The Potomac Drinking Water Source Protection Partnership
Quarterly Meeting Summary

ICPRB Offices, 30 West Gude Dr, Rockville, MD

May 1, 2024

Attendees

Water Suppliers

Berkeley County Water:
Alison Auvil
Mitchell Henson
Steve DeRidder

DC Water:
Anjuman Islam
Salil Kharkar
Alirenza Parhami
Maureen Schmelling

City of Hagerstown
Wendy Webster-Zahnow
Fairfax Water:
Nicki Bellezza
Greg Prelewicz
Anne Spiesman

Loudoun Water:
Catherine Cogswell
Bradley Schmitz
Pam Kenel (virtual)

Town of Leesburg
Melissa Andrews
Russell Chambers

WSSC Water:
Robin Forte (virtual)
Clark Howells
Aklile Tesfaye
Laura O'Donnell
Kishia Powell
Hector Rojas
Priscilla To
Sydney Williams

Washington Aqueduct/USACE
Nina Hallissy
Audrey Litte

State and Local Agencies

WV DHHR
Monica Whyte

DC DOEE
Jayne Brown
Jonathan Champion

MDE:
Robert Peoples

PA DEP:
Amy Williams

VDH:
Raven Jarvis
Robert Edelman

Federal and Regional Agencies

EPA Region 3:
Beth Garcia (virtual)
Virginia Vassalotti Hogsten (virtual)

MWCOG:
Steven Bieber
Lisa Ragain (virtual)

USGS:
Mary Foley
Joseph Duris (virtual)
Sara Breitmeyer (virtual)

ICPRB:
Renee Bourassa
Christina Davis
Mike Nardolilli
Heidi Moltz
Serena Moncion
Carlington Wallace

Others:

PEREC/GMU:
Kirin Furst
Matthew Badia

Guest Speakers (Virtual):
Alex Gorzalski, One Water
Caitlin Glover, Stantec
Erik Rosenfeldt, Hazen

Business Meeting

The May 1, 2024 Quarterly Meeting was held in person at ICPRB's office space in Rockville, MD. There were 35 in-person attendees. There were 9 virtual attendees, including guest presenters.

WRF Project 5269 Task 1 Update

Anne Spiesman, Fairfax Water

Given that several DWSPP members and ICPRB have initiated their tailored collaboration study on PFAS variability in the Potomac watershed, Spiesman gave a quick background on the approach and findings of a Pennsylvania surface water PFAS study published in 2023 in the journal Science of the Total Environment, which evaluated land use and other potential sources statewide. The main conclusion was that "statistically significant relationships existed between PFAS and variables associated with sources of pollution and human-altered landscapes." The authors concluded that water pollution control and electronics were primary sources of PFAS.

Dr. Brad Schmitz, Loudoun Water; Dr. Priscilla To and Laura O'Donnell, WSSC Water

Understanding the Factors Affecting PFAS Variability in the Potomac River Watershed

Speakers displayed a chart of the new EPA PFAS Maximum Contaminant Level (MCL) Regulations, which make the study timely, for reference.

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The main research questions: What is causing fluctuations in the PFAS concentrations that are detectable? There are three groups that could all cause variability: PFAS present in the environment, PFAs in sample processing, and PFAS sources.

Research objective: to identify the factors affecting the presence and variability of per- and polyfluoroalkyl substances (PFAS) and precursor compounds in the Potomac River to serve as a model for region-wide source water monitoring to inform mitigation strategies. This Water Research Foundation-funded project kicked off on March 1. A kick-off meeting with the Project Advisory Committee has occurred, and contracting is all complete.

The members of the Project Advisory Committee are:
Jason Dadakis, Orange County Water District
Matthew Fritch, Philadelphia Water
Klaus Albertin, North Carolina DEQ

These individuals have provided valuable insight from their own WRF PFAS monitoring projects in their jurisdictions.

At a May 2 stakeholder workshop, the research team will finalize the 10 sampling locations, from which 120 samples will be taken (once a month + one weather event) using EPA method 1633 targeted analysis for 42 compounds and Total Oxidizable Precursors (TOP). They will

consider 4 “buckets”: 1) Potential Sources 2) Utility Infrastructure 3) Population and Geography 4) Site Accessibility. Some presumptive sources of PFAS, AFFF sources for example, were difficult to filter out. The PIs did a priority analysis to develop their final criteria for site selection maps:

- land use & population density
- hierarchical Hydrologic Unit Code (HUC)
- PFAS-containing waste & solid industries (NAICS)
- USGS Gages
- Tributaries
- AFFF Discharges – airports, fire training, national defense
- Utility infrastructure – water intakes and wastewater facilities

The study is aiming to determine factors affecting variability in the Potomac River Basin, not source tracking for specific point-sources of contamination. The research team is avoiding biasing samples based on point sources as there are too many point sources in the watershed and not enough sample locations.

Pre-selected sites included: HUC (H), Water Intakes (IN), USGS Gage (G), Tributary (T), and Discretionary (D)
HUC: 7 sites
IN: 7 sites
USGS Gage: 5 sites
Tributary: 2 – 4 sites
Discretionary: 3 sites

A workshop will take place on May 2 for feedback outside of the Research Team, who will make final decisions following the meeting.

Christy Davis, ICPRB:
The Research team is recommending that utilities pay separately for a study (outside of WRF) sampling the intakes for PFAS and/or microplastics. The DWSPP chairs and coordinator are considering adding intake sampling into a line item as part of DWSPP dues. Some discussion occurred among attendees about leveraging different funding sources, such as the State Revolving Funds and the Bipartisan Infrastructure Law for PFAS sampling.

Introductions and remarks on PFAS

(Kishia L. Powell, WSSC Water)
Powell emphasized a whole-watershed approach for addressing PFAS, providing the cleanest water possible through treatment, and holding polluters accountable. Other attendees shared how they are working on PFAS. One action item: an ad-hoc PFAS workgroup.

Monitoring for CECs in the Potomac and Beyond

Dr. Erik Rosenfeldt, Hazen

Rosenfeldt briefed the group on past Potomac CEC Occurrence studies between 2015 and 2020. Phase 1 was a “Focused Study on Paired Subwatersheds” to understand impacts of BMPS on

emerging contaminants and phase 2 was “Broad CEC Monitoring Throughout the Watershed.” Questions in the early 2000s about endocrine disruptors in pharmaceuticals and personal care products and their impact on intersex fish spurred this research. Project 1: “Initial screening of EDC sources in the DC metro area” had two objectives: 1) to evaluate upstream and downstream impacts from nutrient control, agriculture management, stormwater management and wastewater treatment strategies 2) to evaluate impacts of EDC in receiving waters attributed to point versus non-point sources. They “paired” watersheds, or sampled from one stream with BMPs and one source with few BMPs once a month for 18 months. Project results showed higher relative loads of CECs from agricultural lands.

The same team was awarded funding from EPA STAR. This study question was more focused on how to co-manage pollutants (e.g. nutrients and CECs).

In year 1, researchers identified and tracked variations in EDC hot spots and found highest load of estrogen/estrone in the Shenandoah Valley.

Year 1 land use analysis showed high hits for EDCs in forested lands, ranch lands. Highest hits for herbicides in cropland. Conclusion: Agriculture inputs are big contributors, in part because of the amount of water those inputs use. Point sources were much smaller contributors.

Year 2 sampling plan was a comparison of urban and rural monitoring sites. Rural: Agricultural BMPs typically reduced EDCs, and some herbicides. Urban: BMPs showed less impact on all CECs and EDCs.

Year 2 results. CECs were found in wastewater effluent but not in levels higher than standard. Advanced Water Treatment had significant reductions in CECs compared to other treatment methods. CEC detections in this phase were all below ecological or human health levels of concern.

Year 3 objective was to develop a framework to compare costs, impacts, and benefits of CEC management strategies. Agriculture jumped to the top of the priority list after the group went through a multi-criteria decision analysis.

Extended Analysis: Focusing on PFAS in the Potomac

Research title: “Optimized suspect screening approach for a comprehensive assessment of the impact of best management practices in reducing micropollutants transport in the Potomac River watershed.” This extended analysis showed more interesting trends. The study was a high-level look at PFAS levels in the Potomac in Wastewater Treatment Plant effluent, agricultural, and urban impaired watersheds. Approximately 9 PFAS observed.

Experiences in Source Monitoring beyond the Potomac include “sorting out” suspected sources. In a Southwestern Ohio case study at a defunct Air Force base-turned shipping center: upstream, downstream, tributary, and far downstream sampling sites were collected. For many of the contaminants, only the downstream showed significant occurrence, pointing to the site as the source, though there was observed seasonality in the samples.

At Spring Hollow Reservoir (Fall 2021), GenX passive samplers were deployed upstream and downstream of a WWTP and showed hits there.

An effective Source Identification example from New York state was highlighted.

North Carolina PFAS and 1,4-Dioxane Monitoring and Source Control Case Studies

Dr. Alex Gorzalski, One Water Engineering

Gorzalski covered the following areas:

- Land-applied PFAS can leach long after application ceases;
- The most acute water quality impacts are likely in tributaries.
- Considerations for getting the most out of your PFAS sampling
- Source control successes & industrial discharge variability

In the Cane Creek watershed in North Carolina, high PFAS concentrations continued to be found long after biosolids containing PFAS ceased to be used (2018). Not all biosolids are the same, industrially impacted WWTPs can have much higher PFAS concentrations at as much as 1000 ppb.

Tributaries/smaller bodies of water where there is less dilution are more likely to be impaired by PFAS.

Gorzalski shared an example from the Cape Fear River Basin with discharges of 1,4-Dioxane.

Tips for gathering actionable data:

- Using composite or passive samplers because industrial discharges can be highly variable.
- Some sampling at low flow, and some after rainfall to minimize the effect of streamflow diluting the sample.
- Larger sample volume can yield better resolution or help avoid non-detects if sampling a larger water body.

An example illustrating streamflow and dilution from Chemours in 2023 was shared with the group.

Success in reducing short-chain PFAS GenX and PFMOAA at Sweeney Water Treatment Plant (Cape Fear River Basin, NC). 1-4 Dioxane was reduced through source control, however, industrial sources can be difficult to identify due to inconsistent loadings. This illustrated the drawbacks of grab samples, which can result in non-detects unless the industrial source happens to be discharging at the same time that you collect a sample.

Industrially-impacted wastewater treatment plants showed they could reduce PFAS discharges from over 30,000 nanograms per liter to nearly zero for the last 4 years. Their wet-oxidation system used to treat biosolids was causing the short-chain PFAS to convert to long-chain PFAS.

The wastewater treatment plant shut that system off, and worked with the textile producer to contain their source and eventually phase out their use of PFAS entirely.

Conclusions:

Certain PFAS sources, like land applied biosolids and fire training facilities, will continue to leach even after the source is controlled.

Tributaries are most likely to have very acute effects. So, if you're able to detect a chemical in the main stem, it's going to be more concentrated. Given the DWSPP utilities' current project of characterizing variability of PFAS in the mainstem, it is worth asking how sampling benefits small and disadvantaged communities that are located on those tributaries. Small towns that are using those tributaries as a source would benefit from that work.

Also note that to improve detection limits and precision, increase sample volumes for solid phase extraction methods to avoid non-detects.

Source control can be effective for reducing PFAS and synthetic organics like 1,4-Dioxane. So, what seems like an intractable problem when you're looking at a large watershed like the Potomac, actually can be impacted; there are plenty of examples of identifying sources, mitigating those sources, and reducing the concentrations downstream.

Passive sampler technology is available from Environmental Sampling Techniques (EST) and it costs about $1500 to outfit, $300 to replace cartridges, and $400 for analysis.

Regional Stakeholder Discussion of WRF Project 5269

A series of sub-watershed maps were shared to help members get an idea of sites in the Potomac basin, and an overview of the criteria influencing the pre-selected sites and priority scoring. Non-utilities and those unable to attend the workshop gave prior feedback.

USGS (Joseph Duris and Sara Breitmeyer) shared more about their study design in Pennsylvania contrasted with the WRF DWSPP study. This research team was not surprised to find PFAS concentrations to be related to urbanization, but they were surprised to find a relationship between PFAS concentrations and electronics manufacturing facilities. They mentioned that they sampled during a drought in PA, which worked to their benefit and allowed them to avoid flow/dilution impacts to their samples. However, it is recommended to gather samples with both high flow and low flow conditions to pinpoint sources, but that was not possible for this study. The EPA PFAS Analytics tool may be helpful in prioritizing the sites for the WRF project. HUC8 sub-watersheds are granular enough for the purpose of characterizing variability in a large watershed. A pre-filtration step may be necessary for highly turbid tributaries.

Utilities that are part of the study can give more feedback during the workshop on May 2, and other feedback can be funneled to Brad Schmitz of Loudoun Water.

FY2025 Update to the Land Prioritization Mapping Tool

Dr. Heidi Moltz, ICPRB

In 2020, eight DWSPP utilities and ICPRB staff developed a land prioritization tool, ranking parcels of land and their potential to degrade long-term water quality. Part of that project included an interactive mapping tool. The tool is to be updated next year. For example, the team wants to extend the boundaries to the full states/jurisdictions and update data sets that might be available to address changing conservation priorities. ICPRB is welcoming feedback and will host a series of 3 virtual meetings to gather information in October.

Chair's Update

Kishia L. Powell, WSSC Water

The chair thanked the participants in the room and in the virtual meeting, emphasizing new voices in the meeting, and noted action items. Thank you to Robin Forte, Priscilla To, and Laura O'Donnell for their work on the WRF project and others from the WSSC water team members for joining today.

Administrative Announcements

August 7 will be a virtual meeting on climate resilience-focused topics, and November 6 is the date set for the annual in-person DWSPP Meeting.

Workgroup Reports

Contaminants of Emerging Concern (CEC) Workgroup – brief report given by Christy Davis for chair Bradley Schmitz

Some research indicates that microplastics are synergistic with PFAS. Goose Creek and Broad Run data. HDPE, rubber, and paint found at those sites. Utilities might want to sample for microplastics in a parallel effort to the PFAS study funded by WRF. Chesapeake Bay Program is developing a microplastics monitoring framework, and they have been made aware of the PFAS study.

Early Warning/Early Response (EW/ER) – Anne Spiesman, Fairfax Water

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Anne Spiesman is the new chair of this workgroup. The WG reviewed the fall DWSPP EPA Oil Spill Exercise After-Action Report. Members of the workgroup served on the CISA Exercise Planning Team. They also prepared a draft Incident Action Plan to serve as a model for individual utilities response to vulnerabilities. Members participated in the EPA R3 Water Supply NCR Response Virtual Workshop on March 14 and the CISA NCR Water Supply (Potomac Spill) Exercise on March 21.

Discussion on FFF and AFFF, many FFF may be PFAS-free.

Reaching Out Workgroup – Virginia (Vassalotti) Hogsten

Virginia shared information about the Virginia Small Systems Roundtable coming up on May 21 in Augusta County, VA. The target audience is small systems in Virginia and the topics to be

covered are: 1) about DWSPP 2) HABs toolkit 3) Agriculture 4) PFAS 5) VDH Technical and Financial resources. All DWSPP members are welcome to attend.

She called for feedback from members on the regional source water protection in the Potomac River Basin StoryMap for possible minor updates.

Source Water Protection week begins in the last week of September. The workgroup is developing a guide for DWSPP members and non-DWSPP members.

Urban and Industrial Issues (U&II) Workgroup – Greg Prelewicz

The workgroup held their last meeting on April 24. Topics included:

NPDES permits:

1) The LYCRA company in Virginia. Fairfax Water's comments included a request to DEQ for PFAS monitoring and reopener clause for additional types of monitoring to be allowed before the 5-year review period,

2) The New Market Poultry operation in Virginia. Fairfax Water's comment letter included EPA's new effluent guidelines for meat and poultry processing facilities. Both permits/comments were posted to Samepage.

A NPDWR for Perchlorate is expected to be announced by EPA next year. The workgroup also discussed the Potomac watershed PFAS WRF study siting process.

Agricultural Issues Workgroup – Pam Kenel

The workgroup is meeting today (May 1) to discuss broadening the focus of the workgroup on non-crop lands, forest and conservation. Potential new partnerships have been identified. The chair is considering a corresponding change in the workgroup's name.

Water Quality Workgroup – Christy Davis (for chair Niffy Saji)

The workgroup is working towards finalizing a list of sites collecting salt data and creating a Salt Story Map. The workgroup is updating the PFAS Story Map and finalizing the utility capabilities spreadsheet for communications in the event of an emergency. The workgroup is supporting the EW/ER workgroup with updating the DWSPP Utility Spill Response Plan.