

# Delaware River Basin Commission

## Project Updates

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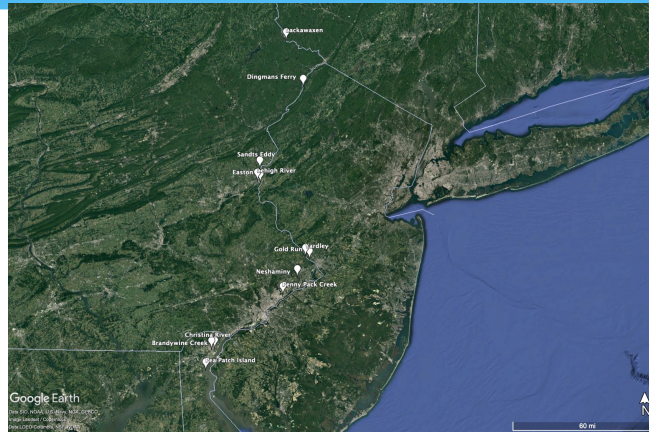
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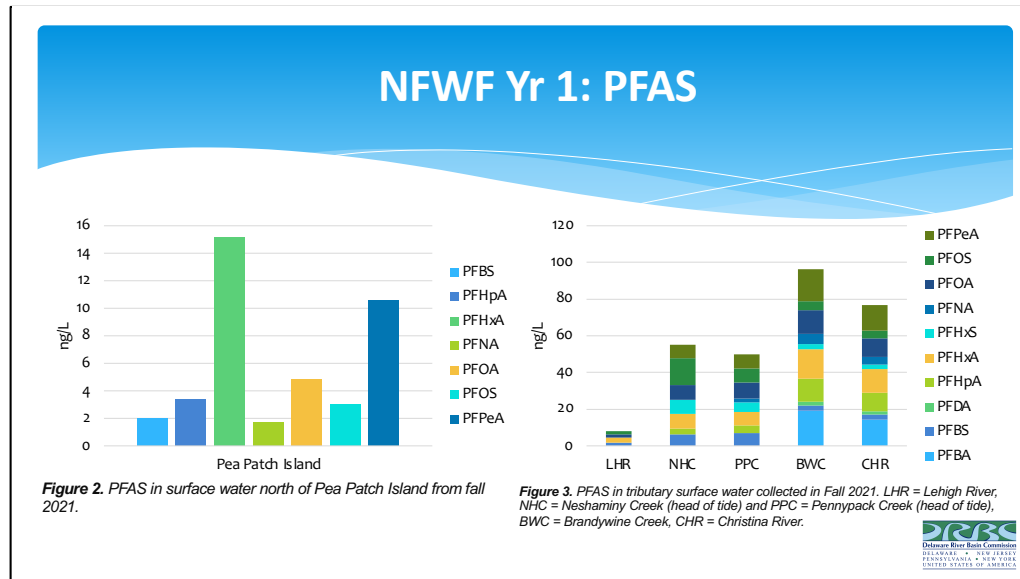
Presented to DRBC's the Toxics Advisory Committee on June 14, 2023. Contents should not be published or re-posted in whole or in part without the permission of DRBC.



## NFWF Yr 1: PFAS

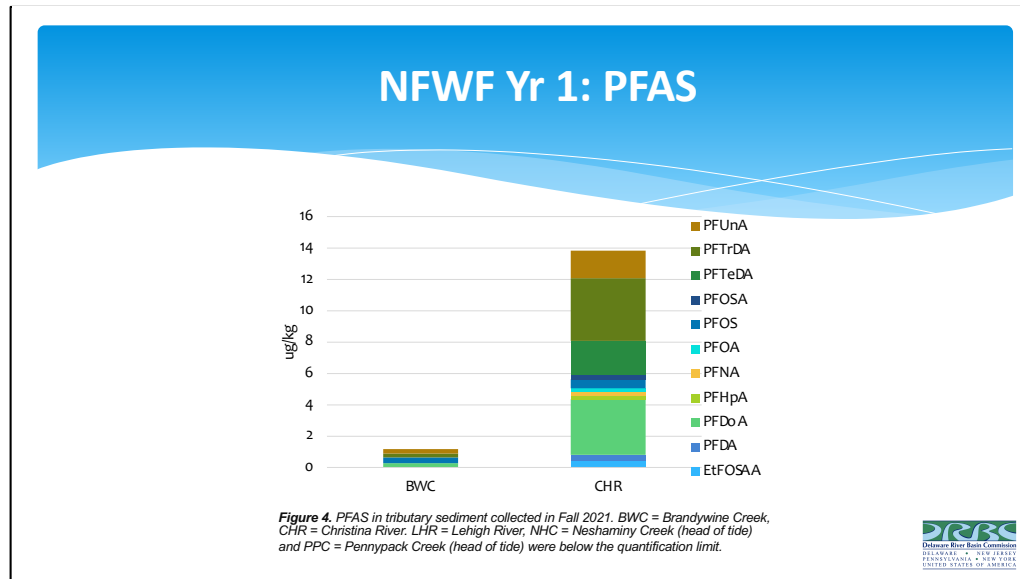


- Sample collection
  - Mostly mainstem in non-tidal (except Lehigh)
  - Mostly tributaries in tidal (except Pea Patch Island)
  - Water and sediment (12 sites, 7 mainstem and 5 tributaries)
  - No Fish were analyzed w/year 1.
- Sample analysis by SGS Axys using Draft EPA Method 1633 for 40 PFAS analytes



No PFAS detected in the Mainstem other than Pea Patch Island. Although most sampling was done above Trenton where there is less industry/population density

Tributaries is where more PFAS was found. The data in figure 3 is organized by river mile, with the Lehigh River being the furthest upriver and Christina River being the closest to Delaware Bay. So, you can see a general increasing trend as you move downstream in the River catchment.



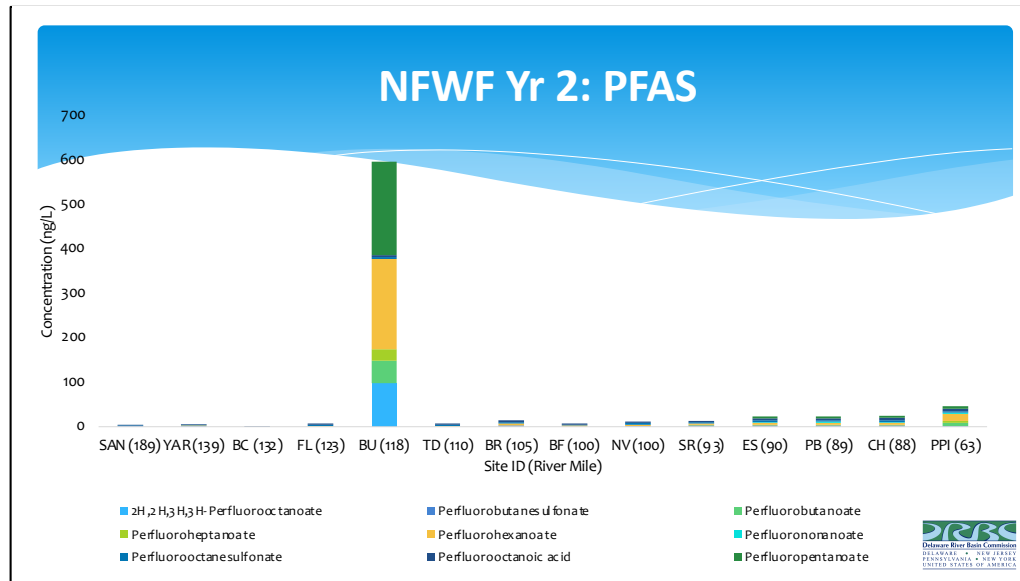
Interesting that 3 of the 5 tributaries where PFAS was detected in water, didn't have any detections in sediment.

The ability to broadly interpret the results of this study are limited by the experimental design, which involved a single sampling event. However, the subsequent year 2 and 3 studies will replicate some of the year 1 work providing a more robust understanding of PFAS in the Delaware River Basin. The general conclusions from year 1 are that the 40 targeted PFAS compounds, if present, were not detectable at quantifiable levels in surface water or sediment above the Lehigh River. Ron attempted to remedy these non-detection with year 2 data by collecting 1L instead of 500 mL for samples in the river mainstem above Trenton.

As you move from the Lehigh River south (downstream) toward the Delaware Bay, concentrations of the targeted PFAS and number of compounds found at a site generally increased. This is likely due to a similar increasing population and commercial and industrial densities as you move closer to Delaware Bay. The studies conducted in years 2 and 3 will help to clarify these results and the patterns observed.

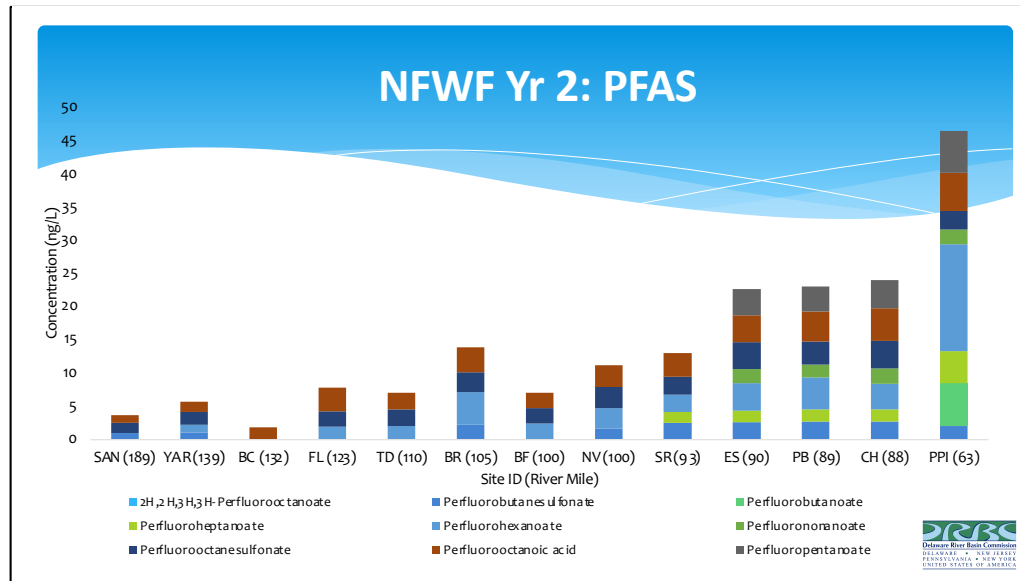
The report for Yr 1 is nearly finalized and will be submitted in the next few weeks.





As you can probably see, we had one site that is an outlier. This water sample was collected at the Burlington Bristol Bridge w/600 ng/L total PFAS. This was 13x the next highest site was Pea Patch Island at ~46 ng/L total PFAS.

Not sure what is going on here, but talking with Anna Robuck about this site, they have also seen some higher concentrations in this area. Not sure if we captured a pulse or flush, but we saw something that we want to keep an eye on with future sampling/studies. One good thing is that we didn't see the concentration in the samples at the next site, 8 miles down stream.

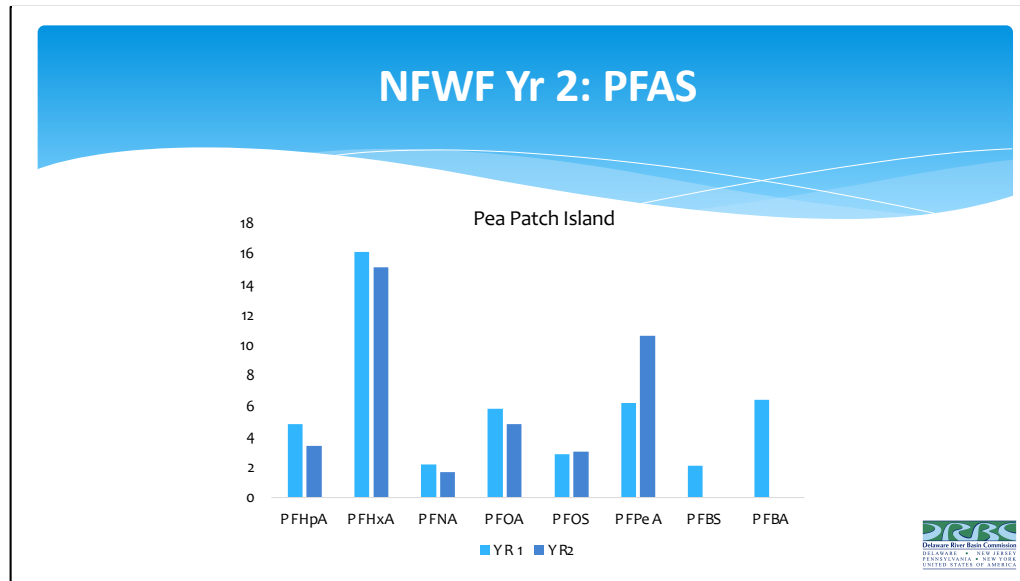


If you remove the Burlington site, you can see what the data looks at sites where PFAS was detected. Only the 2 most northern sites, Lackawaxen and Dingmans Ferry had no detections. So Ron's use of larger sample volumes may have helped with finding lower concentrations of PFAS in the 2 sites above the tidal influence.

I should note that I've included the only tributary site on here (Schuylkill River) site here.

With this data you see the same general data trend with increasing concentration as you water flows to the Delaware Bay. Which isn't surprising.

One thing we can directly compare from Yr 1 to Yr 2 is Pea Patch Island. The concentration was similar in both years, 40.6 and 46.4 ng/L total PFAS.



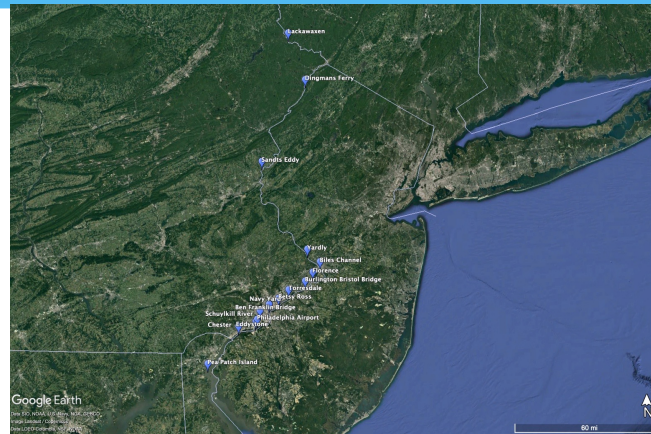
One thing we can directly compare from Yr 1 to Yr 2 is Pea Patch Island. The concentration was similar in both years, 40.6 and 46.4 ng/L total PFAS.

The individual PFAS mixture and concentration is also similar although in year 2 we found 2 more compounds. These are just 2 data points over the course of a year, but it is interesting how similar they are. It hints at regular discharge of these compounds in this area, but we would need more consistent sampling to verify if that is accurate or not.

This is all the data I can show for now, but we will be writing this report in the coming weeks and submitting it late in the summer or early fall.



## NFWF Yr 3: PFAS



Same sampling sites as Yr 2

Fish samples have been collected

Water and sediment will be collected in the next 4-6 weeks.

NFWF – did not apply for more PFAS funding with this years NFWF submission... I'll explain that in a minute.

## PACZM Yr 1: PFAS

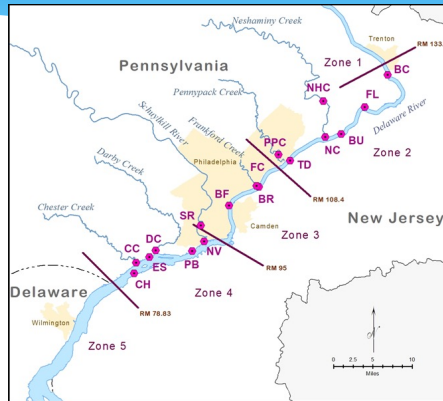


Figure 1. Delaware river and tributary sampling locations.

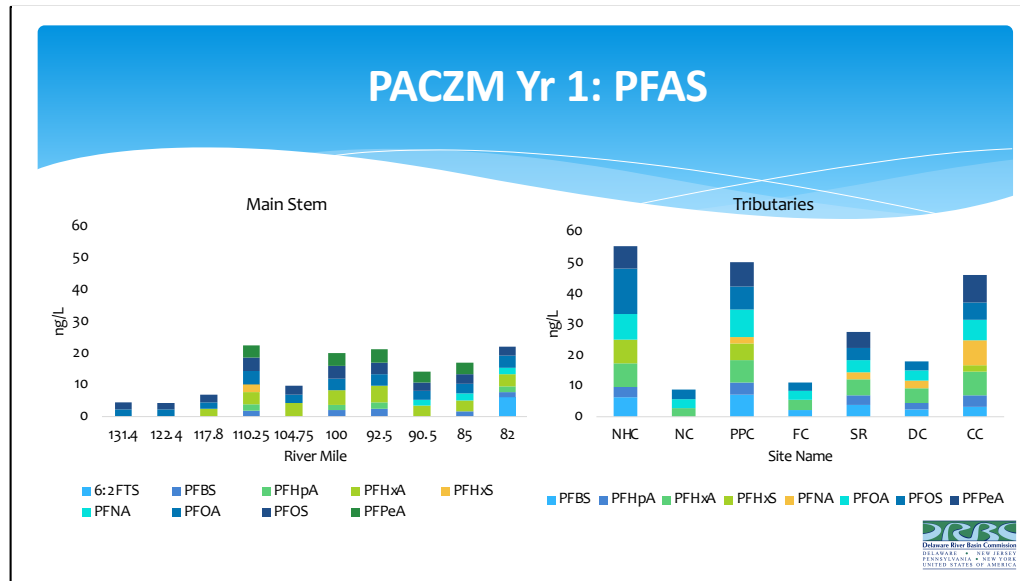


This grant is finished. We are putting the finishing touches on the report and submitting it in the next couple weeks.

Since this was Pennsylvania Coastal Zone Management funding, all work took place in the Mainstem bordering Pennsylvania or tributaries on the Pennsylvania side of the river.

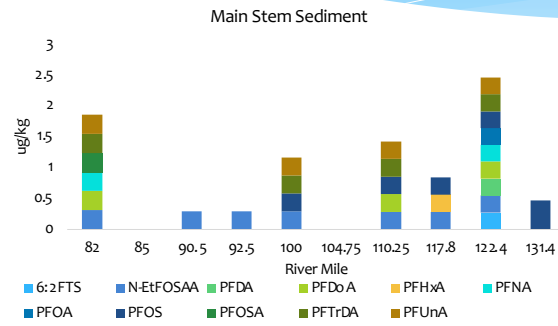
There were 10 mainstem sites (some overlapping with the NFWF sites) and 7 tributary sites. Fish, white perch and channel catfish, were also sampled at 6 of the sites.

Samples were analyzed via EPA DRAFT Method 1633 for 40 PFAS compounds by SGS AXYS. We also had Temple University do a more broad non-targeted analysis to see if there were any compounds found in our samples that were not accounted for in the DRAFT EPA Method 1633 analysis.



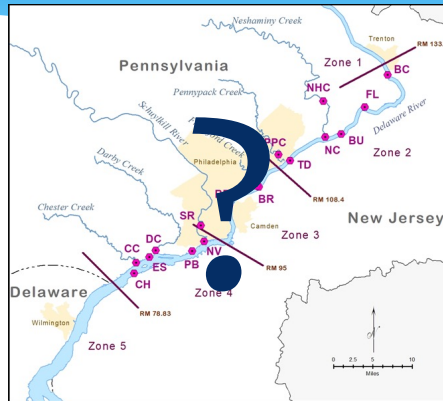
For mainstem samples, we see the same general increasing trend in PFAS you move downstream toward Delaware Bay. One point worth noting is that data at River Mile 117.8 is the Burlington Bristol Bridge and we don't see that spike in this sample as was shown in the earlier graph from the NFWF data.

# PACZM Yr 1: PFAS



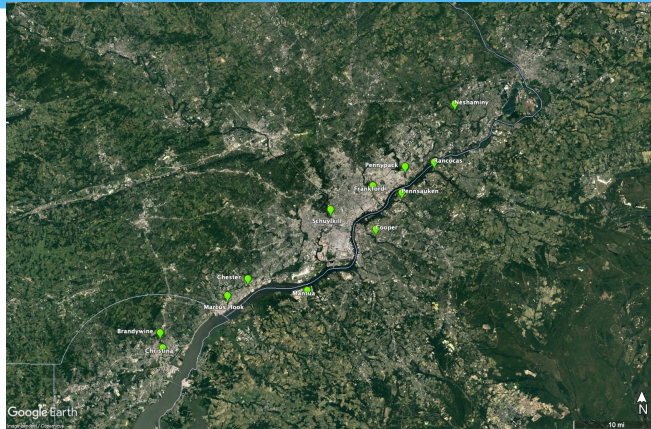
This grant is finished. We are putting the finishing touches on the report and submitting it in the next couple weeks.

## PACZM Yr 2: PFAS



This sampling will start later this summer and we will look at the existing data we have on PFAS to see where we want to sample. We will be collecting sediment and water at 12 sites and fish at 6 sites.

## PDE Bipartisan Infrastructure Bill: PFAS



This project will examine 12 tributaries on both sides of the river south of Trenton in to Delaware. It will examine PFAS, but also PCBs, Dioxins, Furans, Organochlorine Insecticides, Neonicotinoid Insecticides, Pyrazole Pesticides and PAHs. Just water sampling, with the goal of finding tributaries that are sources of these pollutants. Sampling will be done later this summer.

I've shown 6 project on PFAS, 3 of which are mostly done and 3 others that we will be sampling for this year. This work was all started before my arrival, so I'm still figuring it all out. Therefore, with so much PFAS data piling up, we've decided to pause applying for more PFAS funding until we can complete the current projects and synthesize the data. Basically, we need to figure out what it all means so that we can figure out how to focus our efforts in the future.

Instead of PFAS, we have decided to do is apply for funding to look at other emerging issues related to trace organic pollutant in the Delaware River Basin.... We've submitted 2 proposals on 6-PPDq... Briefly discuss 6-PPDq history

6-PPDq

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REPORT

f t in r e x

## A ubiquitous tire rubber-derived chemical induces acute mortality in coho salmon

ZHENYU TIAN, HAOQI ZHAO, KATHERINE T. PETER, MELISSA GONZALEZ, JILL WETZEL, CHRISTOPHER WU, XIMIN HU, JASMINE PRAT, EMMA MUDROCK, [...] AND EDWARD P. KOLODZIEJ +17 authors [Authors Info & Affiliations](#)

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14,638 244

<https://www.science.org/doi/10.1126/science.abd6951>

Coho salmon were having these die off events in the Pacific Northwest it took years to find the culprit.

## 6-PPDq



All tires have a chemical called 6-PPD that keeps them from cracking and extends the life of tires.

Through driving, each of us releases 7-12 lbs of tire wear particles (TWPs) into the environment annually

10% of that gets into surface waters due to wind and rain, where 6-PPD reacts with water to form 6-PPDq.



## NFWF Proposal: 6-PPDq

- Full proposal submitted in March
- If awarded, will start in October 2023
- In collaboration w/Temple WET Center
- Quantify 6-PPDq in the Upper Delaware River Basin (including tributaries)
- Targeting waters with salmonids



## PA Sea Grant Proposal: 6-PPDq

- Pre-proposal approved for full submission
- Full submission on June 7<sup>th</sup>
- If awarded, starts February 2024
- Collaboration w/Temple WET Center



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**Delaware River Basin Commission**

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*Managing, Protecting and Improving  
Our Shared Water Resources since  
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