DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND NORTHWEST
1101 TAUTOG CIRCLE
SILVERDALE WASHINGTON 98315-1101

5090
EV/23-00023
26 January 2023

Department of Ecology
P.O. Box 47600
Olympia, WA, 98504-7600

Dear Washington State Department of Ecology and representatives:

The Navy appreciates the opportunity to review the Draft Guidance for Investigating and Remediating Per- and Polyfluoroalkyl Substances (PFAS) Contamination in Washington State issued for public comment on December 15, 2022. The Navy is providing comments to confirm Ecology's intentions in issuing this guidance prior to promulgated PFAS cleanup values and making sure the other information in the document is accurate as possible, particularly as it pertains to the Navy's PFAS investigations in Washington state. The comment table in Enclosure 1 is organized in four columns: the first column is the comment number, the second and third column is section and page of draft document the comment is in reference to, and the last column is the comment for Ecology's consideration.

If you have any questions on the comments, please contact my point of contact Ms. Kendra Clubb, who can be reached at (509) 999-6843 or kendra.r.clubb.civ@us.navy.mil.

Regards,

Dina Ginn
Environmental Restoration Manager
By direction

Enclosures: 1. Navy Comments on DRAFT Guidance for Investigating and Remediating PFAS Contamination in Washington State

Title: Navy Comments on DRAFT Guidance for Investigating and Remediating PFAS Contamination in Washington State

Comments dated: January 25, 2023

	Section	Page #	Comment
1	1.1	1 of 64	It is unclear if the purpose of this guidance is to establish promulgated MTCA levels, recommended screening levels, or recommended MTCA levels. If the purpose is to enforce the levels in the 'guidance', then that needs to be clarified. If not, that also should be stated.
2	1.2, first paragraph	2 of 64	In describing PFAA's, perfluoroalkyl means all carbons are fully fluorinated (with the exception of functional groups such as carboxylates); "most" carbons being fluorinated could be used to describe polyfluoroalkyl compounds.
3	1.2, first paragraph	2 of 64	"Because PFAAs are so persistent… they tend to be the focus of environmental investigations" equally important might be mobile, known or suspect toxicity, and bioaccumulative
4	2.0	5 of 64	It could be useful to include a brief discussion on EPA reference doses (RfDs), since the lack of cancer slope factors is discussed.
5	2.1	6 of 64	"Since the UCMR3 sampling event of 2013–15, several military bases in Washington state have tested drinking water sources in response to a directive from the U.S. Department of Defense (DOD). PFAS were discovered at McChord Airfield and Fort Lewis (located between Olympia and Tacoma), Naval Air Station Whidbey Island (located near Oak Harbor); Naval Base Kitsap- Bangor (located near Poulsbo and Silverdale); Fairchild Air Force Base (located near Airway Heights and Spokane), and the Yakima Training Center (located near Yakima), which is part of JBLM." At Whidbey Island, PFAS was only identified in one on base drinking water well at OLF Coupeville in Coupeville, WA. If the 2nd sentence pertains to the Navy's on- and off-base drinking water wells, then that should be clarified
6	2.1	6 of 64	"As of May 2022, PFOA and PFOS were identified above the 2016 EPA HAL of 70 ng/L in 6 locations across Washington:…" Same comment as above.

7	2.2	7 of 64	Please specify that EPA anticipates to finalize the rule including the release of MCLs by the end of 2023.
8	3.1	10 of 64	This sentence needs a reference "Some PFAS such as PFOA, PFOS, PFHxS and PFNA are readily absorbed into the human body when ingested with food and water, but only slowly eliminated." Review document thoroughly for places where facts are stated and no source document is referenced.
9	3.2	13-21 of 64	Section 3.2: "In the following sections, we discuss how we developed (or will develop) MTCA cleanup levels for PFAS chemicals for each media (groundwater, surface water, soil, and air)." What levels are MTCA enforceable numbers? Table 3 includes 'recommended' groundwater cleanup levels. Tables 4 and 5 do not include 'recommended' in the title. Does that mean the soil levels in Table 4 and 5 <u>are enforceable MTCA levels</u> and not just recommended? Please clarify.
10	3.2.1	15 of 64	**"**Ecology has consulted with both EPA and DOH on the selection of RfDs identified in this guidance…" Was there a public comment period or formal peer-review prior to issuing these RfD's?
11	3.2.2	16 of 64	ECY ARARs by definition are <u>not</u> the same as federal ARARs in CERCLA. To be a CERCLA ARAR, a state requirement must be promulgated. We are making this distinction in our comments so it is clear to the agency as we start to determine CERCLA ARARs for the Navy projects in NW.
12	3.2.5	21 of 64	"MTCA Equation 747-1 does not account for some of the unique transport characteristics of PFAS. Because of their surfactant properties, PFAS tend to sorb preferentially to air-water and NAPL-water interfaces. Studies have shown that air-water interfaces can account for up to 100% of the PFOS and PFOA retained in soil. The Kd parameter in Equation 747-1 accounts for adsorption to organic matter in soil but does not account for interfacial sorption." Comment: Since MTCA equation 747-1 doesn't account for interfacial PFAS sorption (up to 100% of PFOS and PFOA in soil), then it is not appropriate to establish soil cleanup levels for

			migration to groundwater protection. At most a screening level may apply with this important caveat. Comment: Further, most labs are not able to detect the values set for saturated zone in Table 5. Thus, these values are impractical.
13	3.3.2 third paragraph	24 of 64	Remove the word 'All' from this sentence and replace the words 'and only' with the word 'except' so as not to be misleading. "All PFAS compounds listed in EPA's RSL table have SLs based on noncancer effects, and only PFOA has an SL based on cancer risk.)
14	3.4	25 of 64	Consider removing section 3.4 or move to an appendix. These levels are no longer in use and therefore not important to the meat of the document. Having them here can be confusing to the reader.
15	Chapter 4 Section 4.1.1, 4.1.2, 4.1.3	28 of 64	The screening levels are not considered clean up levels so delete the term "cleanup levels" in these sections. Using the term clean up levels assumes that can be used as replacement for MCLs and this is not the case. There are used for screening sites.
16	Chapter 4 Section 4.2	29 of 64	Too much time is spent discussing EPA Method 537, which is now an outdated method. Space is better-spent discussion Method 537.1.
17	Chapter 4 Section 4.3.1	30 of 64	Remove mention of method 537
18	Chapter 4 Section 4.3.1	31 of 64	This section does not mention EPA Draft Method 1633. It is presented in section 4.3.3 – Future Analytical Options. We recommend that it is moved up to this section because ECY currently has three labs accredited to this method. There are also ~18 lab across the country accredited for this method by compliant with DoD/DOE Quality Systems Manual (QSM) Table B-24.
19	Chapter 4 Section 4.3.2	30 of 64	This section should mention total organo fluorine or adsorbable organo fluorine. The EPA has a draft method 1621 that has undergone single lab validation and will undergo multilab validation for this method. CWA Analytical Methods for Per- and Polyfluorinated Alkyl Substances (PFAS) | US EPA

20	Chapter 4 Section 4.3.3	31 of 64	Draft EPA Method 1633 is listed as a "Future analytical option". We recommend moving it up to Section 4.3.1. In addition, this section states that it Draft EPA Method 1633 is compliant with Table B-15. For Draft EPA Method 1633 the QA/QC procedures are in Table B-24. Please revise.
21	Chapter 4 Section 4.4	31 of 64	Denly et al (2019) and Rodowa et al (2020) is not listed in the list of references.
22	Chapter 4 Section 4.4.3	32 of 64	Trip blanks are most valuable when shipping samples with volatile compounds.
23	6.1.1.2	43 of 64	**"**These resins can provide improved removal efficiency over other adsorptive media for certain classes of PFAS compounds if they have positively charged functional groups, by bonding with the negatively charged functional head of the PFAS compound." Somewhat confusing since it implies the PFAS have positively charged functional groups. Suggest: Anion exchange resins, with their positively charged functional groups…
24	6.1.1.2	43 of 64	"In addition, the hydrophobic portion of the PFAS molecule can adsorb on the hydrophobic surface of the resin." Suggest: …of the resin carrier (e.g. the polystyrene beads).
25	6.1.1.3 first paragraph	43 of 64	**"…**to move water through a semipermeable membrane." Suggest adding to the end of the sentence "while excluding larger molecules including PFAS" Also suggest adding "clogging" to the second sentence, and "fouling" to the third.
26	6.1.1.4	43 of 64	**"**CAC was initially used to remove petroleum and chlorinated contamination…" Technically, it didn't remove the contamination, only immobilized it (which could eventually lead to removal through biodegradation)
27	6.2.4	45 of 64	If PFAS are only removed (transferred) from the soil and captured, this will result in creation of a waste stream containing PFAS that must be disposed of or further treated. The advantage here is that a large volume of soil can be reduced to a much smaller volume of concentrated PFAS waste. Concentration of PFAS from large volumes of impacted water or soil should be mentioned in the treatment chapter as a worthwhile treatment approach.

End of comments