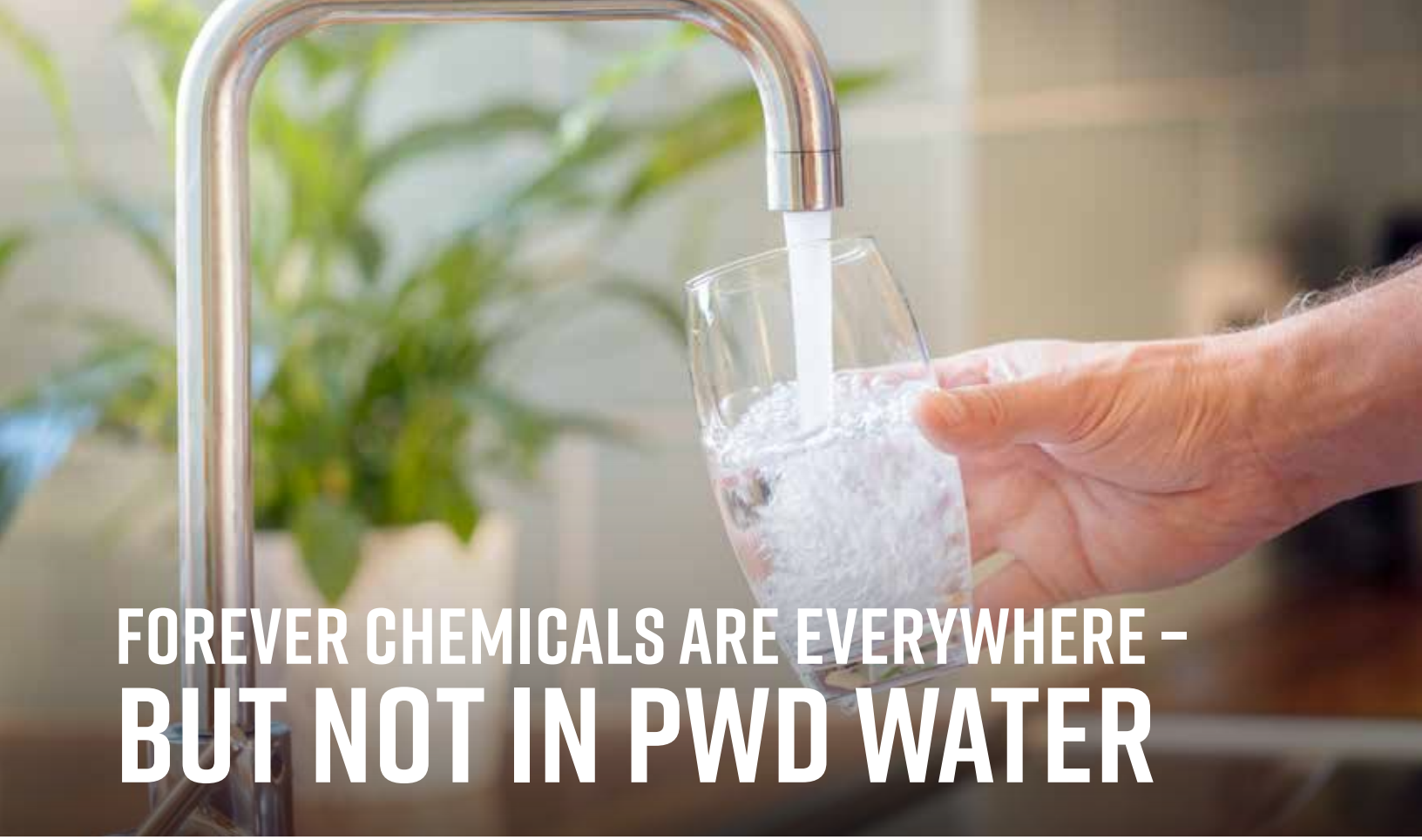
WINTER 2023

SEBAGO IN DEPTH

Water, Land, Community

WHAT'S INSIDE

PORTLAND WATER DISTRICT



FOREVER CHEMICALS ARE EVERYWHERE – BUT NOT IN PWD WATER

By Paul Hunt
Environmental Services Manager Paul Hunt can be reached at phunt@pwd.org

You have probably seen headlines about PFAS or "forever chemicals" and wondered what they are, where they come from, and if they are found in Sebago Lake water. We recently tested the water leaving our Sebago Lake Water Treatment Facility for 25 PFAS chemicals and did not detect them. Here are the answers to some frequently asked questions about PFAS that will help explain why we tested, what the results mean, and what else you should know.

What are PFAS?

Perfluoroalkyl and polyfluoroalkyl substances, or PFAS, are a family of thousands of different man-made compounds that have been used since the 1940s. Each one has an incredibly strong bond between carbon and fluorine. This makes PFAS handy substances for creating products that resist heat, oil, stains, grease, and water. You can find them in many common products: waterproof fabrics, stain repellents, non-stick cooking surfaces, cell phones, and fire-fighting foam to name a few. They are all around us and, we're learning, can be detected in our soil, our water, our food and even in our blood.

I've heard of PFAS but I've also seen other, similar letters like PFOS and PFOA. Why?

Remember that PFAS refers to a bunch of different chemicals. PFOA (Perfluorooctanoic Acid) and PFOS (Perfluorooctane Sulfate) are two of the most widely used and studied chemicals in the PFAS family. Like all PFAS chemicals, they have the carbon-fluorine bond but they're not exactly the same. All PFAS chemicals are not equally concerning. That's why the federal and state governments are still trying to determine what safe levels should be set and for which of the PFAS chemicals.

Why are they called "Forever Chemicals?"

That carbon-fluorine bond that makes PFAS great for creating barriers also makes them resistant to being broken down naturally. So they persist and move through the water and food cycles like passengers on a Ferris wheel. In places where PFAS-containing materials have been spread on farms, researchers have found the chemicals in cows that have grazed on those fields, in the milk produced by the cows, and in the blood of people who've consumed the milk. This very thing was recently documented at a farm in Arundel.

Why am I hearing about them so much lately?

Though PFAS have been around for many decades, the methods for detecting them are much newer. There are now laboratory tests which can detect PFAS down to the parts-per-trillion level (ppt). To get an idea of how tiny an amount that is, think about this: there are a trillion seconds in 32,000 years of time. So one ppt represents 1 second out of 32,000 years.

If PFAS are present at such tiny amounts, why should I care?

Research has shown that some and possibly even most PFAS chemicals are not dangerous. But some of them can have health effects even down at that ppt level. Just as they don't break down in soil and water very easily, they don't break down in our bodies easily either. Over time, they stay stored in our bodies and as we ingest more and more of them, they accumulate and increase.

Why did PWD test Sebago Lake water?

The Maine legislature has set an interim limit of 20 ppt for a combined concentration of six PFAS chemicals – those they have determined are the most concerning based on what is known now. Public water systems are required to test now to see if the drinking water meets this interim limit.

What were the results of the testing?

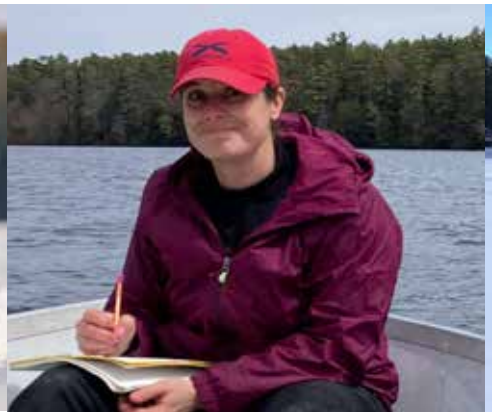
As required, we tested the water after it leaves our water treatment facility in Standish. This means we were testing Sebago Lake water drawn from Lower Bay after we disinfected it and treated it with the required additives. We tested for all six of the chemicals that make up the interim limit as well as some others. The result for each of these chemicals was below the detection limit of the test.

Does this mean you're done with testing?

Probably not. The legislation that required us to test also requires the Maine Center for Disease Control to set a permanent limit by 2024. If that limit is lower than 20 ppt and/or includes other PFAS chemicals we didn't test for this time around, we'll test again.

How can I reduce my personal exposure to PFAS chemicals?

1. Check product labels for ingredients that include the words "fluoro" or "perfluoro."
2. Be aware of packaging for foods that contain grease-repellent coatings. Examples include microwave popcorn bags and fast food wrappers and boxes.
3. Avoid stain-resistant treatments. Choose furniture and carpets that aren't marketed as "stain-resistant" and don't apply finishing treatments to these or other items. Avoid clothing, luggage, camping, and sport equipment that were treated for water or stain resistance.
4. Avoid use of non-stick cookware or choose safer options such as ceramic-coated cookware. Stop using products if non-stick coatings show signs of wear.


PROFILE OF A SEBAGO PROTECTOR

Maggie Welch

Lakes Environmental Association

Limnologist at Lakes Environmental Association (LEA)

Many of the lakes in LEA's service area are part of Sebago Lake's upper watershed, meaning they eventually drain to Sebago Lake. PWD and LEA have a long history of collaboration. When LEA protects lakes in the watershed, Sebago Lake benefits as well.

Q: CAN YOU TELL ME A LITTLE ABOUT YOUR JOB AS A LIMNOLOGIST?

A: A limnologist studies inland waterbodies. My job involves question-based science – the question we try to answer: "Is water quality in LEA's service area changing over time?" We try to answer that question through frequent monitoring of water quality parameters, such as temperature, dissolved oxygen, nutrients (specifically phosphorus), and others. My three big projects right now are water quality monitoring, algae monitoring, and loon monitoring. The loon monitoring project is a collaboration between Maine Audubon, Maine Inland Fisheries & Wildlife, and LEA to determine if artificial loon rafts increase productivity.

Q: WHEN AND HOW DID YOU DECIDE YOU WANTED A CAREER IN LAKE PROTECTION? HOW DID YOU GET TO WHERE YOU ARE NOW IN YOUR CAREER?

A: I decided to go to college amid the '08 financial crisis. It was there that I started to think about working in water quality or environmental protection. Before my current job, I did pesticide resistance and long-term monitoring for tick and mosquito populations at the Maine Medical Center Research Institute Vector-Borne Disease Lab. Although the subject matter is different, the work itself is similar. Both jobs involve field work to answer (sometimes nebulous) questions about environmental change. I had just finished my master's degree when the job at LEA opened, and I took a shot and was hired. I just finished my fourth field season here.

Q: WHAT MAKES THE PARTNERSHIP BETWEEN PWD AND LEA VALUABLE?

A: In school we are taught subject by subject, but in reality, everything is systemic and connected. When you monitor a system such as Sebago Lake you need to monitor the systems that feed into it to get the full picture. These relationships are particularly valuable because they allow us to do more collectively than we could if we all worked individually.

Q: WHAT IS YOUR FAVORITE THING ABOUT YOUR WORK?

A: I'm a nerd and I love anything to do with taxonomy and microscopy. At my previous job, I was identifying ticks and mosquitos, and here I'm identifying algae. It's very cool to get a live sample and watch things swim around. LEA is supportive of my career goals and it's been a fun ride so far.

Q: THIS INTERVIEW IS FOR OUR WINTER EDITION. WHAT SORT OF LAKE MONITORING DOES LEA DO IN THE WINTER?

A: Winter monitoring is similar to what we do in the regular season, but we use one piece of equipment called a data sonde to collect several types of water quality data all at once. The sonde has a sensor called a fluorometer on it that shows us what depths algae are growing at. We use a pump to collect water from that depth and run the sample through our FlowCam, which takes pictures and allows us to characterize the algal community within the lake. People think of winter as being very quiet, but it's fascinating how lakes change over the winter. You can get oxygen loss at the bottom of a lake like you would get in the summer, and algae still grow despite the low light and nutrient conditions. Being out on the ice on a warm day, you can hear the ice shift and create an almost musical, song-like sound that is really beautiful.

Q: ANY FAVORITE EXPERIENCES YOU'VE HAD ON THE JOB?

A: Many people don't know about freshwater jellyfish. There are a few lakes in LEA's service area that have them. You can only see them for a couple weeks at the end of the summer, and when you do it's magical.

CONSERVING MORE FORESTS ALONG THE CROOKED RIVER

Western Foothills Land Trust (WFLT) is protecting more land along the Crooked River, the largest tributary to Sebago Lake, by expanding its 252-acre Twin Bridges Preserve. Three parcels, once purchased by WFLT, will create a protected landscape with 4 miles of Crooked River shoreline, 1.5 miles of stream habitat, 92 acres of wetlands, 1,000 feet of pond shoreline, and **1,052 acres of forests filtering the water moving towards Sebago Lake.**

Acquisition of Edwards Mills, Robinson, and Cummings parcels located in Harrison, Norway, and Otisfield, totaling 795 acres, is possible because of conservation-minded landowners and funding from Portland Water District, Sebago Clean Waters, Land for Maine's Future, Casco Bay Estuary Partnership, Open Space Institute, and other donors.

WFLT will expand trails through woods and along the river to viewing areas near Little Pond in Otisfield and create access to the north side of Route 117 in Norway. This conservation effort protects important wildlife habitat, water quality, and provides access to outdoor recreation.

Photo by: Bruce Small

WHAT'S MAKING WAVES: AROUND SEBAGO LAKE

5TH ANNUAL WOODLAND OWNER APPRECIATION DAY A SUCCESS

On October 1st, 2022, 52 woodland owners and 27 representatives from partner organizations gathered at Narramissic Farm and Peabody Fitch Woods in Bridgton. The event celebrated woodland owners in the greater Sebago Lake watershed and the role their woodlands play in protecting clean water, wildlife habitat, and the Maine way of life. District staff worked with Lakes Environmental Association, Sebago Clean Waters, and other partners to organize and run the event. If you own ten or more acres of woods in the Lake Region, we invite you to consider attending this annual event next year.

Survey for Woodland Owners in the Sebago Lake Watershed - We are working with Sebago Clean Waters to better understand what motivates woodland owners in the Sebago Lake watershed. Please complete an anonymous survey to tell us about your land, how you use it, and about stewardship and/or conservation strategies you use or would like to use to help you manage it. You can help us serve you better by completing this survey: https://www.surveymonkey.com/r/Woodlotsurvey

CODE ENFORCEMENT OFFICER ROUNDTABLE EVENT

Sebago Lake region code enforcement officers (CEOs) gathered for collaborative discussions with state regulatory staff, Portland Water District, and lake protection partners last October. CEOs are among our most important partners in lake protection as they are responsible for ensuring that people in their town are following shoreland zoning, subsurface wastewater, and erosion control laws. The roundtable-style format lets CEOs share issues they are facing and share land and water protection strategies. The day-long meeting was attended by a total of 35 people representing 14 municipal town code enforcement departments and three environmental regulatory divisions.

GRANTS AVAILABLE TO LAKE ASSOCIATIONS TO PURCHASE LAKE MONITORING EQUIPMENT

New this year, the District is offering matching grants of up to $500 for lake associations in the Sebago Lake watershed to help fund the purchase of lake water quality monitoring equipment. Examples of such equipment include but are not limited to Secchi discs, dissolved oxygen meters, core tubes, and depth samplers. Contact us for more information or to apply: sebagolake@pwd.org

SPOTTING SIGNS OF EROSION

By Carina Brown
Water Resources Specialist Carina Brown can be reached at cbrown@pwd.org

A process as old as time, influenced by gravity, wind, waves, and rain can be blamed for causing water quality declines in our local waterways. The process is erosion and it occurs when elements wear down the land and move particles of soil. These sediments end up in lakes and rivers creating cloudy water and contributing to algae blooms. Sounds pretty detrimental, and pretty darn natural. However, when we change the landscape and remove trees around a lake or river to make it more suitable for us to live near, we remove the features that ensure this process will be slow and almost unnoticeable in one generation. More importantly, we create surfaces and interact with the land in ways that accelerate erosion and this can make water quality declines happen within our lifetime. No one wants to see Sebago Lake go green with algae, so let's explore erosion so you can identify it on your property.

First, I need to discuss the water cycle. We can't really understand erosion without recognizing the really important influence of the water cycle. Let's begin with rain. When rain hits the ground, it moves down (there's that gravity!) until collecting in our waterbodies. Water moving through the landscape will eventually make its way to your property before ending up in Sebago Lake. How it moves through the landscape varies. It will do very different things in a forest compared to a developed area.

RAIN IN A FOREST - *Rain infiltrates the forest floor slowly making its way down into the pine needles, leaves, twigs, and other organic matter that's been sitting on the ground decaying – all of this acting like a sponge. The rain water seeps through the ground slowly. If it had picked up pollutants like chemicals or fertilizers, these attach to the soil or get absorbed by the roots of plants. The water is then slowly released into our waterways, clean and cold.*

RAIN IN DEVELOPED AREAS - *Rain flows off the roof, hits the ground and becomes runoff which moves downhill over driveways, roads, and lawns with increasing speed and volume, generating more power to pick things up along the way – like unstable soil. This powerful runoff rushes into our waterways, wearing down the shoreline, carrying soil and other pollutants.*

You can probably already determine why water acts so differently in these two settings. It has everything to do with the surface type. In a forest, water can soak into those surfaces. In developed areas where we live, water can't soak in. We design developed areas to keep water out, often resulting in large volumes of concentrated flows moving off our properties. We can, however, make changes to our outdoor surfaces to make them act a little more like a forest does.

Runoff, the water moving over the landscape, often causes erosion. Other common causes of erosion include frequent foot or vehicle traffic and shorelines that receive a lot of wave action. Erosion leaves tell-tale signs. If you can see these, that means you have erosion happening on your land, but it also means you have identified a problem area and can address it.

COMMON SIGNS OF EROSION

If you spot signs of erosion, your property is losing land - losing soil - which ends up in Sebago Lake. The District works with property owners living within 250 feet of Sebago Lake or its tributaries to address erosion through our Sebago Lakescaping Program. It starts with a free site visit which allows us to recommend changes to your property that will encourage rain to infiltrate instead of run off. It can end with you applying for a grant to help offset the costs of implementing these lake-friendly improvements. **Let us help you protect Sebago Lake.** This spring, inspect your property for erosion and if you see any signs, reach out: sebagolake@pwd.org.

DISTRICT STAFF PROFILE }

Seth Garrison
General Manager

In October, we welcomed Seth Garrison as our new General Manager. He brings extensive experience in the water industry, including work as a state regulator and as Superintendent of another Maine water utility. Most recently, he spent 18 years as a nationally-known management consultant in the water and wastewater sector, helping utilities enhance performance, strengthen their workforces and organizations, and improve trust among stakeholders and the public. He served as a Portland Water District trustee for nine years.

As the General Manager, he oversees the organization from Sebago Lake to Casco Bay, but for this article we asked him to share his thoughts about Sebago Lake protection. When asked what drew him to PWD, he said a desire to serve the public and help conserve the environment in Maine. He looks forward to continuing PWD's efforts to keep Sebago Lake clean for generations to come.

IIn Seth's role at the Maine Drinking Water Program (DWP) in the early 90s, he helped us reach an agreement with the DWP to treat the water without the expensive step of filtration. That experience gives him a strong appreciation for working to maintain Sebago Lake's excellent water quality. Seth said he has always had an interest in the environment, first working in the Water Resources Division at the U.S. Geological Survey while in college, then moving to the DWP, and as a utility manger and consultant helping organizations use their resources wisely.

When asked how he envisions protecting the long-term health of Sebago Lake, he said that the watershed has critical value to a lot of people – drinking water, recreation, a place to call home – and all those values need to be considered. He feels that partnerships with organizations and individuals are very important and will help PWD maximize benefits to everyone who values the lake. In his free time, you might find him biking on the Sebago Lake Land Reserve or visiting Sebago Lake State Park with his daughter. Welcome to PWD, Seth!

INTRODUCING THE SEBAGO LAKE TO CASCO BAY CALENDAR

Portland Water District draws water from Sebago Lake, disinfects it, and distributes it to hundreds of thousands of faucets. When it goes down the drain we collect the wastewater, treat it again, and release the treated water to the Presumpscot River or Casco Bay. Our job is to be the stewards of the water as it travels from Sebago Lake to Casco Bay. Starting in 2024, that's going to be the theme of our annual calendar. Our popular calendar, Images of Sebago Lake, will be called Sebago Lake to Casco Bay and feature photos of Sebago Lake and its tributaries, the Presumpscot River, and Casco Bay. Please visit our website for more information about photo submissions. pwd.org/publications/sebago-lake-calendar

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Learn about events we and our partners host around the lake and throughout the watershed by joining our email list. Send an email to sebagolake@pwd.org