

**Portsmouth Safe Water Advisory Group (SWAG):  
Overview Document**

**SWAG Mission**

To review and communicate the latest science on the health and environmental effects of drinking water contaminants (with a heavy focus on PFAS), to monitor federal and state level legislative changes, and to anticipate policy changes that could impact the city of Portsmouth.

**SWAG Members**

Portsmouth Safe Water Advisory Group (SWAG) Participants

<u>Role</u>	<u>Name</u>
City Councilors	Cliff Lazenby Deaglan McEachern
Community Members	Andrea Amico Lindsey Carmichael Katie Hillman Rich DiPentima
City of Portsmouth - Fire Department	Russ Osgood
City of Portsmouth - Water Department	Brian Goetz
City of Portsmouth - Health Department	Kim McNamara
City of Portsmouth - School Board	Hope Van Epps
Environmental Scientist	Dr. Laurel Schaider
State Legislators from Portsmouth	Rep. David Meuse District 21 Senator Rebecca Perkins Kwoka

## **Issue Origin**

Pease Air Force Base was an active Air Force Base from 1956-1991 <sup>(1)</sup>. Personnel on the base used Aqueous Film Forming Foam (AFFF) for fire training exercises and to fight petroleum-based fires. AFFF products were used extensively in a firefighting training area (known as site 8) and other areas on the base. Per- and polyfluoroalkyl substances (PFAS) chemicals are found in the AFFF that was used at Pease. The Pease Air Force Base was officially listed as a National Priority List (NPL) Superfund Site on February 21, 1990 <sup>(2)</sup>.

When AFFF is used in one location over a period of time the PFAS compounds can move from the foam to the soil and the soil to the groundwater; this is what happened at the former Pease Air Force base. PFAS are highly stable and persistent chemicals and do not break down; this is why they are often referred to as “forever chemicals.” <sup>(3)</sup> Testing of groundwater in 2013 and drinking water in 2014 revealed that the PFAS compounds were found at concentrations above the United States Environmental Protection Agency (US EPA) provisional health advisories (PHAs) in the Haven well at Pease <sup>(4)</sup>. PFAS were also detected in the two other drinking water wells on Pease (Smith and Harrison) as well as two city of Portsmouth municipal wells (Portsmouth and Collins) in close proximity to the Pease Tradeport <sup>(5)</sup>. Because of the high levels of one PFAS compound (Perfluorooctanesulfonic acid or PFOS), the Haven well was shut down in May 2014. This event was the catalyst for many other events related to addressing and remediating the PFAS water contamination at the Pease Tradeport, including the Air Force working with the city of Portsmouth to fund the installation of a Granular Activated Carbon (GAC) filtration system for two wells at Pease (Smith and Harrison) that are still in service <sup>(6)</sup>. The GAC filtration system went online in September 2016. The city of Portsmouth is actively working on a construction project to install ion exchange resin in addition to the GAC filters at Pease, with the goal of having that system operational in the Spring of 2021 <sup>(7)</sup>. Other actions taken included the formation of a PFAS blood testing program for all the people on the Pease Tradeport who were exposed to the contaminated water offered by New Hampshire Department of Health and Human Services <sup>(8)</sup>, the formation of a Pease Community Assistance Panel (CAP) with the federal health Agency for Toxic Substances and Disease Registry (ATSDR) <sup>(9)</sup>, the re-formation of the Pease Restoration Advisory Board (RAB) with the United States Air Force (US Air Force), the creation of two Pease PFAS community health studies <sup>(10, 11)</sup>, and additional groundwater remediation projects at Pease <sup>(12)</sup>.

There have also been additional community concerns related to PFAS in the city’s drinking water Greenland well located near a superfund site known as the Coakley Landfill <sup>(13)</sup>. The city’s hydrogeologist does not believe the landfill is impacting the Greenland well, in part due to the fact that the well is two miles from the landfill <sup>(14)</sup>. However, all of the PFAS detected in the Greenland well <sup>(15)</sup> are also detected in groundwater at the Coakley landfill site <sup>(16)</sup>. Also, the confirmed source of PFAS

contamination of the drinking water wells in the Southern Well Field at the Pease Tradeport is the KC-135 accident site that ranges from 0.64 miles from the accident site to the Haven well, 1.59 miles to the Harrison well, 1.86 miles to the Smith well, 2.27 miles to the Portsmouth well, and 2.4 miles to the Collins well (17).

There are also PFAS in the groundwater around the Dover Municipal Landfill in concentrations above NH Ambient Groundwater Quality Standards (AGQS). This landfill, on Tolend Road in Dover is situated approximately 1,500 feet from the Bellamy Reservoir (the city of Portsmouth's largest drinking water supply) (18). The city of Portsmouth has sent letters and information to the city of Dover, the state of New Hampshire and the EPA regarding the Dover Municipal Landfill and its potential risk to the city's Bellamy Reservoir water supply. The city of Portsmouth recommends additional monitoring to track any contaminants that might flow from the landfill to the reservoir; the EPA agreed with this recommendation in a November 18, 2020 letter (19). The most recent sampling of the reservoir water treated at the Madbury Water Treatment facility resulted in levels of 3 parts per trillion (ppt) for PFOA, 1 ppt for PFOS and below 1 ppt for both PFHxS and PFNA. These results are consistent with sampling that has been performed previously (20).

### **Why Exposure to PFAS is Concerning**

Epidemiological studies indicate that exposure to PFAS compounds can be associated with a number of adverse human health effects. The C8 health study included 69,000 participants and concluded that there are six 'probable link' health conditions for humans exposed to one PFAS compound, Perfluorooctanoic acid (PFOA), at levels of 50 ppt or higher (note that the US EPA's Lifetime Health Advisory (LHA) for PFOA is 70 ppt, and these health effects have been observed with exposures below the LHA) (21, 22). The 'probable link' conditions include: pregnancy-induced hypertension (including preeclampsia), kidney cancer, testicular cancer, thyroid disease, ulcerative colitis, and high cholesterol. There is also epidemiological evidence that exposure to PFAS compounds can lead to immune system suppression and reduced vaccine effectiveness (24) and impaired mammary gland development (21). ATSDR and EPA also report elevated cholesterol levels and changes in liver enzymes as potential human health effects from PFAS exposure (22, 23).

### **PFAS in Portsmouth Municipal Water**

While the two systems share an interconnection, the Pease water system is separate from the Portsmouth municipal water system. PFAS were first discovered in the drinking water at Pease in April of 2014 which led to the closing of the Haven well and ultimately the filtration of the two remaining wells (Smith and Harrison) (25). There are two city of Portsmouth drinking water wells located in close proximity of the Pease Tradeport (but outside of the Pease water system) that also have low

levels of detectable PFAS. There have also been low levels of PFAS detected in multiple drinking water sources in the city of Portsmouth system, but none of those wells have PFAS levels that have exceeded the US EPA's LHAs or New Hampshire Department of Environmental Services (NH DES) Maximum Contaminant Levels (MCLs) for four PFAS.

### **NH PFAS Regulations**

At the Federal level, the US EPA's LHAs for PFOA and PFOS is 70 ppt, for either chemical individually or combined (22).

On July 23, 2020 Governor Sununu signed into law a bill that sets MCLs for drinking water for four different PFAS compounds (26). They are:

- 12 ppt for PFOA
- 15 ppt for PFOS
- 18 ppt for PFHxS
- 11 ppt for PFNA

The bill also set aside \$50 million in state funds for cleanup of sites contaminated by PFAS (24).

### **Conclusion**

Given the concern for known PFAS contamination located at or near multiple drinking water sources for the city of Portsmouth (Pease Tradeport, Coakley Landfill, Tolend Landfill), Portsmouth community members have advocated to city elected officials to form a SWAG (28). The science on human health effects continues to evolve and Pease is the focal point for two PFAS health studies. The regulations on PFAS also continue to rapidly evolve with NH DES setting MCLs for four PFAS in the absence of enforceable standards from the US EPA. The SWAG will serve to provide community awareness of contaminants of concern in the city of Portsmouth drinking water, better understand threats to the city of Portsmouth's water supply and actions being taken to monitor contaminants, monitor the evolving science and regulation on PFAS, and place the city of Portsmouth in a proactive position to address water quality threats and concerns. The Portsmouth City Council voted unanimously in favor to form a SWAG on October 5, 2020 (28). The first SWAG meeting was set for December 15, 2020 (29, 30). The SWAG will report back to the City Council by the end 2021 (or sooner as needed) with information that could help inform city policy. The SWAG will meet until at least December 2021 and beyond if needed. This document was approved by SWAG members on April 6, 2021 to be posted on the City of Portsmouth SWAG website.

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