

The Navy's PFAS Contamination on Whidbey Island

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The Politics of Pollution

The relationship between powerful polluters and government should not be one of the ‘tail wagging the dog.’ But it often is. Concerns for business dollars should not take precedence over a community’s right-to-know and be protected. But it too often does.

This reality is why an estimated 11 million Americans are now drinking water laced with chemicals that can, among other things, weaken our immune systems when we need them to fight off a deadly spreading virus.

The widespread contamination of people and the environment with PFAS (Per- and Polyfluoroalkyl Substances) is a national problem that was predictable and preventable.

The PFASs in Whidbey’s Island’s water come from a type of fire-fighting foam patented and still used by the Navy. The Navy says it didn’t know of the foam’s dangers when it was first used. But it did know.

The Department of Defense, has known of the dangers for over thirty years. Companies that made PFASs in the toxic foam knew long before that.

The EPA also knew. In 2006 its Science Advisory Panel labeled PFOA (the one found in the highest concentrations on Whidbey Island) a likely human carcinogen. That was the same year that EPA backed away from banning manufacture of the chemicals and instead allowed them to be made and used for another decade.

The EPA’s ‘phaseout’ of PFOA in 2006 was the Bush Administration’s chosen option over the prosecution of manufacturers and users that covered up evidence of the chemicals’ hazards.¹ I was investigating PFAS problems in several states and delivered internal company documents to the Justice Department that documented DuPont’s and 3Ms prior knowledge of those hazards.

Much has changed since then. The number of PFAS polluted communities has increased, as has the number of contaminated military bases—including those I lived on and near. Also increased are the number of scientific studies confirming the risks and harms from exposure. Amounts in single digit parts per trillion are now recognized as a threat.

What have *not* changed are the tactics used by those who don’t believe we have a right to know what’s in our water—and who don’t want to publicize a problem that will make a polluter look bad or cost money to solve.

- Levels of contamination are represented to be “safe” when credible scientific studies suggest they are not.
- Environmental sampling is done so as not to find and report all pollutants.
- Laws and regulations are still used as an excuse not to act, even though nothing in them prevents needed actions from being taken.
- Citizens who speak out are still attacked and marginalized in hopes their message won’t be heard.

Navy has acted like any big corporate polluter seeking to avoid bad publicity and reduce liability. Whidbey’s public officials have been quick to help. PFAS pollution is treated as a public relations problem instead of a health concern. Words like ‘pro-active’ and ‘transparency’ and are defined to meet the Navy’s needs.

Like the Navy, Whidbey’s public officials have sometimes kept information from the public, supposedly for the public’s own good. In doing so, they deprived people of choices and opportunities to protect themselves.

Lessons Learned

The history of our nationwide PFAS crisis is told in the movies, ‘The Devil We Know’ and ‘Dark Waters.’ These real life stories make it clear that progress is possible because of outspoken victims, their lawyers, and scientists who aren’t for sale. Politicians follow when people lead.

The EPA has not come to our rescue, and under an administration known for removing regulation, isn’t likely to. The hard lesson learned is that people must act to protect themselves. Our best allies have proven to be fearless journalists and ‘watchdog’ citizen groups willing to challenge polluters and unresponsive public officials.

PFASs are being found in living things far and wide. They are not going away. How much will be in our children and their children is up to us.

Rick Abraham

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How Much Is “Safe” Per- and Polyfluoroalkyl Substances (PFAS)

So-called ‘safe’ levels identified by government agencies keep changing. Levels once said to be safe are no longer considered so. Smaller and smaller amounts are being widely recognized as dangerous. PFASs can accumulate and stay in the body for years. As some PFAS victims on Whidbey Island have learned, a person can have higher levels in their blood than in the water they drank.

The health effects of PFOS, PFOA, PFHxS, and PFNA, all found in Whidbey’s private and public water wells, have been more widely studied than other PFAS compounds. Adverse health effects may include:

- developmental effects to fetuses during pregnancy or to breastfed infants (e.g., low birth weight, accelerated puberty, skeletal variations),
- cancer (e.g., testicular, kidney), liver effects (e.g., tissue damage)
- immune effects (Impair the ability to fight infections, especially among children)
- thyroid effects and other effects (e.g., Increase cholesterol levels).
- Interfere with the body’s natural hormones

Those who minimize the risks posed by PFAS often compare amounts found in drinking water to drops in a swimming pool. What they don’t say is that such small amounts, down to single digit parts-per-trillion can be harmful. Some scientists say the maximum contaminate level for PFOA, the PFAS found in the greatest amounts on Whidbey, should be less than 1 part per trillion or no more than 3.²

The manufacturer of PFOA replaced it with a PFAS called GENX—which was supposed to be safer. Like PFOA, there are no federal drinking water standards for GENX. Even so, North Carolina requires the manufacturer of GENX to provide and maintain three under sink water filter systems if a home has as little as 11 parts per trillion of GenX.³ Families on Whidbey must have PFOA above 70 before the Navy provides alternative water.⁴

PFAS and the Pandemic

A new compilation of research into how toxic PFAS chemicals affect the human immune system finds suppressed immune function, lower vaccine effectiveness, hypersensitivity and greater risk of autoimmune diseases. *Environmental Working Group*

“The evidence that these chemicals affect multiple aspects of the immune system supports the overall conclusion that both PFOA and PFOS alter immune functions in humans.” *National Toxicology Program, United States Department of Health and Human Services*

The Navy's Flawed Investigation

PFASs were found at Whidbey in 2016 after the Department of Defense began testing for PFASs at its installations pursuant to the EPA's Unregulated Contaminant Monitoring Rule.⁵ After the chemicals were found in the aquifer its property, the Navy began to sample nearby public and private drinking wells.

The Navy's 'community investigation' was designed so as *not* to find all the PFASs. People whose water was investigated had no input into what PFASs were tested for or at what detection levels.

- The Navy only sampled for *some* PFASs in the community—not for all the PFASs it knew to be in the aquifer. The Navy only sampled for three PFASs even though six were sampled for on its own property.⁶
- The Navy did not look for PFHpA and PFHxS in the community's water, even though both were found in its own water.⁷
- The Navy used higher detection limits when sampling the community's water than were used on its own property.⁸ This allowed for some levels of PFASs found in the Navy's water to go undetected in community water.⁹
- At the Navy's request, the Island County Health Department kept the plan for testing the community's water from the public until *after* testing was underway.¹⁰

The Navy's investigation from November 2016 to June 2017 only looked for three PFASs—and only above certain amounts.¹¹ It was *not* done to see how many people were exposed—or to determine how far PFASs had spread. Had the Navy wanted to determine the extent of contamination, it would have sampled potentially contaminated wells for *all* PFASs and used detection limits that would have revealed *any* detectable amount.

Voluntary participation in the Navy's investigation was understandably limited because it would not commit to a specific timely response to the finding of PFASs. Neither would it agree to compensate victims for loss of property values caused by the contamination.



First round potentially contaminated wells. Ault Field and Coupeville OLF areas ¹²

Improved Sampling Offered - To some

The Navy's practice of testing community water for only three PFASs changed at the direction of the Secretary of Defense in September 2017. Military projects were told, "drinking water sample results should include all 14 PFAS ..."¹³

This change followed complaints to the Secretary of the Navy and Secretary of Defense from Citizens of Ebey's Reserve, and probably others, that detailed the inadequacy of the Navy's efforts.¹⁴

In October 2017, the Navy offered to retest *some* community drinking water wells on Whidbey Island. This retesting was described in one Navy document as a "precautionary measure to ensure residents living near our installations are not being exposed to PFAS..."¹⁵ Another document said the purpose was to "evaluate the seasonal and spatial variation of PFAS and to evaluate filtration performance."¹⁶

Both would have been valid purposes for the Navy's retesting. However, the Navy conducted its retesting in a way that accomplished neither.

Instead of offering to resample *all* wells in areas of potential contamination, the Navy's expanded sampling of October 2017 was only available to owners of wells where PFOA or PFOS had been previously detected—and to those adjacent to a property where PFOA or PFOS had been detected *above* EPA's advisory level.¹⁷

A well on a property next to a location where PFAS had been found below EPA's advisory level was *not* eligible. Wells that may have been contaminated with up to 9 parts per trillion (ppt) of PFOA and up to 15 ppt of PFOS were effectively excluded from resampling because these amounts would *not* have been detected in previous sampling.¹⁸

The Navy's limited eligibility for the October 2017 resampling excluded potentially contaminated wells—some which might have been contaminated with PFASs exceeding the U.S Department of Health's more recently proposed Minimum Risk Levels.

The Navy's conditional sampling reduced the number of contaminated wells that would be found. It also ignored the reality of a spreading plume of contamination that could have reached wells where PFASs had not been previously found.

The well at the County's Rhododendron Park, where Little League Teams play and drink the water, was not eligible for the Navy's resampling of October 2017—even though it is close to the Navy's OLF and Coupeville's contaminated supply well. It has not been tested since December of 2016, *and never for all PFASs in the aquifer.*¹⁹ The County chose not to test this or other wells on its own property.

Improved Sampling Finds More PFAS

Although not available to all well owners, the Navy's October 2017 testing for fourteen PFASs with more sensitive detection limits revealed PFASs not previously found. The Navy also found, for the first time, PFBS, PFHxS, and PFHxA in Coupeville's drinking water.²⁰ PFAS migrating from the Navy's OLF were also found in the Coupeville Fort Casey well field for the first time.

PFASs in Coupeville and Ault Field Area

Perfluorooctanoic Acid (PFOA)
Perfluoroheptanoic Acid (PFHpA)
Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic acid (PFHxA)
Perfluorobutanesulfonic Acid (PFBS)

Coupeville's Contaminated Water

In December of 2016 the Town of Coupeville learned from the Navy that its water was contaminated with PFAS leaking from the Navy's Outlying Field (OLF).



PFAS had migrated to Coupeville's main supply well next to the OLF runway. Although the Navy claimed to have no records of the foam being used at the OLF, residents had seen the runway sprayed with foam. They also saw the 1980s crash of a jet near the runway involving fire and foam.

A concerned citizen wrote a Letter to the Editor stating, "Today, we know that the worst is true – water is contaminated with a bad-acting fire-retardant chemical. In Coupeville's coffee shops and restaurants now, contaminated water is served..."²¹

Coupeville's Mayor Molly Hughes responded by sending a letter to Coupeville's Residents that accused the citizen of "carelessly using the word 'contaminated' as an intentional distortion that was made without regard to its emotional or economic effect."²² The citizen's letter was likened to "fear mongering."²³

In fact, Coupeville's PFAS contamination, which may have been occurring for years, was worse than the concerned citizen described.

There were five PFASs in Coupeville's water, not just the two the Navy and the Town first chose to acknowledge. They were being distributed to homes, schools, and a hospital. They were being discharged to Penn Cove which has a commercial shellfish farm—also in Coupeville's sewage sludge being spread over land where they could again leak to the aquifer.

When a citizens group called Concerned Community Allies advertised a meeting to discuss PFASs, Mayor Hughes wrote that their use of the phrase "Contaminants in your water" was "meant to cause panic."²⁴

Although the Mayor held that Coupeville's water was "not technically contaminated," she and the Town's Engineer used the term "contamination" when describing PFASs in the water to other public officials.^{25 26} All the PFASs found in Coupeville's water were listed as "contaminants" in the EPA's Unregulated Contaminant Monitoring Rule.

Keeping Information From The Public

In January of 2017, the Town of Coupeville announced it had independently tested its water for three PFASs and found only one (PFOA). Mayor Molly Hughes stated, "We will continue to be completely transparent as new issues arise and new information is received."

It was later revealed that the Town had been testing its water for six PFASs, not just three, beginning in November of 2016.²⁷ Coupeville posted partial water test results on its website, identifying only three PFASs, for about a year.

Coupeville officials waited until October 2017 to tell water customers about all the PFASs in their water.²⁸ In addition to PFOA, Coupeville was finding PFHxS and PFHpA. Levels of PFHxS were almost as high as the PFOA.

PFHxS has been linked to attention-deficit/hyperactivity disorder (ADHD) in children, suppression of the immune system and a decrease in antibody responses to vaccines.²⁹
^{30 31} It takes 8.5 years for the body to rid itself of half the PFHxS it has accumulated.

Some states include both PFHxS and PFHpA in their health advisories.³² Both were required in EPA nationwide assessment testing of large public water systems.³³

Almost 1600 people who had been drinking water contaminated by a former Air Force Base in New Hampshire had their blood tested. Elevated levels of PFOA, PFOS, and PFHxS were found above national averages. Significantly higher concentrations were found in children aged 11 years and younger. The highest amounts of a PFAS found was PFHxS.³⁴

As expected, all of the PFASs found in the aquifer beneath the OLF were found in Coupeville's water. One chemical, Perfluorohexanoic acid (PFHxA), was known to be in the aquifer but was never tested for by Coupeville.

Coupeville received test results from the Navy in April of 2018 showing PFHxA to be in its water. However, it was not listed among those totaled in the Mayor's October 2018 Drinking Water Update. Had it been listed, the total PFASs reported to the public would have been much higher.³⁵

In the Town's "Big News" mailing of July 18, 2019, Mayor Hughes stated, "As we have done the past two and a half years, the Town will continue to post all water test results on the Town website."

In fact, the Town was only posting partial water test results for three PFASs instead of the complete test results for six PFASs for much of this time. Coupeville has since removed the partial test results from its website and replaced them with the complete results.

What Wasn't Reported

Because of its size, Coupeville may not have been legally required to monitor or report detections of these PFASs under EPA's Unregulated Contaminant Monitoring Rule. However, EPA encouraged water systems that detected PFASs and other 'unregulated' chemicals to report them in the required annual Consumer Confidence Reports.³⁶ According to the EPA, reporting such contaminants serves to:

"Improve public health protection by providing educational material to allow consumers to make educated decisions regarding any potential health risks pertaining to the quality, treatment, and management of their drinking water supply."

Coupeville only identified the detection of PFOA in the June 2017 Consumer Confidence Report sent to its customers. The PFHpA, PFHxS and PFBS that had been detected since November 2016 were not identified.

When Coupeville told its water customers it was "committed" to keeping them "informed about water issues" it wasn't walking its talk. Had people been fully informed about all the chemicals in their water, they might have taken steps to reduce exposures—and they might have pushed the Navy and public officials to do more about the problem and sooner.

PFASs in the Hospital's Water



Island County's public hospital with its \$50 million dollar expansion had almost everything. It did not have a water filter system to remove PFASs from the water supplied by Coupeville

In April of 2017 the Board of Directors and CEO for WhidbeyHealth (formerly Whidbey General Hospital) were asked to filter the hospital's water to remove PFASs—or at least inform its patients, employees and visitors about the PFASs.

"People come to this hospital seeking health and wellness, not to be exposed to toxic chemicals at levels someone else finds acceptable. If Whidbey General Hospital's Board of Commissioners is not going to take action to get the Navy's toxic chemicals out of its water, it should post notices warning those who come here about the contamination."

R. Abraham Comments to WhidbeyHealth Board of Directors

Rick Abraham, whose taxes supported the hospital, gave the Hospital's Board and CEO test results showing PFOA to be in its water and Navy test results showing other PFAS also likely to be present.³⁷ Following the presentation, the Hospital's General Counsel, agreed to provide information about actions planned or taken to remove the PFASs.

The day after the hospital Board was asked to filter its water, Coupeville Mayor, Molly Hughes and the Hospital's CEO, Geri Forbes exchanged emails proposing wording to be used in rejecting the request.³⁸ When Forbes referenced the hospital's ice machine and drinking water filtration, Hughes wrote,

"I would leave out the part about your filter. Unless you know for a fact that you use activated charcoal and your filter system is large enough to treat the hospital's water and the media is changed out often enough, I think it's risky to imply you are treating your water for these compounds. Someone will check. Richard has already threatened to test it on the sly." *Email from Mayor Molly Hughes to Hospital CEO Geri Forbes*

Two days after Mayor Hughes and CEO Forbes talked about turning down the request for filtration, Mayor Hughes wrote Keith Higman, Island County Environmental Health Director, saying that the local newspaper would be writing about the issue.³⁹

"Just more of the same, EPA's levels are not good enough, other states have lower levels, beware of the big bad Navy, etc. this time he's adding to his fear factor the patients and employees at Whidbey health." *Email from Mayor, Hughes to Keith Higman*

Abraham attended WhidbeyHealth's August Board meeting to provide information about additional PFASs found in Coupeville's water and to complain about the failure of the hospital's General Counsel to provide promised information.⁴⁰ Board Chairperson Ron Wallin interrupted Abraham's comments to say that PFAS concerns had been addressed with the installation of a filter system and directed to George Senrth, Executive Director of Facilities and Engineering, for details.⁴¹

Senrth did not return phone calls or respond to emailed requests for information about filters and test results. When Abraham asked that he and others be allowed to see the PFAS removal system, General Jake Kempton, WhidbeyHealth's General Counsel replied that the filtration system could not be seen because of "security concerns."^{42 43}

The Hospital finally responded to a Public Records Request and provided results of a test done on its own water. The results were announced in the news article, *"Hospital water 'perfectly safe for all' says CEO."*⁴⁴

WhidbeyHealth's top administrator says its hospital water is safe to drink and that there is no need to conduct further testing for possible contaminants...*"The water at the hospital is perfectly safe for all our patients and employees, and I drink it daily," WhidbeyHealth CEO Geri Forbes said. Whidbey News Times, Sep 19, 2017*

In fact, the hospital's one-time (not to be repeated) test of its water used different laboratories with different detection limits to compare before and after sample results.⁴⁵ The level of PFHxS found in the "pre-filter" sample would not have been detected in the "post-filter" analysis.⁴⁶ The hospital did not say where the water sample was taken.

The news article defending the hospital's water carried the comments of Hospital Board Member, Grethe Cammermeyer, accusing Abraham of being an "alarmist" and causing "chaos with misinformation."^{47 48} Her comments were recycled from news article written months earlier when A the County Health Department to make the Navy's plans for investigating PFAS available to the public. Cammermeyer, also a member of the County Health Department's Board, did not support the request.

The truth about the hospital's non-existent filtration system was finally revealed when the WhidbeyHealth's General Counsel responded to an official Public Records Request.⁴⁹

"We do not maintain a system-wide water filter that filters all water coming into the hospital. The only hospital-wide system that we have is a water softening system, but that is not designed to be, nor does it function as, a filtration system." *Jake Kempton, Whidbey Health General Counsel*

Kempton provided information about various point of use filters, including those for coffee and ice machines., not were designed to remove PFASs.

The fact that a PFAS filtration system had not been installed meant that unknowing patients, employees and visitors were drinking water supplied by the Town of Coupeville containing PFASs. Although Forbes and Hughes might have felt comfortable drinking the water, expectant mothers and people suffering from ill health might have decided differently had they known what was in it.

Although PFASs were discovered in Coupeville's drinking water in late 2016, it would not be until July of 2019, before the water going to the hospital began to be filtered for PFASs.

PFAS in School District Water

Before Coupeville began filtering its water for PFASs, its contaminated water was going to the Coupeville School District's three schools with about 900 students. Over 400 were in elementary school.



The water that contained PFASs above ATSDR's Minimum RiskLevels and the health advisories of several States cost the District's taxpayers about \$35,000 a year.

In January of 2019 concerned citizens asked the District Board and its Superintendent, Steven King to provide students with PFAS free water until the water provided by Coupeville was properly filtered—or at least inform parents about the PFASs so they could send students to school with safer water if they chose to do so.⁵⁰

The Board and Superintendent were given copies of water test results, information on health advisories of other states, and an article on a peer reviewed health study documenting sexual development problems in young boys who were exposed to two PFASs.⁵¹ One was the PFAS found in Coupeville's water in the highest amounts.

A retired emergency room physician also sent a letter to the board pointing out the increased risk of harm to children from PFAS exposure. The PFAS in his blood was 100 times higher than the level found in his contaminated water.⁵²

A retired teacher and wife of a former Vietnam Era serviceman poisoned with Agent Orange ask that clean water be provided to students until "hazard free water" was available from the Town.⁵³ After Mayor Hughes reviewed the letter she wrote the School Board and Superintendent,

"There is a lot of information about PFAS and sometimes people in the community, sometimes intentionally or sometimes unintentionally, throw around "facts" that are not really the truth or out of context. Sometimes people are advocating for 'no newjets' or 'no new Growler flights' use our school children and hospital patients as an emotional plow to make their case."⁵⁴

In fact, there had been no mention of Navy jets or noise in the request that was made at the school board meetings. The Mayor did not identify any "facts" or statements she claimed to be untrue or taken out of context.

Water Brought to Schools

After appeals from concerned citizens, the District agreed to bring in water coolers with PFAS free water. However, the Superintendent and board refused to tell parents about PFASs still coming from the schools fixed water fountains. Neither would they agree to turn the fountains off.

When asked by a news reporter why the district was bringing in water coolers, Superintendent King said he was concerned that students weren't drinking enough water because they didn't like the smell or taste. "Student health is very important to us and hydration in an important part of that," he said. Water coolers were brought in "to see if more students start to drink more water."⁵⁵

Superintendent King sent a "Hello Coupeville families" letter giving an explanation for the water coolers.

"I have noticed very few of our students are drinking the tap water that is provided at school... they typically tell me it is because of the taste. Given this, we have decided to place multiple water coolers in our schools so students have access to water throughout the school day... I did look into the health of the water and found that all water tests in the Town of Coupeville meet the state's regulations."

When the Superintendent sent Mayor Hughes a copy of his letter that made no reference to PFASs still in school water, she replied, "This is perfect Steve, thank you!"⁵⁶

Before sending his letter to parents, Superintendent King told school board members.

"I will try to stay very neutral on the PFAS issue and the fact of the matter is I am very neutral on it. I have no idea if it is a health issue but by doing this this we ensure that our kids and their health is a priority."⁵⁷

Placing water coolers in the schools was a good thing to do. Keeping information from parents and students about PFASs still in school water fountains was not.

Withholding information that deprives people of choices isn't being "neutral". Parents could have encouraged their children to drink the PFAS free water in the water coolers—like the cooler that had been in the Superintendent's office for a year or more.⁵⁸

PFAS free water could have been provided more than a year earlier when it was clear that PFASs in the Coupeville's water weren't going away. More contamination had been found on OLF property in April 2017.⁵⁹ In August of 2017 contamination was considered serious enough for Coupeville to have considered relocating its water supply well or installing a filter plant—and to be asking the State about money to pay for it.^{60 61 62}

Such actions, according to Coupeville's Mayer, were being taken out of "an abundance of caution." This consideration was not given with regard to a simple action that would have limited the PFAS exposures of school children.

Whatever PFAS's accumulated in the bodies of students would be there years into the future. Half the PFHxS would be there eight or more years later.

After the District brought in the water coolers, the water from fixed fountains would continue to contain PFAS for several more months as water that had been stored was mixed with that being filtered. In September of 2019, Superintendent King noted that the water still tasted "bad."⁶³



PFAS's that were in the School Water
Perfluorooctanoic Acid (PFOA)
Perfluoroheptanoic Acid (PFHpA)
Perfluorohexanesulfonic Acid (PFHxS)
Perfluorohexanoic acid (PFHxA)
Perfluorobutanesulfonic Acid (PFBS)

Coupeville Water Finally Filtered

Both areas of the aquifer from which Coupeville draws its water are now contaminated. Coupeville sought money from the State for a new well in the summer of 2017 and had inquired about purchasing land for the well from the County.⁶⁴

It is not clear when the Navy was asked to pay for a new well. For reasons not explained, the Town and Navy decided against relocating the Town's main supply well to an uncontaminated area.

In the summer of 2018 the Navy and Town of Coupeville signed a Memorandum of Understanding wherein the Navy agreed to pay for a PFAS filtration system for the Town's drinking water.

In of July of 2019, almost 3 years after PFASs were found in the Town's water, the "treatment plant" began operating. The Navy acknowledged that PFASs wouldn't be completely eliminated. When first tested, the filter system reduced PFASs below levels of detection. How much of which PFASs will be found in the future is the unanswered question. The agreement didn't do the following:

- It didn't call for PFASs to be removed to the greatest extent possible.
- It didn't require post-filter monitoring to reveal the identity and detectable amounts of the PFASs that will remain.
- It only called for reducing PFOA/PFOS in the water - and only to an amount below the Navy's and Town's acceptable level of 70 parts per trillion.
- It said nothing about other PFASs, like PFHxS and PFHpA that are known to be in Coupeville's water. The Agency for Toxic Substances and Disease Registry has proposed Minimum Risk Levels for both.

Although the MOU was supposed to have been discussed with “affected residents,” it was not noticed for a hearing or posted for public comment. Affected residents included those who use, and pay for the schools and hospital.

The actions set forth in the agreement will expire in ten years, or “whenever the Navy determines the response action is no longer needed.”

Navy Polluting Farmland and Bay

In October of 2018 the Navy announced that *two* PFASs had been found in stormwater draining to Clover Valley Creek and Duagalla Bay.⁶⁵ However, it waited a year to tell the public that *six* PFASs had actually been found – and had been found in every monthly sample taken until October of 2019.⁶⁶

There are 114 properties in the Clover Creek and Lake area where water is still used for irrigating. Cattle graze on grass flooded by PFAS containing water. Swans, Geese and Ducks can be seen in the same fields and in the contaminated water nearby. Clover Valley Creek and Lake empties to Dugualla Bay.⁶⁷



Contaminated Clover Valley Creek and Lake near Ault Field in Oak Harbor. Used for irrigating crops, and watering livestock before emptying a Salmon Restoration Area and Dugualla Bay

The two PFASs the Navy first admitted to finding were, PFOA and PFOS. Also found in every sample taken from September 2018 through September 2019 were PFHXS, PFHXA, PFHPA, and PFBS—the same ‘forever’ chemicals found in Coupeville’s water.

Of the six chemicals found, PFHXS found at the highest level—up to 90.8 parts per trillion (ppt). PFHXS is linked to child development and other health problems and takes about 8 years for the body to rid itself of just half of what it accumulated. PFOA is found up to 39.3 and PFOS up to 143 ppt. The total of all PFASs in a monthly sample has been as high a 266.7 ppt.⁶⁸



Contaminated water floods family farms

PFAS Found in Private Wells

The Navy was quick to say that contaminated surface water doesn’t mean groundwater is contaminated. But, buried within the Navy’s websites were summaries of test results from January 2019 showing the contamination of three Clover Creek area wells with PFOA, PFHXS and/or PFBS.⁶⁹

The family with the most contaminated well didn’t receive results until October 21, 2019. The well contained PFOA at 19.2 ppt and PFHXS at 33.6 ppt.

EPA’s Permit - To Pollute or Protect?

The EPA proposed a NPDES and Storm Water Permit for the discharges to Clover Valley Creek and Dugualla Bay. EPA permit writers were unaware of the PFASs when it wrote the permit. Neither did they know the chemicals had been found in in nearby drinking water wells.⁷⁰ The public comment period on the proposed permit ended November 14, 2019, *much of it having passed without the public knowing about the PFASs.*⁷¹

The Navy’s illicit PFAS discharges were also occurring, apparently unknown to the Washington Department of Ecology, on and before June 20, 2019 when it granted Clean Water Act 401 Final Certification for Permit WAS026611. That certification was based, in part, on conformance with the “prohibition on discharges that cause or tend to cause pollution of waters of the state of Washington.”

Ironically, the proposed EPA Permit called on the Navy to educate the public about “Resident Killer Whales”—but it didn’t require monitoring for the PFASs known to accumulate in marine mammals and fish. The EPA has considered revising and re-publishing its NPDES Permit for comment.

Contaminants in the Navy’s stormwater include: petroleum, oil, lubricants, steam condensate, cleaners, solvents, metals, AFFF (Aqueous Film Forming Foam) and paint. Beside the PFASs in the foam, ingredients may include: butyl carbitol; and hydrocarbon surfactants; ethylene glycol; urea.



Yellow area - potentially contaminated properties.¹

Navy says it is “committed to open and transparent communication regarding this [PFAS] issue.” Its conduct says otherwise.

Citizens wanting to know all the chemicals found in the Creek were told at the Navy’s April 2019 Restoration Advisory Board meeting that the analysis reports were completed, WNAS Base Commander, Captain Army stated that providing the complete analysis reports was an “action item.”⁷² It was an action not taken for six more months.

The Navy’s practice has been to phone well owners if their test results exceed EPA’s Health Advisory Level for PFOA and PFOS—but not tell them if lesser amounts or other PFASs were found.⁷³ The Navy’s public website only counted the wells that had PFOA and PFOS above EPA’s Advisory. There is no counting of findings below that level.

Sources of PFASs Identified on Navy Base

The Navy has attributed the PFAS in its stormwater to historically contaminated groundwater entering its sewer system. However, the Navy’s internal investigation suggests otherwise:

- Releases occurred during the “testing of hanger and other fixed systems” and from the collecting and storing of “spent AFFF solution”. AFFF systems are referenced at Hanger 6, Hanger 8, Hanger 9 Hanger 11, and the C-40 hanger.
- PFAS was found in the storm water sewer line leading from a ground support maintenance shop towards Hanger 6.
- Samples collected in November 2018 “indicate contamination is not limited to Hanger 6. Elevated PFAS levels were found in the two laterals leading from Hanger 8/10 and 11 at levels of 843 ppt (parts per trillion) and 31 ppt respectively.”

- PFASs were found at 122,000 ppt in an oil water separator on the north side of the hanger that formerly served the interior trench drains.
- PFAS were found at 639 ppt in a storm sewer line leading from building 995 ground support maintenance shop towards hanger 6.
- PFASs above EPA’s advisory limit were also found in a in a Clover Creek tributary leading from the former Area 6 landfill to the runway ditches. In addition to PFAS, Area 6 landfill contains 1,4 Dioxane, Trichloroethylene, Dichloroethene, Trichloroethane, and Vinyl Chloride.
- A May 2017 Navy document noted, “Currently approximately 70,000 gallons of AFFF-contaminated water is being stored in tanks that are not designed for long term storage and may be leaking to the environment.”

PFASs are still seeping to the aquifer and still discharging through farmland to Dugually Bay—public waters classified by the State as “extraordinary” for aquatic life uses, protected shellfish harvesting, and threatened and endangered *species*⁷⁴

How PFASs Can Go Undetected

If don’t want to find something, you just don’t look for it, or don’t look hard. This is what polluters often do and the Department of Defense has did according to the largest drinking water test lab in the country.

“The EPA and the Department of Defense calibrated water tests to exclude some harmful levels of contamination and only register especially high concentrations of chemicals.”⁷⁵ Andrew Eaton, Vice President of Eurofins Eaton Analytical

Laboratories that test for PFASs in water can reliably detect them at 1-2 parts per trillion. However, if a laboratory uses higher detection limits, the PFAS won’t be found.

In 2016, when the Washington State Department of Ecology tested wastewater discharges from municipalities to assess impacts on fish, it looked for PFASs at 1–2 parts per trillion—much less than the amounts that the Navy and Coupeville first looked for in drinking water.⁷⁶

Both Coupeville and the Navy did the very thing that once got a DuPont facility in Ohio in trouble with the EPA more than ten years ago. DuPont failed to measure the PFOA pollution at the lowest possible level. EPA, DuPont’s sampling approach “was not acceptable or appropriate.”

EPA told DuPont that measuring pollution “at the lowest level it can be detected” was EPA’s “standard practice.” DuPont then agreed to use a lower limit of 3-5 parts per trillion.⁷⁷ Both the Navy and the Town of Coupeville have sometimes used less sensitive detection limits.⁷⁸

When the Navy or Coupeville said that a PFAS wasn't detected, they rarely said it wasn't detected *above a certain amount*. People wrongfully assume that something not detected is not present. In fact, when a sample result is described as Non-Detect or Undetected, it only means the contaminant wasn't detected at the level it was looked for.

When Coupeville's Mayor drafted the first News release about PFASs in the Town's water, she wrote that PFOS "wasn't detected." The Washington Department of Health suggested her draft be changed to "clarify that PFOS was not detected *above 10 ppt*."⁷⁹ The suggestion was not followed.

Telling people about all PFASs in their water gives them the opportunity to reduce or eliminate exposures. To deny them information is to deny them the opportunity to protect themselves. Keeping the public in the dark also shields polluters from criticism and demands for cleanup.

The Navy and Whidbey's public officials have been quick to point out that PFASs are unregulated chemicals without enforceable standards. It's been a convenient excuse for not telling people about all the chemicals they are drinking –and for doing little or nothing to remove them.

In fact, a chemical could be suspected or even proven to have adverse health effects and still not be regulated with an enforceable standard.⁸⁰ Many such chemicals have been detected in drinking water above the levels that authoritative scientific studies have found to pose health risks.⁸¹

Standards and Health Advisories

Federal agencies and states have been asking the EPA to set enforceable standards for years.

"EPA has completely abandoned its responsibility to act. We are not cleaning up contamination. We don't even have a drinking water standard. Since I have been in Congress, every time EPA testifies they promise and nothing happens ..."^{Michigan Rep. Debbie Dingell, Sponsor of PFAS Act 2019}

Although EPA hasn't established enforceable drinking water standards for PFASs, it established Lifetime Health Advisory Levels, but only for the PFOA and PFOS. EPA's advisory level has long been criticized for not being adequately protective, which is why health officials in an increasing number of states have set far more protective measures. Examples can be found on the internet.

The manufacturer of PFOA, the PFAS found in the greatest amounts on Whidbey Island, replaced it with a PFAS called GENX—which was supposed to be safer. Like PFOA, there are no federal drinking water standards for GENX. Even so, North Carolina requires the manufacturer of GenX to *provide and maintain three under sink water filter systems* if a home has as little as 11 parts per trillion of GenX.⁸² Families on Whidbey

must have PFOA above 70 before the Navy provides alternative water.⁸³

More protective Minimum Risk Levels have been proposed by the U.S. Department of Health's Agency for Toxic Substances and Disease Registry.⁸⁴ The agency's toxicological profiles released in June of 2018 drops the level at which no harm would be expected from exposure to people.

- The new levels proposed for PFOS and PFOA are seven to ten times lower than EPA's thresholds. Some scientists say the maximum contaminate level for PFOA should be less than 1 part per trillion or no more than 3.⁸⁵
- The ATSDR "minimum risk levels" for exposure for an intermediate time period of 15-364 days translate to approximately 7-ppt for PFOS and 11-ppt for PFOA.⁸⁶ The agency also proposed minimum risk levels for PFHxS and PFNA, both of which are found in Whidbey's contaminated drinking water.

ATSDR based its findings on a comprehensive review of case histories and scientific studies, *including those not previously considered by the EPA*. The Trump Administration attempted to suppress the ATSDR study.⁸⁷

The State of Washington is in the process of setting its own more protective PFAS standards. In 2018 it passed a law restricting the use of PFAS in firefighting foam and personal protective equipment (PPE). However, military installations are exempted from coverage.

Washington's Legislature also passed a [bill](#) banning the intentional use of PFAS in food packaging made from plant fibers, pending a determination by the Department of Ecology that safer alternatives are available.

Vulnerable Exposed Populations

The Washington State Department of Health proposed a rule that would require water providers to notify vulnerable groups of people being exposed to PFASs in their drinking water.⁸⁸

According to the proposed rule, if PFHxS, PFNA, PFHpA, PFOA, and PFOS combined are above 70 parts per trillion in the drinking water, public notification "must" be provided to:

- Pregnant and nursing women.
- Women planning to become pregnant.
- Parents, guardians, caregivers of infants.

Coupeville's drinking water, which served the hospital, schools and child care centers has contained these combined PFASs above 70 parts per trillion when tested on October 2017, March 2018, and September 2018.⁸⁹

As of April 2020, Coupeville's water is still being filtered to remove PFASs and a small number of private well owners near the Navy's Outlying Field now receive Coupeville's water. Nothing is being done for many other contaminated private well owners in the Coupeville and Oak Harbor area.

Growlers and Contamination

PFASs were found on Whidbey Island at the same time the Navy was drastically increasing controversial low-level 'Growler' jet operations.



The Navy was supposed to carefully study potential impacts of this increase and prepare an Environmental Impact Statement (EIS). The impacts from noise and to water resources should have been seriously considered. They weren't.

The Washington State's Attorney General sued the Navy over its failure to adequately study the jet noise that had already generated thousands of complaints and previous citizen lawsuits, including one where the Navy paid for damages.

Citizens of Ebey's Reserve (COER) filed an almost identical lawsuit to that filed by the State that addressed the noise issue. Unlike the State's lawsuit, it also addressed the Navy's failure seriously consider the impacts to Whidbey Island's water resources, including its sole source aquifer.

The Navy's proposed an increase to more than 112,000 annual operations on Whidbey including a 400% increase in low flying operations at the Outlying Field (OLF). This increases the likelihood of an accident and more contamination from the PFAS in the fire-fighting foam the Navy insists on using.

The 1982 crash and burning of a Navy jet next to the OLF and a 2016 accident on an Ault Field runway demonstrated the very real threat of accident related contamination. Coupeville's water supply was already contaminated from the foam residents had seen on the OLF runway located next to the Town's main supply well.

After the Navy issued a draft of its EIS that skirted the water contamination issue, COER Board member Maryon Atwood asked people to contact the EPA and have it rejected.

"Move the trainings elsewhere to Navy lands where they will do harm. We want peace, clean water and the right to live in our homes."⁹⁰ *Maryon Atwood, Citizens of Ebey's Reserve*

COER was the first organization to pull together the resources necessary to seriously challenge the Navy and its harmful actions. It hired noise experts, health professionals, and raised money for an economic study and lawsuits.

Most of COER's members lived under the flight paths of jets training at the OLF and some were impacted from the spreading plume of PFAS contaminated groundwater. COER called for an end to low-level training operations over *any* populated or environmentally sensitive area, including Oak Harbor and the Olympic National Forest.

COER became the organization the 'jet lovers' loved to hate. Its all volunteer board members had their patriotism questioned and were sometimes subjected to threats.⁹¹ COER supporters were marginalized by public officials that were reluctant to challenge the Navy.

Coupeville's Mayor, Molly Hughes wrote Coupeville's residents claiming Atwood's description of the Town's 'contaminated' water was "*an intentional distortion meant to cause panic.*" The Mayor told residents, "Don't call into question the safety of our drinking water because you are trying to fortify your comments on the EIS."⁹²

COER responded that the water issue was "an incredibly important and relevant environmental issue that the final EIS must address, and the public has every right to insist on it."⁹³

Coupeville's Mayor and Council members did what it seemed to be discouraging others from doing. They wrote the Navy acknowledging that increased flights "would result in an increased potential for accidents, including fire emergencies on or near airfields." They also asked that, "existing stocks of toxic AFFFs" not be "maintained or used at the OLF."⁹⁴

While COER was asking the Navy to close the OLF and clean it up, Coupeville officials sided with the Navy and expressly supported its continued use at a level of 6,200 annual OLF Growler operations.⁹⁵ Those low-level flights would continue the noise levels exceeding community guidelines established by the EPA, OSHA, Washington State and the World Health Organization.

Although Coupeville officials recognized the threat posed by the Navy's use the PFAS containing foam, they did not want people drawing attention to the contamination the foam caused. When citizens urged the hospital and schools to provide PFAS free water, Coupeville's Mayor wrote,

"Sometimes people are advocating for 'no new jets' or 'no new Growler flights' use our school children and hospital patients as an emotional plow to make their case."⁹⁶

In fact, none of the organizations opposing the Navy's expansion were involved in the requests to the hospital and school boards, and there was no mention of Growler flights in presentations to either board.

As of April 2020, the Navy's F-18 Growlers still scream over the rooftops of homes where families, including those with children out of school, are sequestered at the request of their Governor. They hope to avoid the spreading COVID-19 virus. They can't avoid the hazardous noise coming through their windows and walls from the Navy operations that threaten to further contaminate Whidbey Island's sole source aquifer.

ENDNOTES

¹ *THE TEFLON TOXIN, How DuPont and the Pentagon Slipped Past the EPA*, Sharon Lerner, The Intercept, 8/20/15.

² The Endocrine Disruption Exchange, 11/9/18 letter to New Hampshire Dept. of Environmental Services; *Perfluorinated Alkyl Substances: Emerging Insights Into Health Risks*, A Journal of Environmental and Occupational Health Policy 2015, Vol. 25(2).

³ 2/25/19 Consent Order, State of North Carolina v. The Chemours Company FC, LLC.

⁴ The Navy's action level is based on the 2016 EPA Lifetime health Advisory Level of 70 part per trillion for PFOA and PFOS individually or combined.

⁵ In 2012, EPA added a requirement to sample for PFOS/PFOA under the Third Unregulated Contaminant Monitoring Rule (UCMR 3). All large and 800 small public water systems (PWS) were required to test for certain PFASs between 2013 and 2015.

⁶ 10/11/16 Analytical Report for Service Request No: K1611172 (OLF)

⁷ 10/11/16 Analytical Report for Service Request No: K1611172 (OLF)

⁸ The Method Detection Limit Detection Limit for PFOA in the Navy's sampling of OLF drinking water was 3 ppt. For the Navy's community drinking water investigation, the Detection Limit for PFOA was about 9 ppt.; The Detection Limit for PFOS in the Navy's drinking water investigation on its OLF property was 10 ppt.; For the Navy's community investigation, the Detection Limit for PFOS was about 15 ppt.; The Detection Limit for PFBS in the Navy's OLF drinking water investigation was 10 ppt. For the Navy's community investigation, it was approx. 44 ppt.

⁹ PFOS found in OLF monitoring wells MW05M, MW14M, MW03D and MW07M at 3.26, .898, .914, and .844 ppt respectively. These were below the Detection Limit of between 14 and 16 ppt used in the Navy's PFOS analysis of community water. (Sources: Table 1 Navy Results of PFOS, PFOA and PFBS in Groundwater, Outlying Landing Field Coupeville; Navy OLF Site Inspection Poster/Fact Sheet); PFBS was found in OLF monitoring wells MW05S and MW09M at 11.2 and 12.9 ppt respectively. The Detection Limit for PFBS in the Navy's community investigation was between 44 and 50 ppt (Sources: Table 1 Navy Results of PFOS, PFOA and PFBS in Groundwater, Outlying Landing Field Coupeville; Coupeville Validated Form 1/LCMS Organics Analysis Data Sheets).

¹⁰ Public Records Request to Island County Board of Health from R. Abraham of 10/31/16 and response of 11/23/16; R. Abraham public records request of 2/3/2017 for Final Sampling and Analysis Plan; The Island County Health Dept. described by the Navy as a "partner," participated in the development of the plan to test wells in the community and helped with the Navy's messaging to the public. (The US EPA also had the plan, but would not release it.)

¹¹ 9/14/15 Navy Drinking Water Sampling Policy For Perfluorochemicals Perfluorooctane Sulfonate And Perfluorooctanoic Acid, From: Director, Energy and Environmental Readiness (OPNA V N45), To: Commander, Navy Installations Command (N4).

¹² Images provided by the Island County Health Department identify wells known to exist within a mile radius of contamination source.

¹³ 9/28/17 letter From: Commander, Naval Facilities Engineering Command Subj: Interim Per- And Polyfluoroalkyl Substances (Pfas) Site Guidance For Na VFAC Remedial Project Managers(RPMS)/September 2017 Update.

¹⁴ 8/14/17 letter from Citizens of Ebey's Reserve to The Honorable Sean J. Stackley, Acting Secretary of the Navy copied to Jim Mattis, Secretary of Defense, RE: Investigation of Perfluorinated Compounds (PFCs) Naval Air Station (NAS) Whidbey. (drafted by R. Abraham)

¹⁵ Final Coupeville Sampling Fact Sheet Jan 2018; Final Ault Field Sampling Fact Sheet Jan 2018.

¹⁶ Navy Drinking Water Summary of September 2017; Naval Air Station Whidbey Island. OLF Coupeville Drinking Water Investigation October 2017.

¹⁷ Navy Fact Sheet: Naval Air Station Whidbey Island OLF Coupeville Drinking Water Investigation, October 2017, "The Navy is planning to conduct a follow on drinking water sampling event in October 2017. The

Navy would like to resample drinking water wells where PFOS and/or PFOA were detected (above or below the EPA lifetime health advisory). In addition, the Navy would like to sample drinking water wells at properties located adjacent to properties with PFOS and/or PFOA exceedances, whether they were previously sampled or not."

¹⁸ The Detection Limits used in the earlier phase of sampling averaged about 9 ppt for PFOA and 15 ppt for PFOS; NASWI Offsite DW Data Summary Table 091217.

¹⁹ Island County officials could have insisted that the well be tested, or tested it independently. They did neither.

²⁰ Validated results of Town of Coupeville and Fort Casey Treatment Plant (Post Treatment, Distribution Point) 10/19/17.

²¹ 12/29/16 letter to the Editor from Maryon Atwood.

²² Hello residents, 1/4/17 Letter from Mayor Molly Hughes.

²³ 1/4/17 letter to Coupeville Residents from Mayor Molly Hughes in response to Letter to the Editor by Maryon Atwood.

²⁴ 12/14/16 email to Willy LaRue and Kelly Riepma;

"Heads up. The new group, Coupeville Community Alliance, which was formed to fight the Growler flights at OLF, is now taking on the water issue. I was hoping they would be more fair and objective with their public outreach than COER, but apparently not. "Contaminates in your Water" is a head line meant to cause panic."

²⁵ 6/5/17 email From Molly Hughes To Grant Weed, "All of the testing the Navy is doing right now is not required of them, however since Department of Defense has contamination at bases all over the country, they are being very proactive. So our town system is involved though not technically "contaminated " at this time."

²⁶ 7/4/17 email from Molly Hughes to Joe Grogan, and Island County Health officials Jill Wood, Doug Kelly to discuss water issues including "Navy contamination" and possible location for new well,

²⁷ 10/31/16 email to Molly Hughes from ALS Global noted that analysis of Town's water would be for six PFASs.

²⁸ 10/1/17 letter to Coupeville Water Customers from Mayor Molly Hughes referencing testing of Coupeville's water for PFASs other than PFOA and PFOS..

²⁹ Pre-natal exposure to perfluoroalkyl substances may be associated with altered vaccine antibody levels and immune-related health outcomes in early childhood, Journal of Immunotoxicology Volume 10 Issue 4, Pages: 373-379 Published: OCT-DEC 2013.

³⁰ *Exposure to Polyfluoroalkyl Chemicals and Attention Deficit/Hyperactivity Disorder in U.S. Children 12-15 Years of Age*, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC300>

³¹ Agency for Toxic Substances and Disease Registry (ATSDR) Draft *Toxicological Profile for Perfluoroalkyl Substances*, June 2018

³² Colorado Department of Public Health and the Environment included PFHpA along with PFOA and PFOS in its combined health advisory guidance level of 70 ppt,

<https://www.colorado.gov/pacific/cdphe/PFCs/about/unregulated-substances>; Connecticut's "Action Level" above which the state can take action, is 70 ppt for the sum of PFOS, PFOA, PFNA, PFHxS, and PFHpA. (EPA only considers the sum of PFOA and PFOS)

³³ Unregulated Contaminant Monitoring Rule (UCMR3).

³⁴ Presentation, PFAS Testing at Pease, Highly Fluorinated Compounds – Social and Scientific Discovery Northeastern University, June 14, 2017, Andrea Amico, Alayna Davis, Michelle Dalton; State of New Hampshire Department of Health and Human Services Division of Public Health Services, Pease PFC Blood Testing Program: April 2015 – October 2015.

³⁵ Navy sampling results of Coupeville's post treatment of water on 10/10/17, and 3/23/18 found PFHxA at 19.9 and 20.9 parts per trillion respectively.

³⁶ Consumer Confidence Report (CCR) Rule, 63 FR 44511, 8/19/98, Vol. 63, No. 160.

³⁷ 4/10/17 R. Abraham appeared before the Board requesting the hospital to have its water filtered. Presented were: laboratory analysis report identifying PFOA in the Town's water at 38 ppt ; report of analysis of water in the aquifer beneath the Navy's OLF property to

demonstrate the possibility of increased contamination in the Town's and hospital's water.

³⁸ 4/11/17 email from Mayor Molly Hughes to Whidbey Health CEO, Geri Forbes

³⁹ 4/10/17 email from Mayor Molly Hughes email to Keith Higman, Island County Environmental Health Director re: Whidbey General Hospital's PFAS Contaminated water.

⁴⁰ 8/14/17 R Abraham request to Island Public Hospital District Board, In May of 2017 a family in Coupeville had their drinking water independently tested for six PFCs identified in EPA's Unregulated Contaminant Monitoring Rule. PFOA was found at 30 ppt, PFHxS at 32.8 ppt, PFHpA at 4.58 ppt, and PFBS at 7.68 ppt. The analysis was done twice. The results were consistent with analysis of drinking water samples from five other Coupeville locations.

⁴¹ R. Abraham discussion with G. Senerth at the 8/14/17 Board Meeting and asked for more information about the need for a filtration to remove PFAS.

⁴² 9/1/17 email from R. Abraham to G. Senerth and J. Kemtpen, WhideyHealth General Counsel

⁴³ 9/4/17 email to Rick Abraham from J. Kemtpen, WhideyHealth, General Counsel.

⁴⁴ *Hospital water 'perfectly safe for all' says CEO*, Patricia Guthrie, Whidbey News Times, 9/19/17

⁴⁵ Anatek Labs, Inc. Analytical Results Report 6/30/17; Edge Analytical Unregulated Contaminant Monitoring Report 8/14/17.

⁴⁶ The 6/27/17 sampling of the hospital's water before the alleged filtering found PFOA and PFHxS at 27ppt (parts per trillion) and 32 ppt respectively. The Method Detection Limit for both was 5 ppt. (.005ug/l). The 7/11/17 Edge Analytical analysis of water after the hospital said it was filtered used Method Reporting Limits for PFOA and PFHxS of 20 ppt (.02 ug/l) and 30 ppt (.03 ug/l) respectively. Amounts of PFASs below the Method Detection Limits and Method Reporting Limits would not have been detected. PFHxS found in the "pre-filter" analysis would not have been found in the "post filter" analysis.

⁴⁷ *Hospital water 'perfectly safe for all' says CEO*, Patricia Guthrie, Whidbey News Times, 9/19/17

⁴⁸ Comments taken from a March 2017 news article were made in response to R. Abraham letter to the editor criticizing her and other public officials to task for keeping information from the public and ignoring the health risks associated with PFASs, also that more PFASs were in the community's water than the Navy was admitting.

⁴⁹ 9/8/17 email to R. Abraham from J. Kemtpen responding to Abraham's Public Records Request #01579

⁵⁰ Request made by R. Abraham in several meetings with Superintendent King and in two appearances before the District's School Board. Requests supported by letters from citizens.

⁵¹ 12/6/18 News Article by Sharon Lerner, Intercept about the study published by the Journal of Clinical Endocrinology and Metabolism. Exposures to PFOA and PFOS resulted in a range of problems with their reproductive systems, including shorter penises, lower sperm counts, and reduction of anogenital distance.

⁵² 1/28/19 Letter to Superintendent Steven King from Steven L. Swanson M.D. and Sandra J. Swanson

⁵³ 1/27/19 letter to Board Members and Staff, Coupeville School District from identified Coupeville Resident.

⁵⁴ 1/29/19 Coupeville Mayor Molly Hughes email to the School District's Board and Superintendent

⁵⁵ 3/4/19 email from Supt. Steven King to Whidbey News Group Reporter. Laura Guido.

⁵⁶ 3/5/19 email from Molly Hughes to Supt. Steven King

⁵⁷ 3/1/19 Superintendent King "Friday Letter" to District Board members

⁵⁸ Statement made in a meeting with R. Abraham and visiting retired district court Judge. Superintendent King stated that the cooler was placed in the office by his predecessor.

⁵⁹ April 2017 Navy sampling results from OLF three on-site monitoring wells with contamination exceeding EPA Lifetime Health Advisory Levels.

⁶⁰ 7/4/17 email from Molly Hughes to Joe Grogan and Island County Health officials Jill Wood and Doug Kelly wanting to discuss water issues including "Navy contamination" and possible location for new well.

⁶¹ 8/2/17 email from Kim Hinds, P.E., Coupeville Engineer to Lydia Lindwell

⁶² 7/11/17 Town of Coupeville Limited Update Water Plan

⁶³ 9/29/19 email from S. King to Donna Bailey

⁶⁴ 6/5/17 email from Molly Hughes to Grant Reed; 7/5/17 Email from Molly Hughes to Jill Wood; 8/2/17 Email from Town of Coupeville Engineer to Lindwell, Lydia, Toxics Cleanup Program WA Dept. of Ecology: Safe Drinking Water Action Grants.

⁶⁵ 'Routine Maintenance Reveals Firefighting Foam in Base Stormwater,' 10-23-2018 Whidbey News Times, "In early October, results came back that showed the contaminants were leaving the base via the creek. Results found 172 ppt at the installation's eastern boundary and 149 ppt near the inlet to Dugualla Bay."

⁶⁶ Sample results posted on Navy Restoration Advisory Board Website following the filing of a Freedom of Information Act request. The first sampling results were then posted at https://www.navfac.navy.mil/navfac_worldwide/pacific/fecs/northwest/about_us/northwest_documents/environmental-restoration/naval-air-station-whidbey-island-restoration-advisory-board.html.

⁶⁷ According to EPA Fact Sheet for NPDES Permit # WAS026611, Clover Valley Creek is, "protected for core summer salmonid habitat; extraordinary primary contact recreation; water supply uses (domestic, industrial, agricultural, stock); and miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating, and aesthetics)."

⁶⁸ Results of Clover Valley Creek Surface Water Sampling posted on: https://www.navfac.navy.mil/navfac_worldwide/pacific/fecs/northwest/about_us/northwest_documents/environmental-restoration/naval-air-station-whidbey-island-restoration-advisory-board.html.

⁶⁹ Sampling results posted on NASWI_DW Ault Field Phase 4 Data Summary.

⁷⁰ Misha Vakoc, EPA Region 10 Municipal Stormwater Coordinator, stated in a call with R. Abraham that she and other appropriate were unaware of the PFAS sampling results.

⁷¹ 9/30/19 Public Notice: Proposed Stormwater Permit for Naval Air Station on Whidbey Island in Washington. EPA proposed to "designate the Municipal Separate Storm Sewer System (MS4) owned and operated by Naval Air Station Whidbey Island as a regulated small MS4 and simultaneously issue a National Pollutant Discharge Elimination System (NPDES) stormwater permit to Naval Air Station Whidbey Island.

⁷² Excerpt from RAB meeting minutes of 4/4/2019 reflect citizens questions and navy response: "What else was found in Clover Creek and the drainage ditch leading to Clover Creek besides PFOA and PFOS? I understand 14 compounds were tested. Ms. Leibman and Ms. Bengston did not have the results with them at the meeting...Captain Army added an action item to provide the results to Mr. Abraham."

⁷³ R. Abraham discussion with Kendra Leibman, co-chair, Navy Restoration Advisory Board meeting of 10/24/2019.

⁷⁴ EPA's Fact Sheet states that Clover Valley Creek and Lagoon are, "protected for core summer salmonid habitat; extraordinary primary contact recreation; water supply uses (domestic, industrial, agricultural, stock); and miscellaneous uses (wildlife habitat, harvesting, commerce/navigation, boating, and aesthetics)." PFAS (polyfluoroalkyl or perfluoroalkyl) chemicals are harmful to humans, persistent in the environment, and accumulate in fish, and marine mammals.

⁷⁵ Presentation by Andrew Eaton, vice president of Eurofins Eaton Analytical, as reported in *BOMBS IN OUR BACKYARD How the EPA and the Pentagon Downplayed a Growing Toxic Threat*, Abrahm Lustgarten, PROPUBLICA 7/9/18.

⁷⁶ *Survey of Per - and Poly - fluoroalkyl Substances (PFASs) in Rivers and Lakes*, 2016, Toxics Studies Unit, Environmental Assessment Program Washington State Department of Ecology.

⁷⁷ U.S. EPA finds C-8 in drinking water near Circleville, Akron Beacon Journal (Ohio), 8/17/05.

⁷⁸ The Navy's Detection Limits for PFOA analysis were lowered to 1-2 parts per trillion in its resampling of community water in October 2017. The detection limits in previous sampling had been approximately 8-9 part per trillion (ppt). The Town of Coupeville's Laboratory results prior to June 2017 only identified Practical Quantitation Limits of 20 parts per trillion for PFOA. Subsequent results identified a "MDL" of 5 ppt.

⁷⁹ 12/7/16 email from Washington Department of Health, Steve Hulsman, to Lauren Jenks and Coupeville Mayor Molly Hughes.

⁸⁰ See EPA.gov: The Safe Drinking Water Act says that a nation-wide standard cannot be established until the following three conditions are met: the EPA must find that a chemical has adverse health effects, that it occurs frequently at levels of public concern, and "In the sole judgment of the Administrator" there is a meaningful opportunity for health risk reduction for people served by public water systems. This means that a chemical could be suspected – or even proven – to have adverse health effects, but if public water systems across the country lack the capacity to remedy the threat, a national standard can't be established.

⁸¹ *Hidden Carcinogen Taints Tap Water, Consumer Products Nationwide - In Industry-Funded Studies, Trump's Chemical Safety Nominee Backed Exposures 1,000 Times Higher Than EPA's Risk Level*. Environmental Working Group - <https://www.ewg.org/tapwater/state-of-american-drinking-water>, 9/6/17.

⁸² 2/25/19 Consent Order, State of North Carolina v. The Chemours Company FC, LLC.

⁸³ The Navy's action level is based on the 2016 EPA Lifetime health Advisory Level of 70 part per trillion for PFOA and PFOS individually or combined.

⁸⁴ Agency for Toxic Substances and Disease Registry (ATSDR), *Toxicological Profile for Perfluoroalkyls*, (Draft for Public Comment), Department of Health and Human Services, Public Health Service. 2018.

⁸⁵ The Endocrine Disruption Exchange, 11/9/18 letter to New Hampshire Dept. of Environmental Services; *Perfluorinated Alkyl Substances: Emerging Insights Into Health Risks*, A Journal of Environmental and Occupational Health Policy 2015, Vol. 25(2).

⁸⁶ <https://www.atsdr.cdc.gov/mrls/index.asp>: Minimum Risk Level (MRL): "The MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse, non-cancer health effects over a specified duration of exposure; Laurel Schaider, PhD environmental chemist and public health researcher at Silent Springs: "The ATSDR's MRLs consider exposure for an intermediate time period of 15-364 days...and indicate potential health impacts at lower concentrations than the existing Health Advisories from EPA for PFOS and PFOA of 70 parts per trillion (ng/L)...Using the MRLs as a basis for a calculation that approximates how the (EPA)HA was derived, gives us lower numbers. These equivalent numbers are: PFOA – 11 ng/L, PFOS – 7 ng/L, PFHxS – 74 ng/L, PFNA – 11 ng/L."

⁸⁷ Environmental Working Group – *News and Analysis*, 7/30/18

⁸⁸ The Washington Department of Health's "PFAS Testing" information sheet 331-605 8/20/2018; www.doh.wa.gov/drinkingwater.

⁸⁹ Coupeville's Water (after treatment) contained 80.91 ppt of the combined PFASs in the Navy's October 2017 Sampling; 79.07 ppt in Coupeville's own sampling of March 2018; and 76.2 ppt in Coupeville's sampling of September 2018.

⁹⁰ 1/29/17 Letter to Editor from Maryon Atwood was not written as a COER member.

⁹¹ COER President, Ken Pickard hired a bodyguard after receiving threats of physical harm.

⁹² 12/29/16 letter to residents from Coupeville Mayor, Molly Hughes

⁹³ 1-9-17 Letter to the Editor copied to M. Hughes from COER Board Member, Bob Wilbur

⁹⁴ 2/22/17 letter from Town of Coupeville to Naval Facilities Engineering Command with no stated objection to the foam's use at Oak Harbor.

⁹⁵ 2/22/17 letter from Town of Coupeville to Naval Facilities Engineering Command. Coupeville government did not oppose the Navy's 'single siting' of all Growlers on Whidbey Island or the total proposed increase in operations, only how the increased was to be apportioned between the two locations.

⁹⁶ 1/29/2019 letter to Coupeville School District Board from Mayor Molly Hughes.