3A	0.092	0.034	0.083	0.14	0.15		0.10				0.019
3B	0.071	0.058	0.10	0.11	0.089		0.081		0.032		0.031
3C	0.10	0.025	0.047	0.074	0.083		0.017		0.045		
3D	0.073	0.054	0.030	0.084	0.038		0.068		0.03		0.0079
3E	0.31	0.024	0.049	0.089	0.076		0.045		0.056		0.035
Average	0.13	0.039	0.062	0.10	0.088		0.062		0.041		0.023

Figure 15: Lobster Meat PCB Congeners Concentration Trends





**Figure 16 American Lobster Locations - Area I, II, & III
2003 to 2007, 2012, 2019, and 2024**

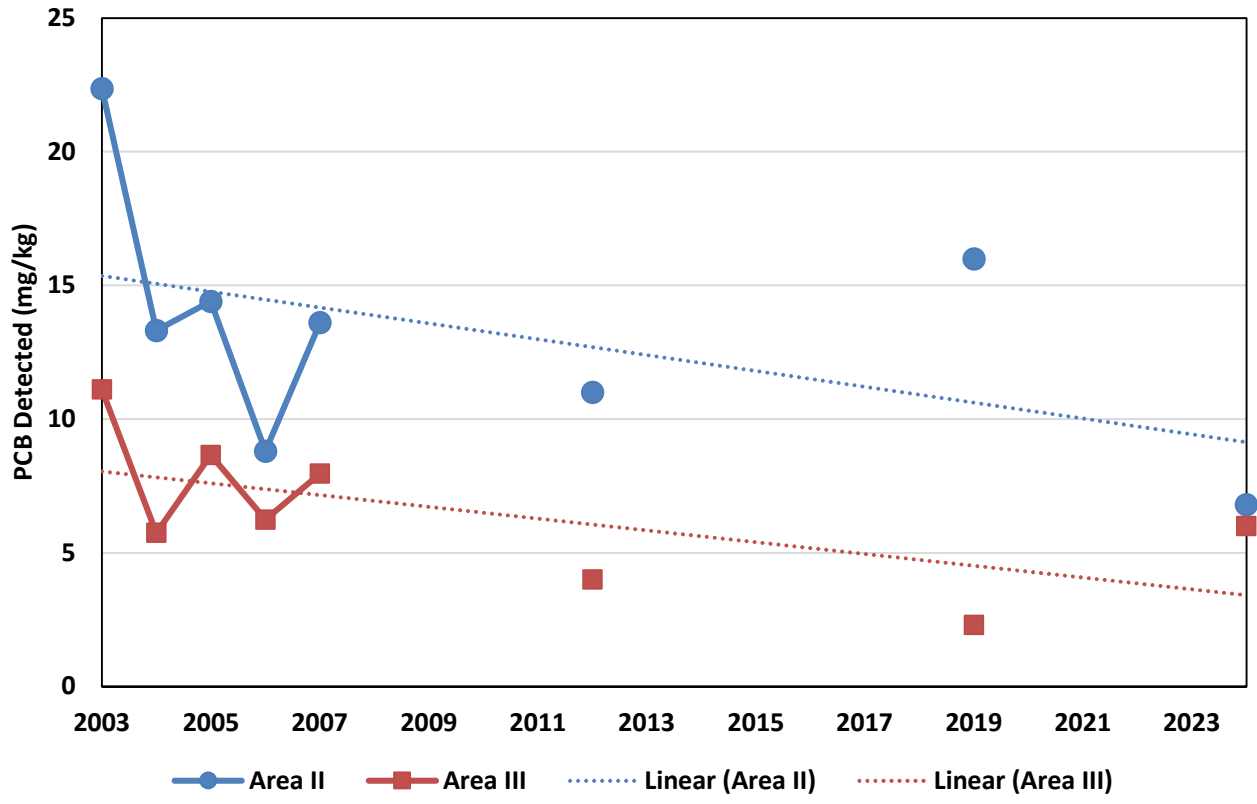
Lobster - Tomalley

The trend for the PCB concentrations in Lobster tomalley decreases from 2003 to 2024 as shown in Table 11 and Figure 17.

Table 11: Lobster Tomalley PCB Congener Trend - Detected Values (mg/kg)

Station\ Year	2003	2004	2005	2006	2007	2008 to 2011	2012	2013 to 2018	2019	2020 to 2023	2024
1E		31	10	14	14	Not Sampled		Not Sampled		Not Sampled	
2A	12	9.4	13	11	19		10		10		6.8
2B	9.3	11	10	5.3	7.1		10		9		5.8
2C	22	12	14	8.0	6.0		8.5				6.5
2D	25	13	9.0	12	10		13		29		8.0
2E	43	21	26	7.5	25						
Average	22	13	14.4	9	14		11		16		6.8
3A	10	5.0	5.1	8.0	11		5.9				9.2
3B	6.1	6.1	19	5.9	13		3.5		2.9		2.9
3C	4.5	4.9	7.9	3.9	5.1		1.2		5.1		
3D	9.2	7.8	6.8	7.5	4.7	6.2	3.4	5.8			
3E	25	4.9	4.5	5.8	6.4	3.3	2.3	6.0			
Average	11	5.7	8.7	6.2	8.0	4.0	3.4	6.0			

Figure 17: Tomalley PCB Congeners Concentration Trends



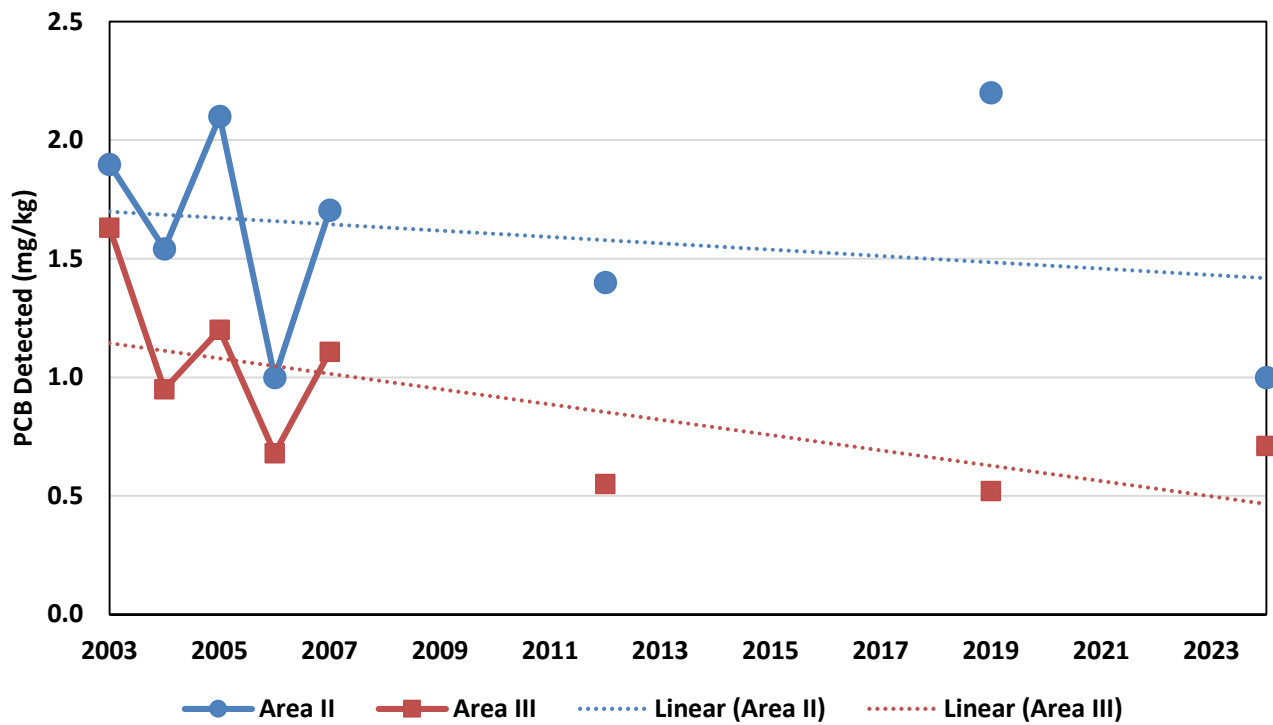
Lobster – Meat and Tomalley Combination

The trend for the PCB concentrations in combination Lobster meat and tomalley (weighted average) decreases from 2003 to 2024 as shown in Table 12 and Figure 18.

Table 12: Lobster Meat and Tomalley PCB Congener Detected Concentrations (mg/kg)

Station\ Year	2003	2004	2005	2006	2007	2008 to 2011	2012	2013 to 2018	2019	2020 to 2023	2024
1E		4.2	1.4	1.4	1.8	Not Sampled		Not Sampled		Not Sampled	
2A	1.4	1.0	1.8	1.2	2.8		1.4		1.4		0.91
2B	1.1	1.0	1.4	0.54	1.0		1.3		1.3		0.76
2C	1.4	1.2	2.1	0.93	0.78		1.1				1.3
2D	1.7	2.3	1.8	1.4	1.3		1.7		3.8		1.1
2E	4.0	2.1	3.6	0.82	2.7						
Average	1.9	1.5	2.1	1.0	1.7		1.4		2.2		1.0
3A	1.4	0.67	0.70	0.93	1.4		0.81				0.94
3B	1.1	0.93	2.2	0.56	1.8		0.5		0.45		0.41
3C	0.82	0.89	1.2	0.45	0.69		0.17		0.77		
3D	1.4	1.4	0.99	0.83	0.69		0.83		0.55		0.57
3E	3.4	0.88	0.80	0.65	0.88		0.45		0.31		0.93
Average	1.6	0.95	1.2	0.68	1.1	0.55	0.52	0.71			

Figure 18: Lobster Meat and Tomalley PCB Congeners Concentration Trends



Quahog - Pre-Spawn

The trend for the PCB concentrations in Pre-Spawn Quahog decreases for all locations from 2003 to 2025 as shown in Table 13 and Figures 19 to 24. The sample locations for the Quahog are shown on Figure 25. The sampling generally occurred during or before May. However, there were some years that the sampling was performed in June and July. Locations 2A, 2E, 2O, 3A, 3C, 3E and 3F are not shown on the figures because the sampling at these locations were not sampled after 2007 or have limited number of samples.

Note there is one sample location (3E) collected in September in 2004 that would be considered a Post-Spawn Quahog sample but was left in the Pre-Spawn Quahog data because only one round of sample was collected. The Post-Spawn Quahog sampling events (2007 to 2014) presented in the next section were specifically performed after a round of Pre-Spawn Quahog samples were also collected.

Table 13: Quahog Pre-Spawn PCB Congener Detected Concentrations (mg/kg)

Station\ Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1A	0.73	0.72	0.77	0.60							0.53					1	
1B	1.1	0.63	1.2	1.4	1.2				0.40		0.23	0.83	0.45		0.54	1	0.4
1C	1.5	1.65	1.6	1.6					0.50		0.34				0.65		
1D	1.7	2.3	1.8	1.8					0.96		0.90	1.1	0.44		1.2	1.8	0.8
1E	2.9	6.1	4.0	4.1	6.0				1.3		0.90	2.1	0.79	1.3	1.5	2.7	0.92
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
2A	0.079	0.086	0.08	0.13													
2B	0.036	0.053	0.037	0.056	0.075	0.036	0.027	0.037	0.036	0.071	0.029	0.035	0.013	0.030	0.043	0.069	0.033
2C	0.26	0.28	0.46	0.48	0.72	0.33	0.31	0.39	0.37	0.36	0.24	0.31	0.17	0.22	0.28	0.33	0.22
2D	0.88	0.17	0.24	0.20	0.15	0.13	0.12	0.28	0.068	0.094	0.056	0.099	0.064	0.057	0.056	0.12	0.073
2E	0.12	0.77	0.81	0.50					0.050								
2F					0.083	0.053	0.046	0.087	0.050	0.056	0.049	0.046	0.043	0.050	0.049	0.11	0.052
2G					0.064	0.050	0.040	0.051	0.027	0.067	0.021	0.032	0.016	0.032	0.045	0.077	0.028
2H					0.29	0.16	0.069	0.15	0.088	0.095	0.12	0.091	0.059	0.080	0.11	0.14	0.071
2O									0.16								
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
3A	0.028	0.062	0.045	0.19													
3B	0.034	0.050	0.016	0.19	0.10	0.026	0.014	0.024	0.021	0.054	0.029	0.033	0.033	0.022	0.035	0.035	0.031
3C	0.028	0.038	0.0002	0.064	0.036												
3D	0.023	0.017	0.14	0.0020	0.029	0.017	0.0067	0.027	0.017	0.022	0.014	0.016	0.0018	0.018	0.024	0.028	0.026
3E	0.065	0.036	0.001	0.001	0.0004												
3F					0.064												
3I						0.021	0.00058	0.045	0.013	0.028	0.029	0.022	0.013	0.025	0.025	0.041	0.039
3J						0.019	0.0034	0.021	0.0034	0.017	0.011	0.007	0.0017	0.0087	0.0056	0.011	0.0062

Figure 19: Pre-spawn Quahog PCB Congener Concentration Trends - Locations 1A, 1B, and 1C

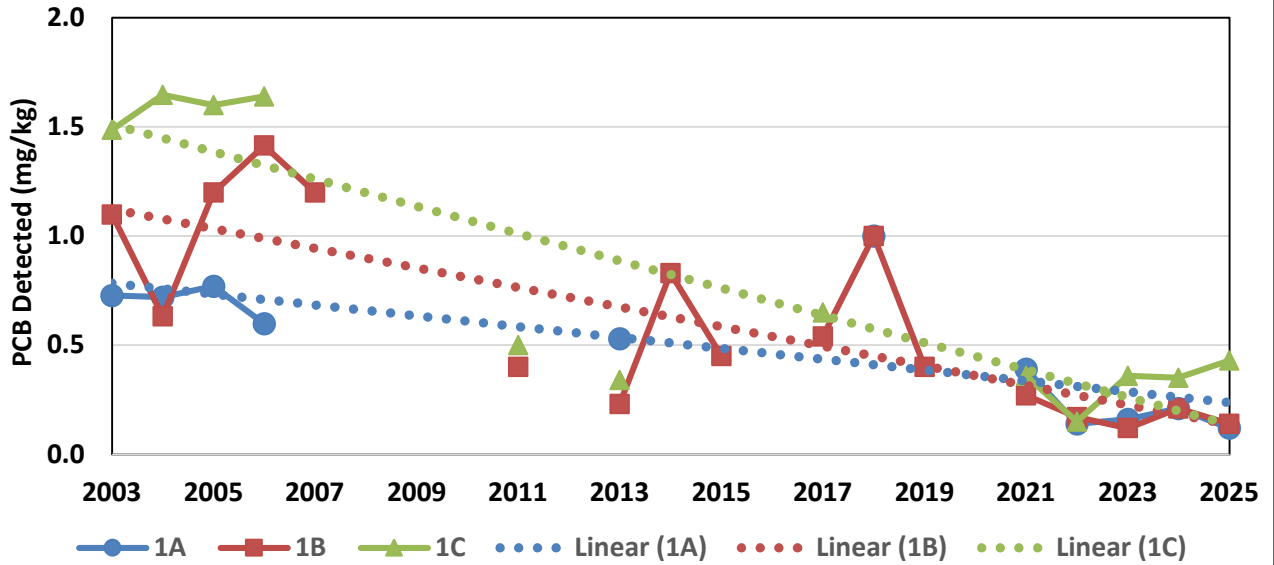


Figure 20: Pre-spawn Quahog PCB Congener Concentration Trends - Locations 1D and 1E

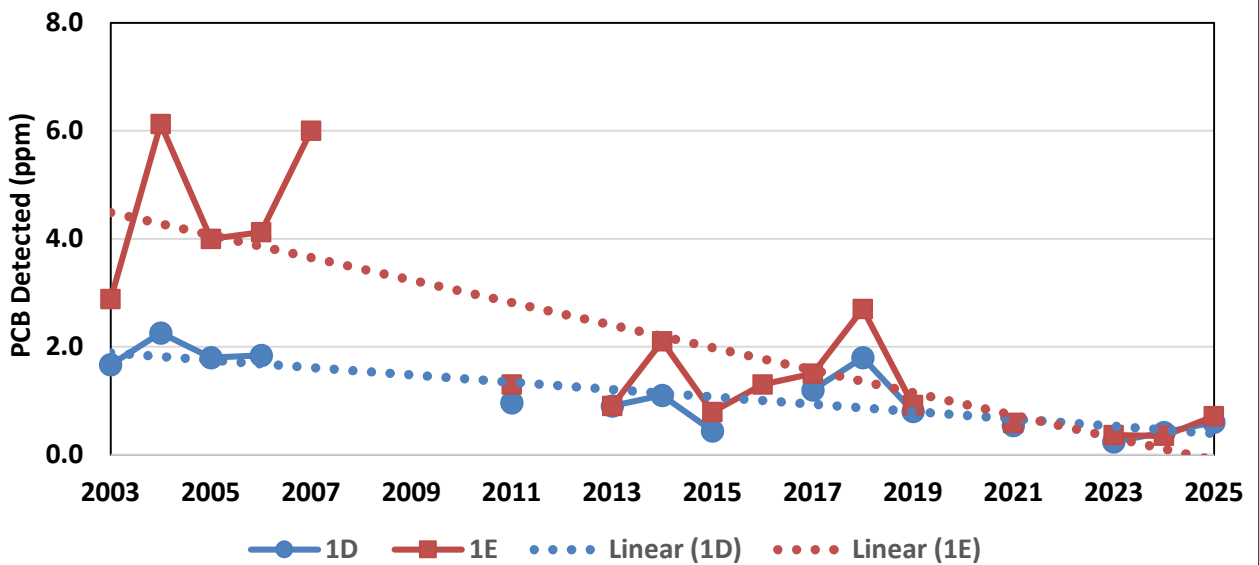


Figure 21: Pre-spawn Quahog PCB Congener Concentration Trends - Locations 2C, 2D, and 2H

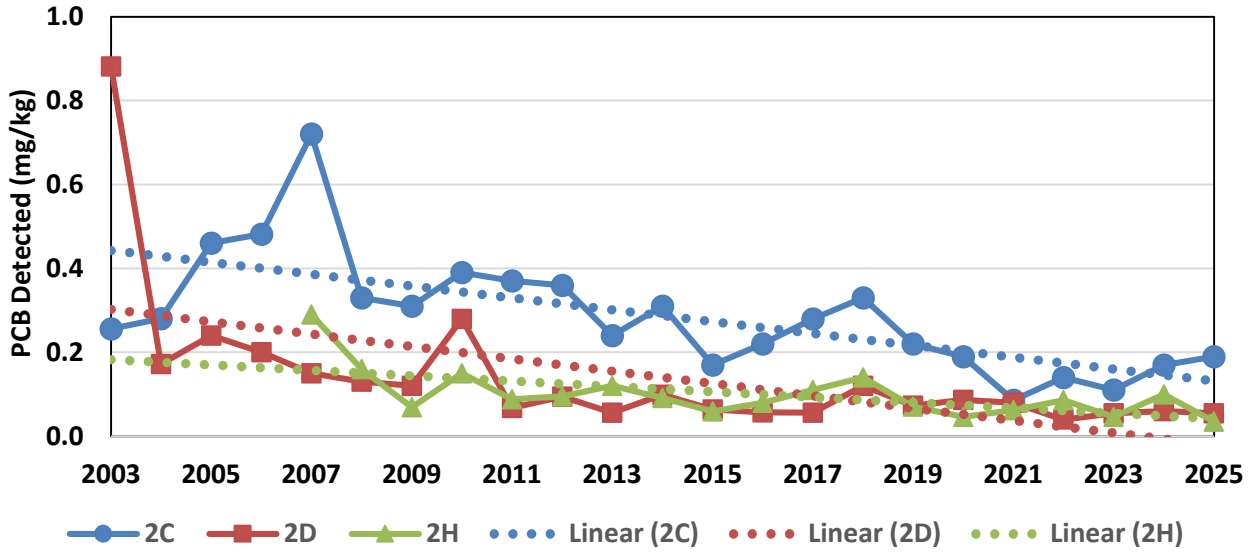


Figure 22: Pre-spawn Quahog PCB Congener Concentration Trends - Locations 2B, 2F, and 2G

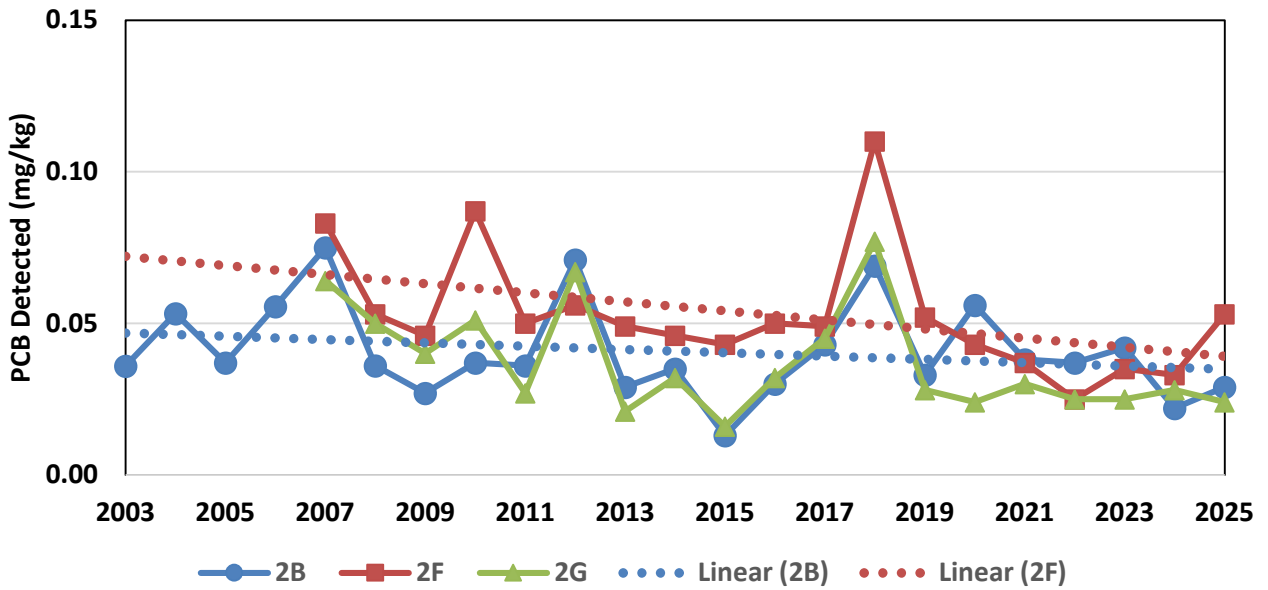


Figure 23: Pre-spawn Quahog PCB Congener Concentration Trends - Locations 3B and 3D

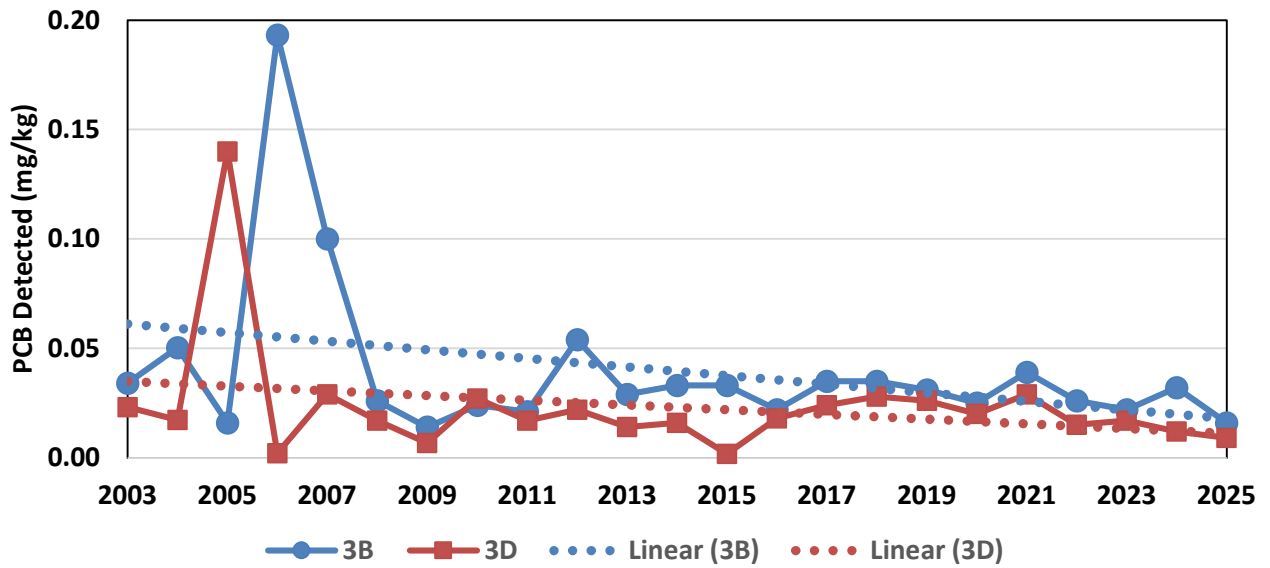
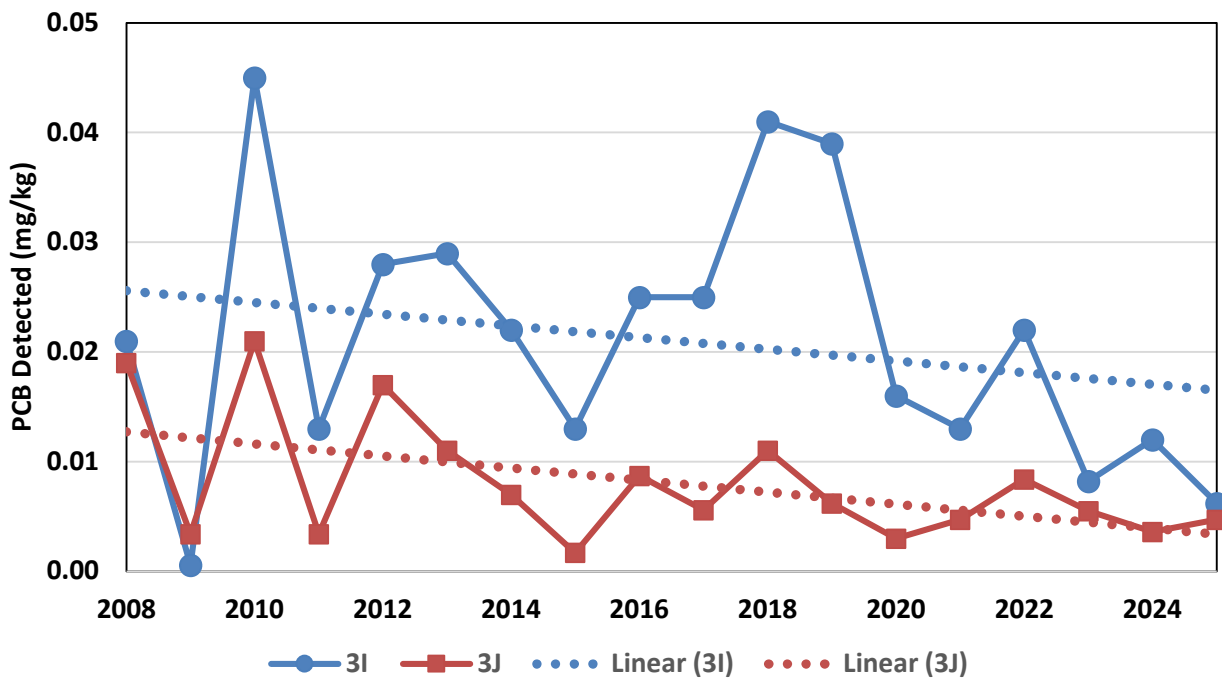
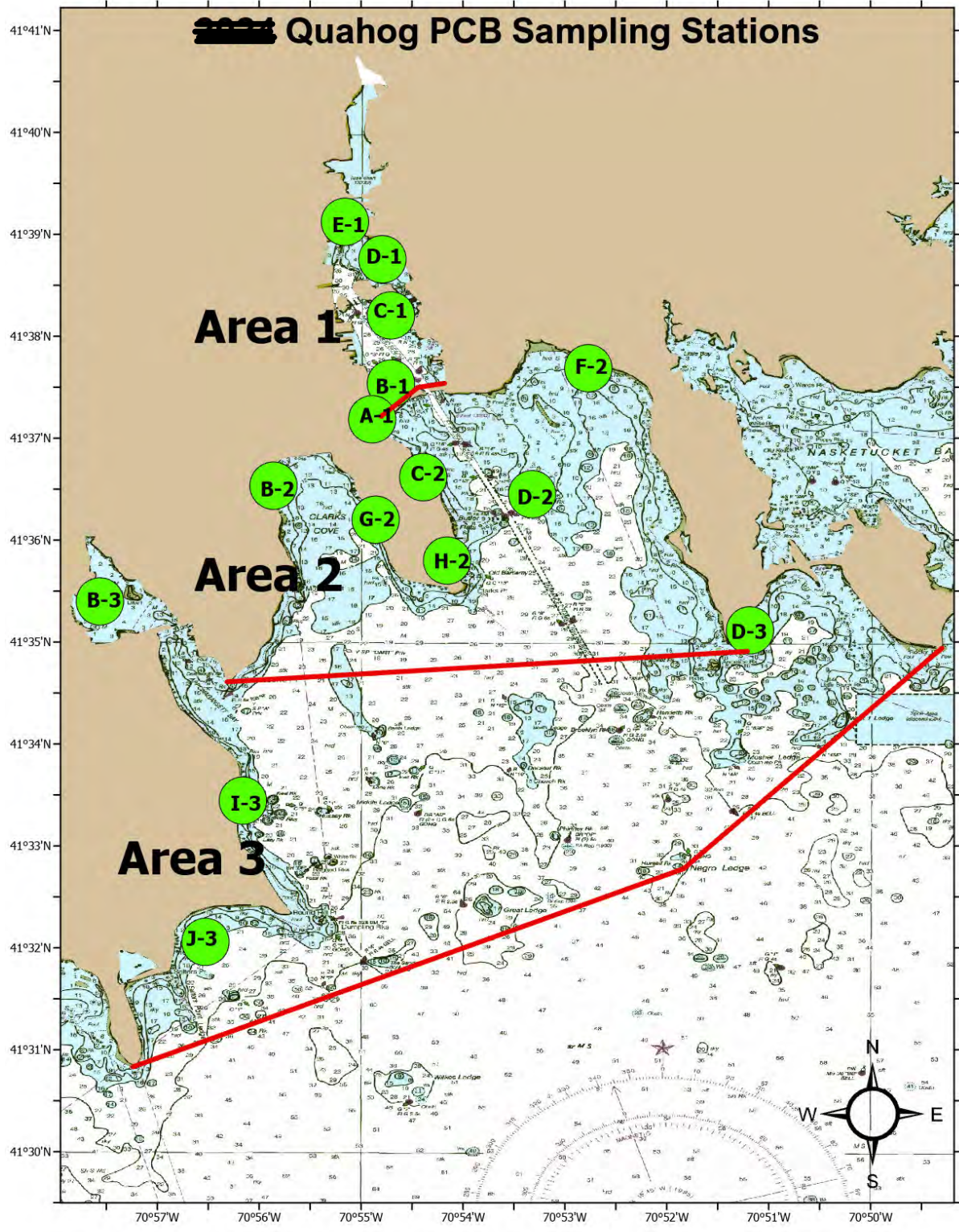


Figure 24: Pre-spawn Quahog PCB Congener Concentration Trends -Locations 3I and 3J





**Figure 25 Quahog Locations - Areas I, II, and III
2003 to 2024**

Quahog - Post-spawn

The trend for the PCB concentrations in Post-Spawn Quahog generally decreases for each location from 2007 to 2014 as shown in Table 14 and Figures 26 to 35. The sampling events for the Post Spawn Quahog were generally done during the month of August, except in the year 2009 when the sampling was conducted in October. Two rounds of Post-Spawn Quahog were done during 2010 and 2011 in August and October. Figures 25, 28, 30, 32, and 34 show the August sampling events and Figures 27, 29, 31, 33, and 35 show the October sampling events. Trend lines are not shown in the October figures because of the limited number of years of data. Note this data represents the years (2007 to 2014) of Post-Spawn Quahog sampling that were specifically performed after a round of Pre-Spawn Quahog samples were also collected. There is one sample location (3E) collected in September 2004 that would be considered a Post-Spawn Quahog sample but was left in the Pre-Spawn Quahog data because only one round of samples was collected.

Table 14: Quahog Post-Spawn PCB Congener Detected Concentrations (mg/kg)

Station\ Year	2007 Aug	2008 Aug	2009 Oct	2010 Aug	2010 Oct	2011 Aug	2011 Oct	2012 Aug	2013 Aug	2014 Aug
1A									0.39	
1B	0.66								0.38	
1C									0.43	0.50
1D									0.75	0.77
1E	3.8								1.7	1.4
2B	0.044	0.023	0.027	0.074	0.048	0.072	0.059	0.026	0.028	0.025
2C	0.25	0.30	0.57	0.45	0.41	0.50	0.44	0.17	0.19	0.23
2D	0.13	0.13	0.10	0.090	0.025	0.10	0.12	0.069	0.079	0.10
2F	0.11	0.023	0.097	0.080	0.025	0.038	0.052	0.025	0.023	0.031
2G	0.064	0.045	0.062	0.040	0.053	0.051	0.054	0.036	0.030	0.025
2H	0.29	0.18	0.33	0.089	0.097	0.12	0.12	0.059	0.16	0.12
2O										
3B	0.055	0.12	0.037	0.023	0.025	0.080	0.072	0.026	0.038	0.029
3C	0.023									
3D	0.029	0.0082	0.013	0.019	0.019	0.034	0.022	0.019	0.0067	0.015
3E	0.11									
3F	0.046	0.022								
3G										
3I		0.00026	0.031	0.031	0.027	0.039	0.060	0.016	0.014	0.027
3J			0.0061	0.021	0.0041	0.017	0.016	0.0073	0.0045	0.00093

Figure 26: August Post-Spawn Quahog PCB Congener Concentration Trends - Locations 2B and 2G

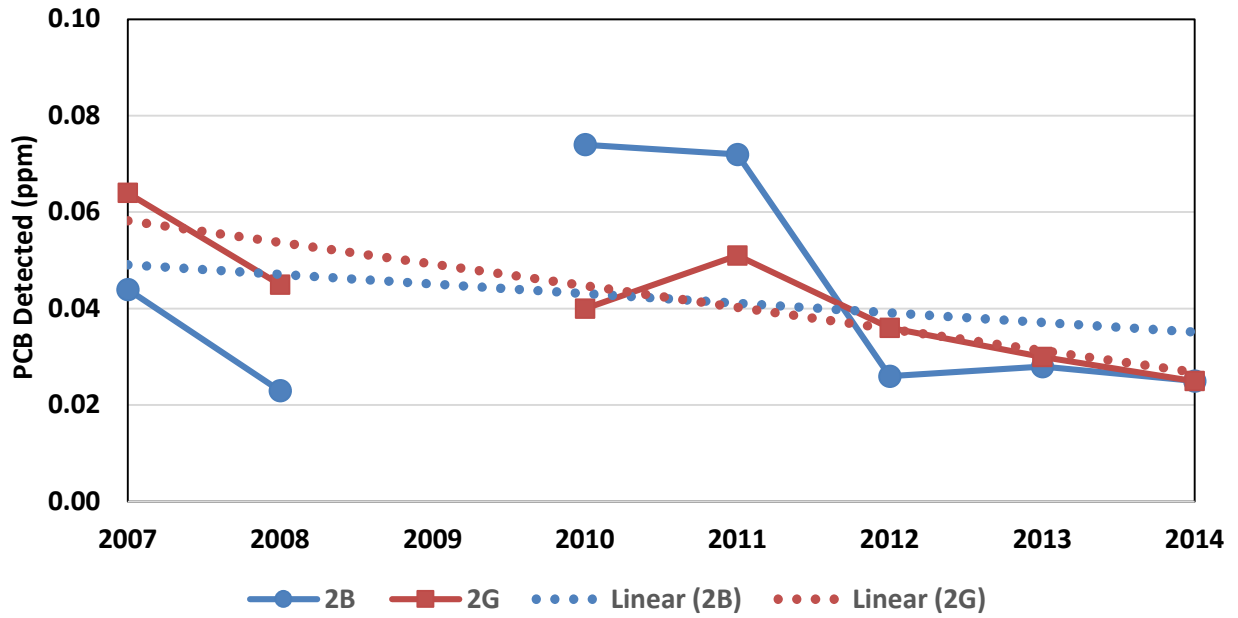


Figure 27: October Post-Spawn Quahog PCB Congener Concentration Trends - Locations 2B and 2G

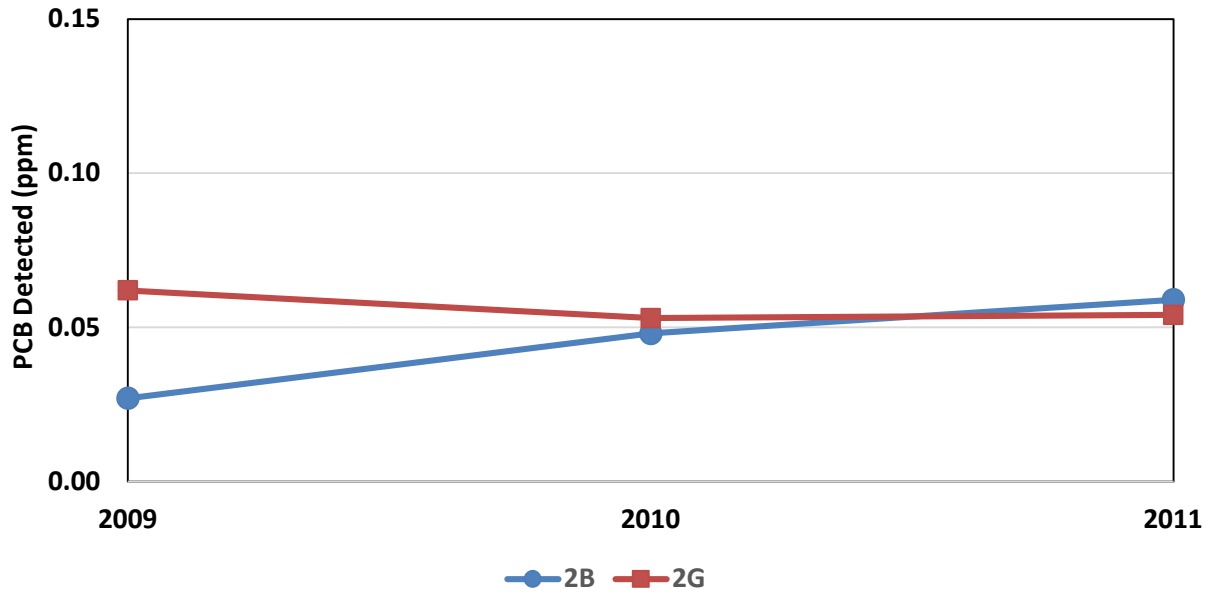


Figure 28: August Post-Spawn Quahog PCB Congener Concentration Trends Locations 2C and 2H

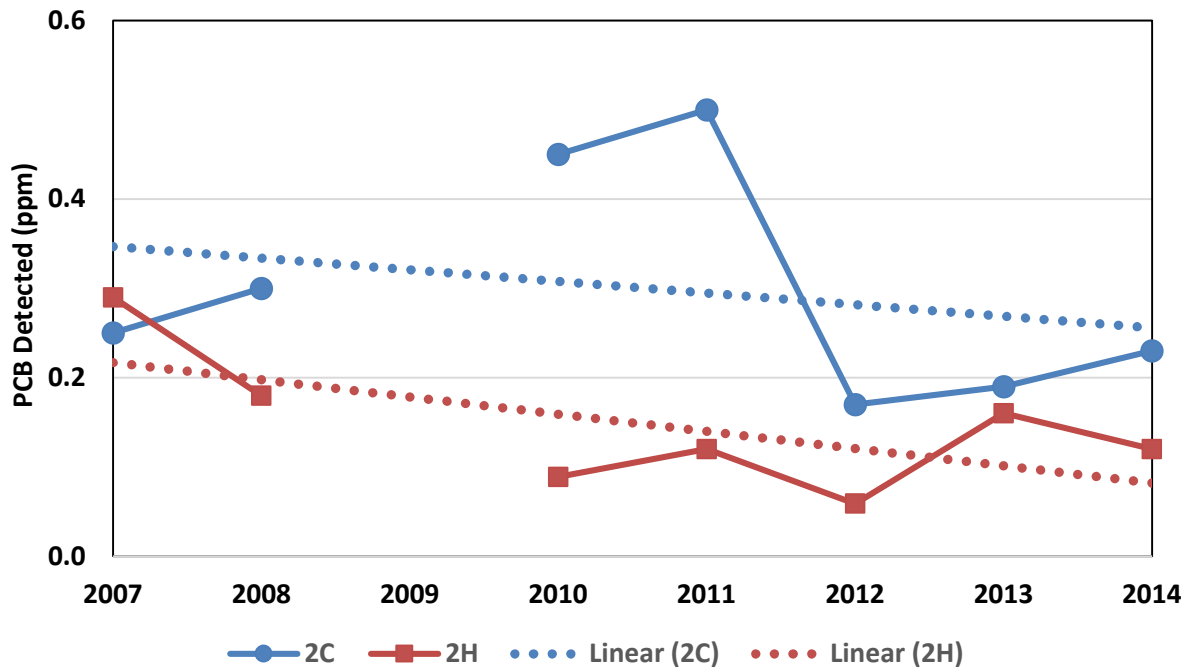


Figure 29: October Post-Spawn Quahog PCB Congener Concentration Trends - Locations 2C and 2H

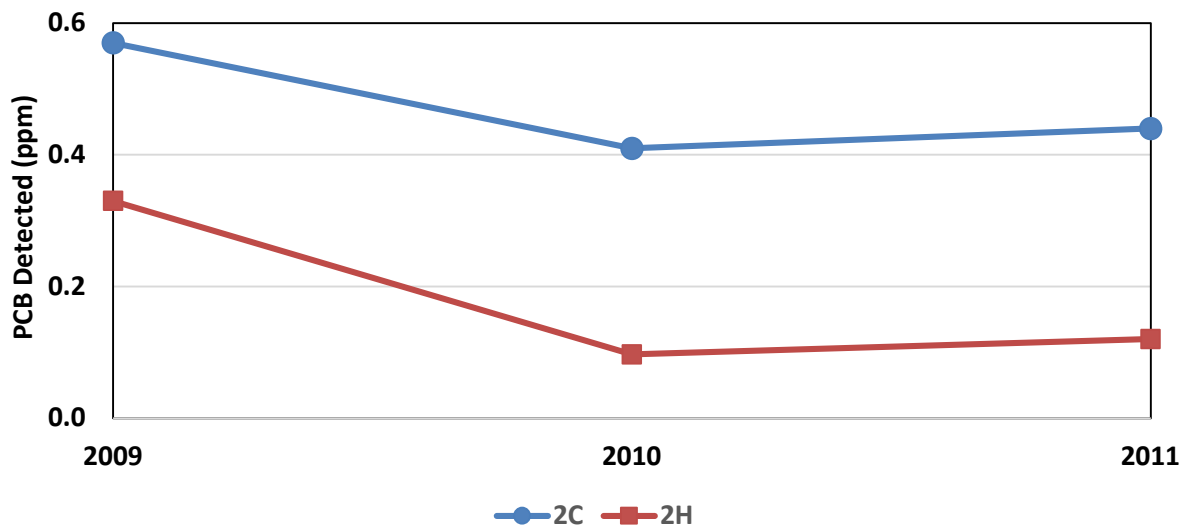


Figure 30: August Post-Spawn Quahog PCB Congener Concentration Trends - Locations 2D and 2F

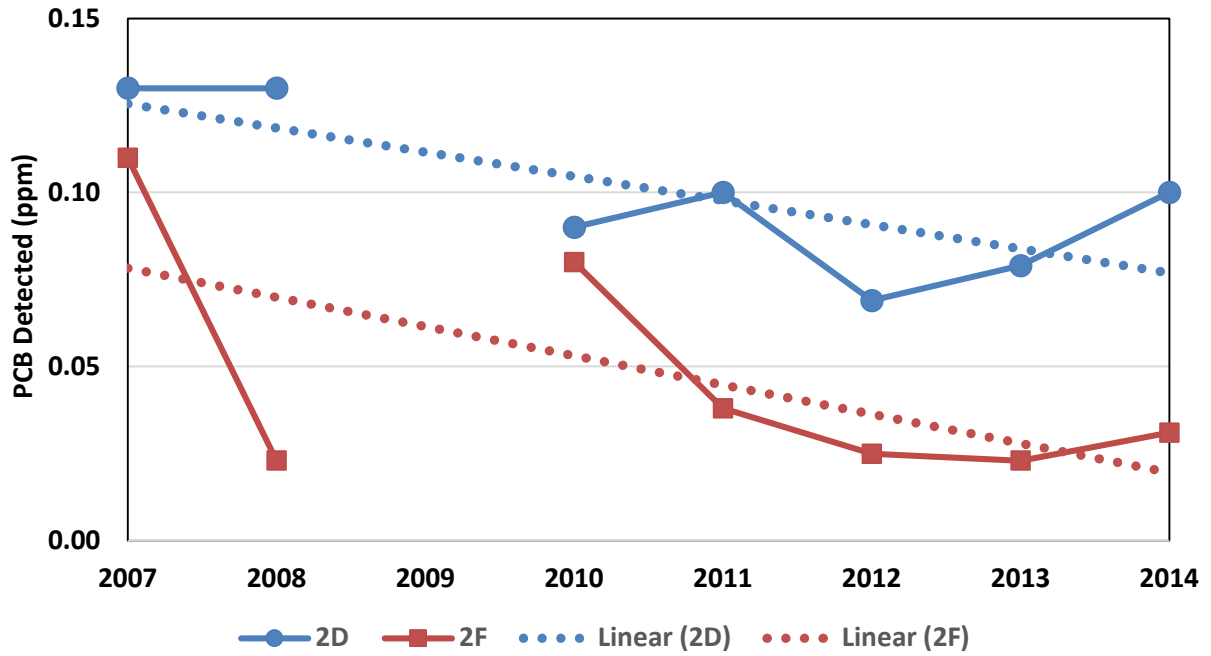


Figure 31: October Post-Spawn Quahog PCB Congener Concentration Trends - Locations 2D and 2F

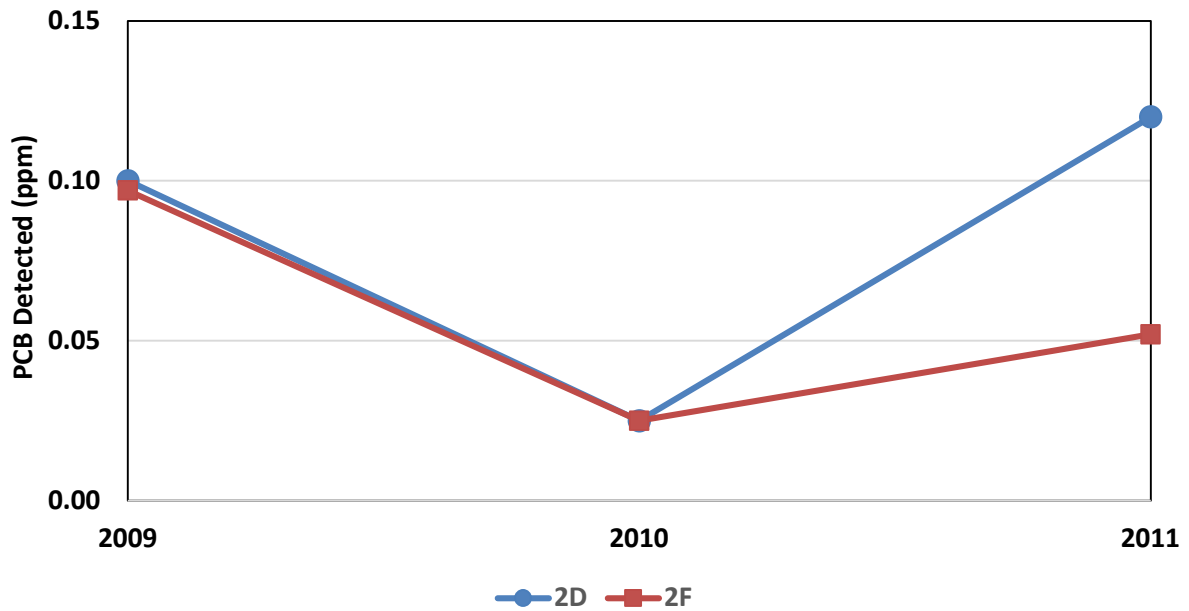


Figure 32: August Post-Spawn Quahog PCB Congener Concentration Trends - Locations 3B and 3D

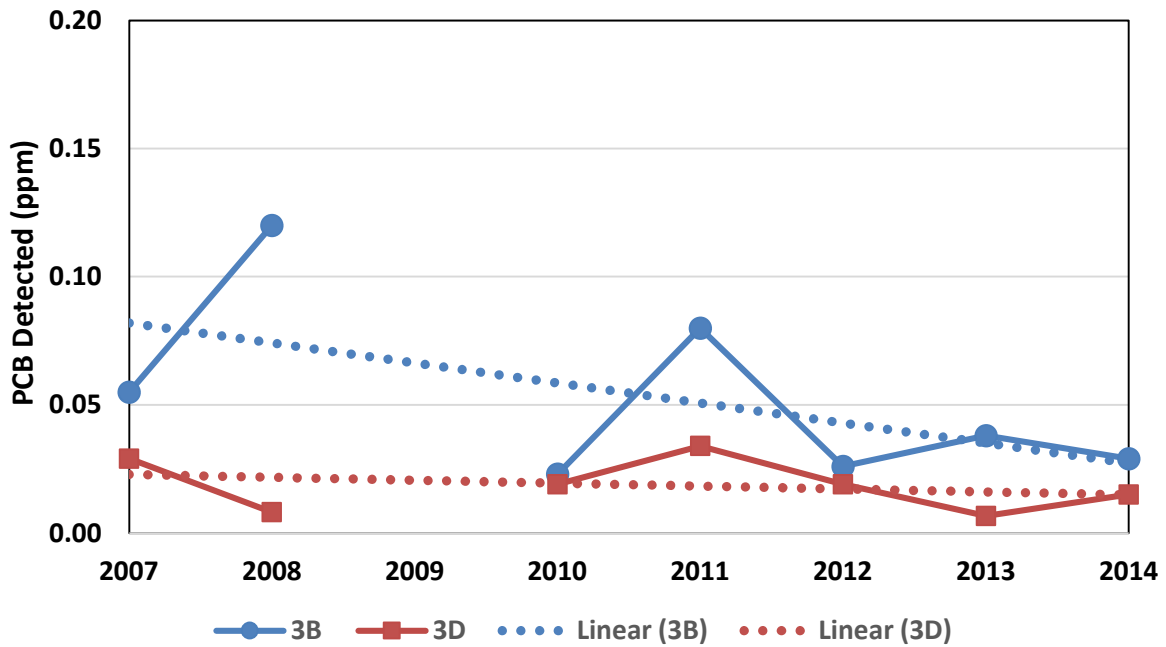


Figure 33: October Post-Spawn Quahog PCB Congener Concentration Trends Locations 3B and 3D

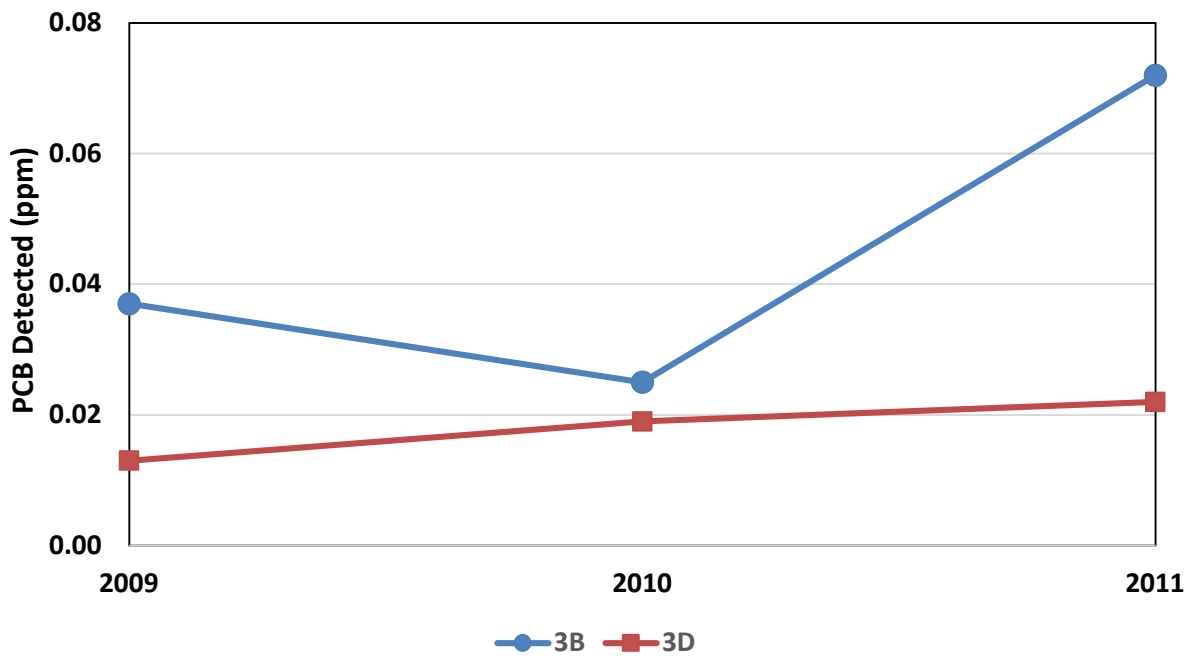


Figure 34: August Post-spawn Quahog PCB Congener Concentration Trends Locations 3I and 3J

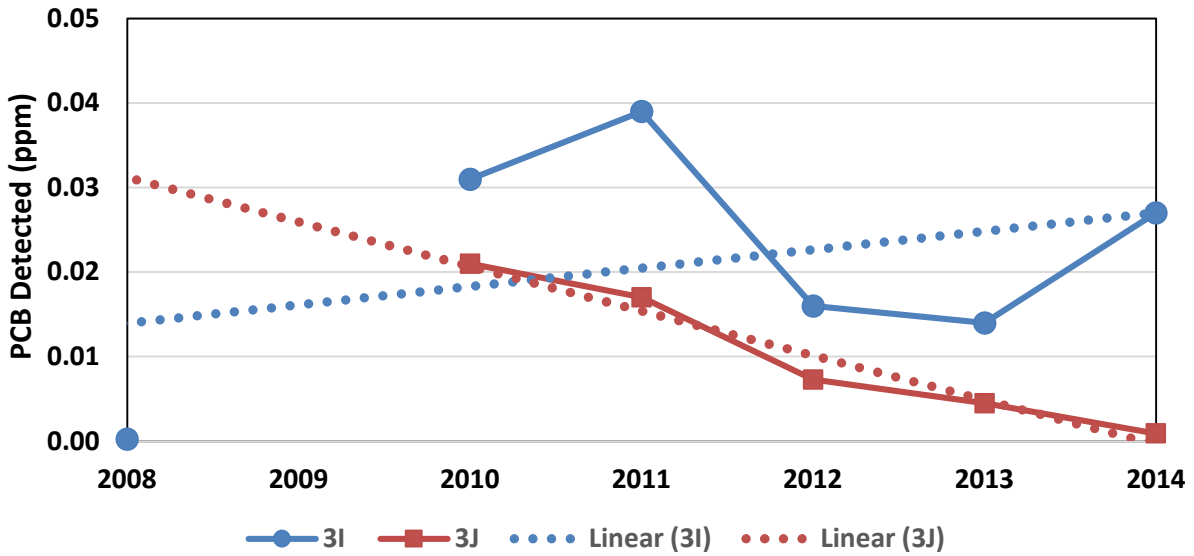
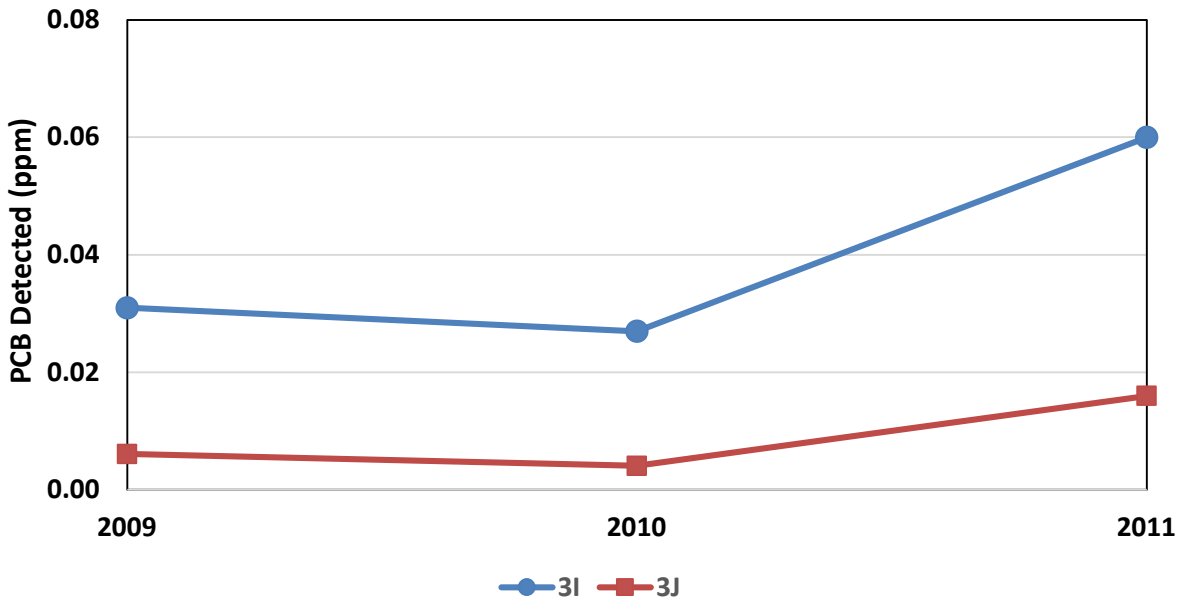


Figure 35: October Post-Spawn Quahog PCB Congener Concentration Trends - Locations 3I and 3J



Scup

The trend for the PCB concentrations in Scup slightly decreased from 2003 to 2024 as shown in Table 15 and Figure 36. The sample locations for the Scup are shown on Figure 37.

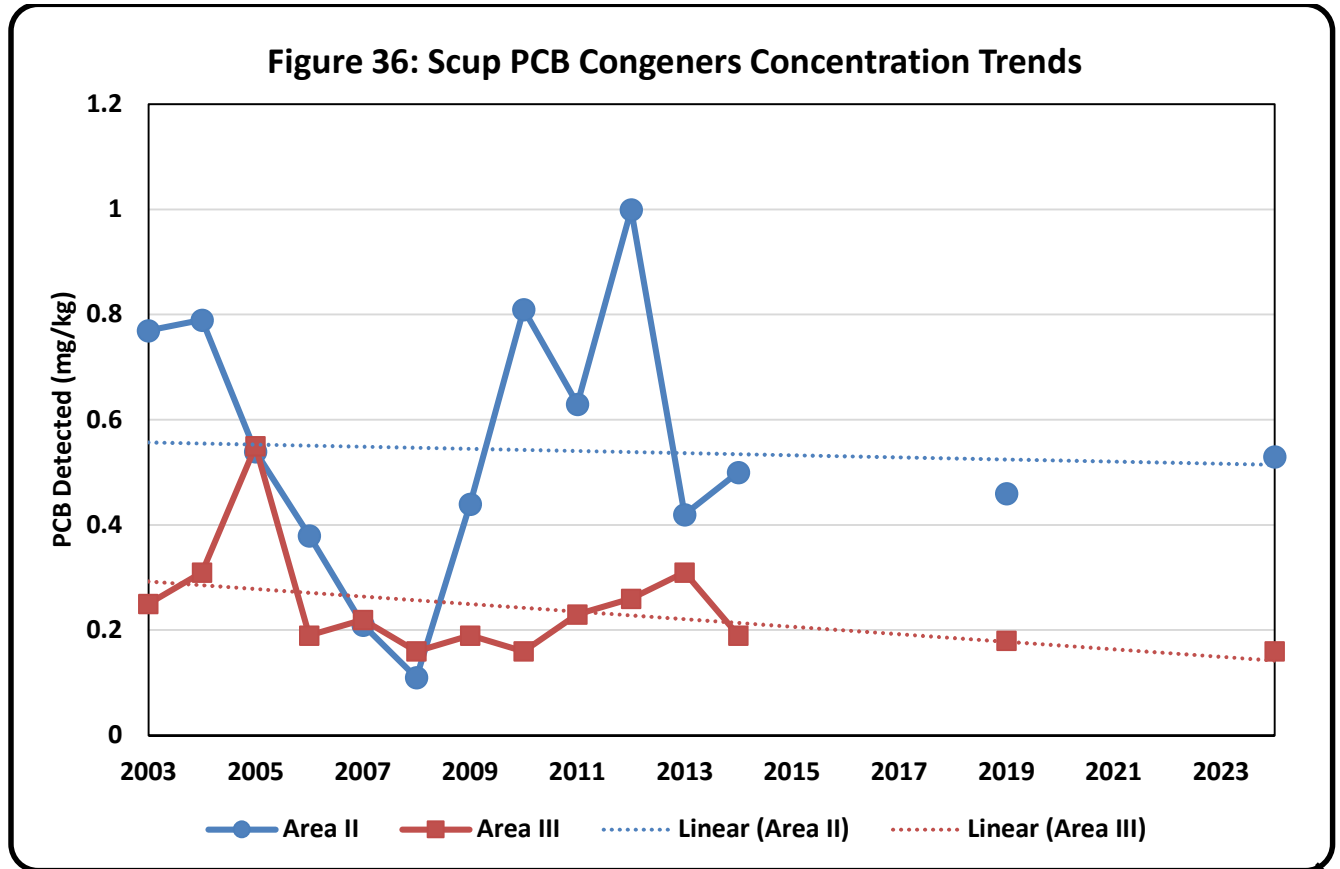


Table 15: Scup PCB Congener Detected Concentrations (mg/kg)

Station\ Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 to 2018	2019	2020 to 2023	2024
2A	0.23	0.25	0.34	0.15	0.28	0.33	0.52	0.43	0.30	0.21	0.46	0.56	Not Sampled	0.52	Not Sampled	0.27
2B	1.1	0.55	0.86	0.53	0.053	0.32	0.78	0.83	0.41	0.83	0.67	0.35		0.26		0.76
2C	0.59	0.56	0.89	0.70	0.24	0.75	0.15	1.3	0.84	2.4	0.22	0.28				0.87
2D	1.2	0.94	0.31	0.15	0.34	0.14	0.38	0.91	1.2	1.0	0.095	0.73		0.59		0.72
2E	0.72	1.67	0.29	0.38	0.067	0.11	0.39	0.57	0.32	0.80	0.66	0.59				0.047
Average	0.77	0.79	0.54	0.38	0.20	0.33	0.44	0.81	0.61	1.0	0.42	0.50		0.46		0.53
3A	0.18	0.28	0.17	0.14	0.13	0.16	0.15	0.15	0.11	0.34	0.062	0.064				0.039
3B	0.14	0.29	0.29	0.22	0.30	0.20	0.29	0.16	0.12	0.45	0.12	0.12				0.081
3C	0.20	0.24	0.65	0.14	0.13	0.17	0.091	0.27	0.32	0.19	0.24	0.25		0.13		0.19
3D	0.29	0.38	1.3	0.33	0.084	0.35	0.16	0.12	0.084	0.18	0.082	0.27		0.21		0.18
3E	0.41	0.34	0.36	0.14	0.38	0.16	0.24	0.086	0.41	0.16	1.1	0.27	0.20	0.29		
Average	0.25	0.31	0.55	0.19	0.20	0.208	0.19	0.16	0.21	0.26	0.31	0.19	0.18	0.16		

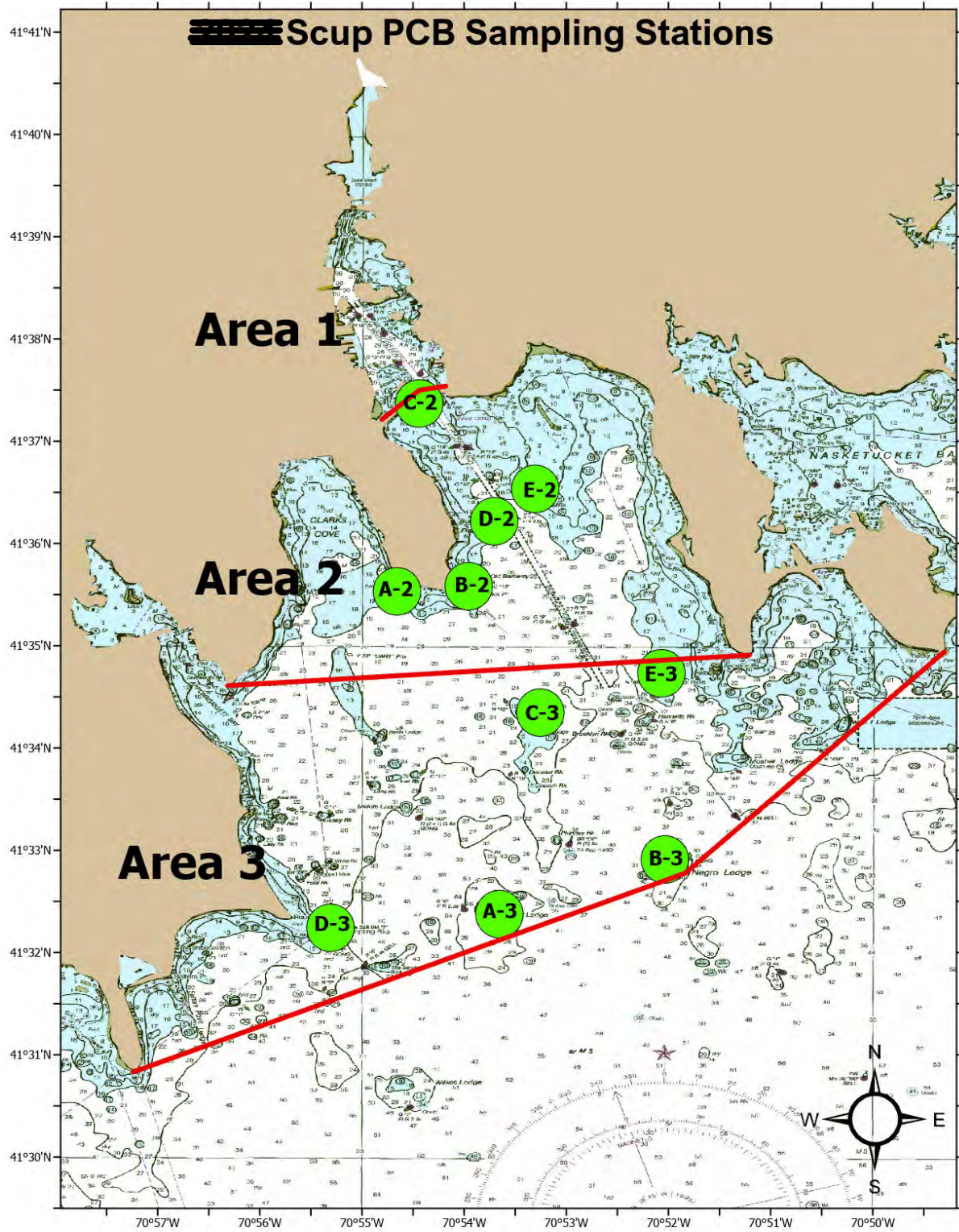


Figure 37 Scup Sample Locations - Area II & III 2003 to 2014, 2019, and 2024

Striped Bass

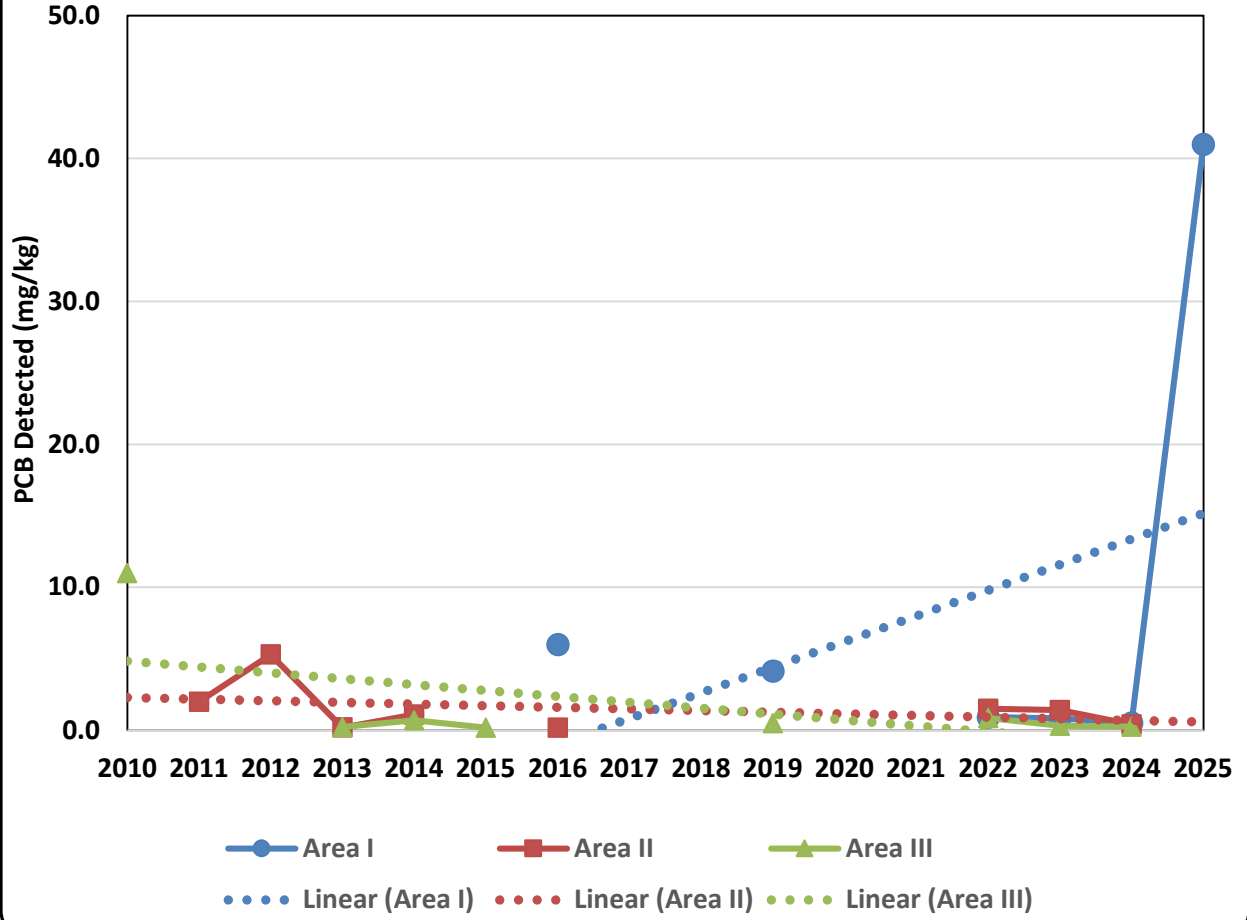
The trend for the PCB concentrations in Striped Bass cannot be determined for all three closure Areas because of the limited number of samples collected as shown on Figure 38. The data set for Striped Bass is shown on Table 16.

Table 16 Striped Bass PCB Congener Detected Concentrations (mg/kg)

Station\ Year	2010	2011	2012	2013	2014	2015	2016	2017 to 2018	Station\ Year	2019	2022	2023	2024	2025
1B-1							0.31	Not Sampled	1A	5.0	1.2	0.26	0.45	76
1B-2							2.8		1B	0.9	0.35	0.29	0.32	4.0
1C-1							0.73		1C	0.79	1.8	2.5	0.61	35
1C-2							4.6		1D	3.6	1.0	0.65	0.70	14
1C-3							21.0		1E	10.5	0.18	0.46		100
									1F					18
Avg							6.0		Avg	4.2	0.91	0.83	0.52	41
2A		2.0	5.3	0.19	1.1				2A		3.6	0.5	0.21	
2E - 1						0.63	0.17		2B		2.4	0.48	0.61	
2E - 2						0.63			2C		0.68	2.6		
									2D		0.19	2.0		
									2E		0.83			
									Avg		1.5	1.4	0.41	
3A	0.24			0.32	0.45				3A	1.2	2.5	0.11	0.64	
3B	2.5			0.20	0.85				3B	0.41	0.90	0.69	0.12	
3C	30.0			0.19	0.15				3C	0.2	0.50	0.16	0.15	
3D				0.26	0.18				3D	0.14	0.17		0.16	
3E				0.12	1.8				3E	0.53	0.22		0.19	
3F-1						0.18								
3F-2						0.18								
Avg	11.0			0.22	0.69			Avg	0.5	0.86	0.32	0.25		

Note: Samples for 2015 locations (E-2 and F-2) were the composite of two fish each. The following stations are in the same locations: Stations 3A, 3B, and 3C in 2010; 1B-1 and 1B-2; 3A, 3B, and 3C in 2014; 1B-1 and 1B-2; 1C-1 and 1C-2 in 2016; all Area 1 Stations in 2019, 2022, and 2023; and 3D and 3E in 2019.

Figure 38: Striped Bass PCB Congener Concentration Trends



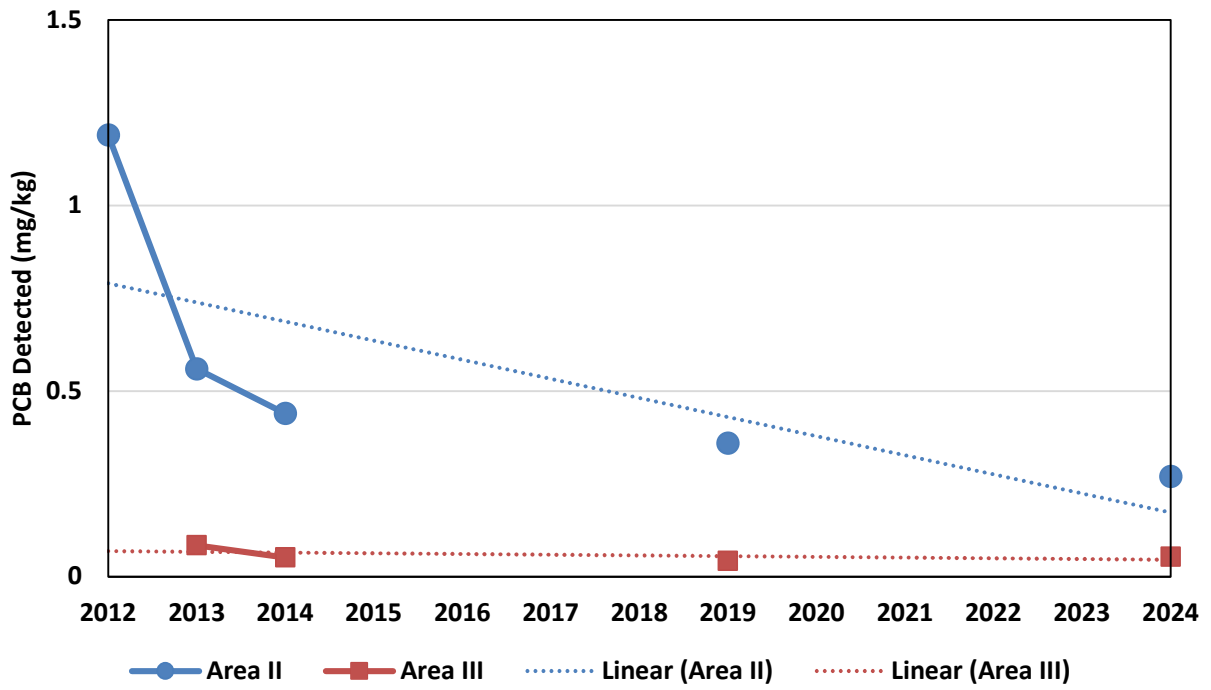
Tautog

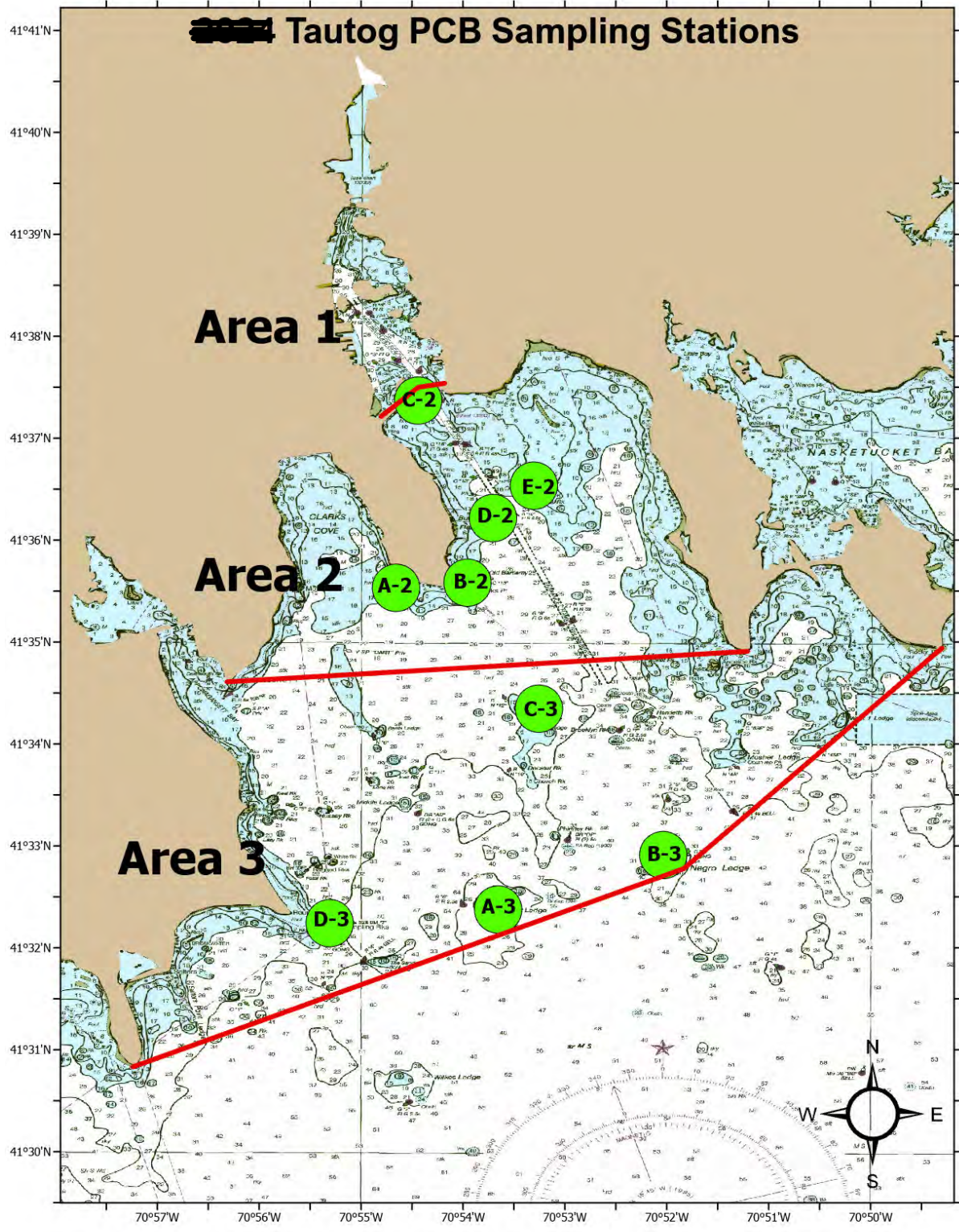
The trend for the PCB concentrations in Tautog decrease in Area II and is level in Area III from 2003 to 2024 as shown in Table 17 and Figure 39. The sample locations for the Scup are shown on Figure 40.

Table 17 Tautog PCB Congener Detected Concentration (mg/kg)

Station\Year	2012	2013	2014	2015 to 2018	2019	2020 to 2023	2024		
2A		0.41	0.16	Not Sampled	0.14	Not Sampled	0.15		
2B	0.46	0.13	0.14		0.31		0.16		
2C	1.9	1.2	0.97		0.68		0.62		
2D		0.19	0.83		0.50		0.15		
2E		0.87	0.12		0.19		0.25		
Average	1.19	0.56	0.44		0.36		0.27		
3A		0.060	0.019				0.0096		0.022
3B		0.027					0.028		0.016
3C		0.065	0.072				0.021		0.094
3D		0.089	0.074		0.056		0.083		
3E		0.18	0.042		0.10				
Average		0.085	0.052		0.043		0.054		

Figure 39: Tautog PCB Congeners Concentration Trends





**Figure 41 Tautog Sample Locations - Area II & III
2012 to 2014, 2019, and 2024**

Surface Water

Although limited to the more recent data sets (2011, 2023 to 2025) the data does indicate a trend towards reduced water column PCB levels. Compared to 1987 water column PCB levels as presented in the 1998 ROD (see Figure 13), the more recent water column levels are significantly lower: the average of the ten Area I samples in 1987 was 1,006 ng/l (or 242 ng/l with the highest outlier 7,635 ng/l near the Aerovox location being removed). The more recent surface water results are shown on Table 18. The surface water sample locations are shown on Figures 25 and 42. Note the results on this table are reported in parts per trillion (ng/l) not parts per billion (ug/l). The site-specific target level for surface water is the Ambient Water Quality Criteria (AWQC) of 0.03 ug/l (which is 30 ng/l).

Table 18 Sample Data for Surface Water (ng/l)

Station\Year	Total 2011	Total 2023	Total 2024	Dissolved 2024	Total 2025	Dissolved 2025
AVX			20	15.7	840	260
Mid-River			52.1	31	110	46
Coggeshall Bridge			64.7	21.4	59	35
Average			45.6	22.7	336	114

I A	64				13	6.1
I B	100	24	30.5	12.4	19	8.1
I C	220	35	41.3	18.1	28	16
I D	430	52	36.6	12.4	65	32
I E	770	100	41.9	32.2	57	37
Average	320	53	37.6	18.8	36	20

II B	4.1	4.5	0.92	ND	2.2	0.74
II C	31	14	8.2	4.42	14	3.8
II D	17				1.3	0.58
II F	16	3.1	1.6	0.34	0.25	ND
II G	4.7				1.6	0.42
II H	16	5.4	7.0	3.25	4.1	2.3
II O	63					
Average	22	6.8	4.4	2.0	3.9	1.6

III B	54	0.84	ND	ND	0.25	ND
III D	0.29	ND	0.28	ND	0.26	ND
III I	0.37	ND	ND	ND	ND	ND
III J	0.27	ND	ND	ND	0.32	ND
Average	13.7	0.21	0.066	ND	0.28	ND

Oyster

Oyster collection started in 2025. There are no trends for the PCB concentrations in Oyster until several years of collection are completed. Table 19 has PCB concentrations in Oyster. The sample locations for the Oyster are shown on Figure 41.

Table 19 Oyster PCB Congener Detected Concentration (mg/kg)

Station\Year	2025
AVX	11
Mid-River	9.4
Coggeshall Bridge	2.8
Average	7.7



Figure 41 Oyster and Surface Water Sample Locations Area I

5. References

AMEC/Wood/WSP, 2003-2026. Data Validation Summaries, MassDEP, NBH Superfund Site, Seafood Contaminant Survey Monitoring Sampling

EPA, 1998. Record of Decision for the Upper and Lower Harbor Operable Unit, New Bedford Harbor Superfund Site, New Bedford, Massachusetts. U.S. EPA - Region I New England. September 1998.

MADPH, 1979. Massachusetts Department of Public Health Regulations 105 CMR 260.000. 1979

MassDEP, 2003-2025. Monitoring Report for Seafood Harvested from the New Bedford Harbor Superfund Site, Massachusetts Department of Environmental Protection and Massachusetts Division of Marine Fisheries.

MassDEP, 2003a-2025a. Seafood Monitoring and Field Sampling Work Plans, New Bedford Harbor Superfund Site, Massachusetts Department of Environmental Protection.

MassDEP, 2003b-2025b. Quality Assurance Project Plan as revised, New Bedford Harbor Superfund Site, New Bedford, Massachusetts. Massachusetts Department of Environmental Protection.

MassDEP, 2018. PCB Congener Calculations 136 vs 148 for 2017 Memo, May 30, 2018.

MassDEP, 2026. PCB Congener Calculations 136 vs 148 and 148 vs 209 Memo, April 22, 2026.