Naval Facilities Engineering Command Northwest
Silverdale, Washington

Final

Action Memorandum
Ault Field and Area 6 Drinking Water

Naval Air Station Whidbey Island
Oak Harbor, Washington

June 2020

Naval Facilities Engineering Command Northwest
Silverdale, Washington

Final

Action Memorandum
Ault Field and Area 6 Drinking Water

Naval Air Station Whidbey Island
Oak Harbor, Washington

June 2020

Prepared for NAVFAC Northwest
by CH2M HILL, Inc.
Bellevue, Washington
Contract N62470-16-D-9000
CTO 4041

Contents

Acronyms and Abbreviations

AFFF	aqueous film-forming foam
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EE/CA	Engineering Evaluation Cost Analysis
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NCP	National Contingency Plan
NTCRA	Non-Time-Critical Removal Action
PFAS	per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
POU	point-of-use
TCRA	Time-Critical Removal Action
USEPA	United States Environmental Protection Agency

I. Purpose

This Action Memorandum was prepared by Naval Facilities Engineering Command (NAVFAC) Northwest per Section 300.415(n)(2) of Title 40 of the Code of Federal Regulations, as part of the National Contingency Plan (NCP). The Department of the Navy (Navy) is the lead agency, under Executive Order 12580, for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) actions at Naval Air Station (NAS) Whidbey Island. NAS Whidbey Island, specifically Ault Field and Area 6 Landfill, is currently listed on the National Priorities List. The purpose of this memorandum is to document the preferred alternatives identified in the Non-Time Critical Removal Action (NTCRA) Engineering Evaluation and Cost Analysis (EE/CA) (CH2M HILL, Inc. [CH2M], 2020) to address perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) in drinking water wells for off-Base residential properties near NAS Whidbey Island, in Oak Harbor, Washington (**Figure 1**).

II. Site Conditions and Background

The NAS Whidbey Island complex is located in Island County, Washington on Whidbey Island, and consists of Ault Field, Outlying Landing Field Coupeville, and Seaplane Base. Ault Field occupies approximately 4,300 acres, 3 miles northwest of the City of Oak Harbor, Washington, and includes Area 6, a 260-acre tract in the southeastern corner of Ault Field (**Figure 1**). Ault Field was commissioned in 1942 and was used for the rearming and refueling of Navy patrol planes and other tactical aircraft operating in the Puget Sound region. Currently, Ault Field supports Navy tactical electronic attack squadrons flying the EA-18G Growler aircraft, the P-8 Poseidon and P-3 Orion Maritime Patrol squadrons, and two Fleet Reconnaissance squadrons flying the EP-3E Aries aircraft.

The historical use of aqueous film-forming foam (AFFF) at Ault Field for firefighting and fire response training purposes has been identified as a potential source of per- and polyfluoroalkyl substances (PFAS) releases to local groundwater. Known and potential source areas are being investigated as part of preliminary assessment (PA) and site inspection work currently underway. The Ault Field PA identified 34 potential source areas at Ault Field where PFAS-containing materials may have been released to the environment (CH2M, 2018a).

Although it is unknown if AFFF was used or disposed of at Area 6, its historical site use as a disposal area suggests AFFF disposal within Area 6 is possible. Wastes are known to have been previously disposed of at two locations within Area 6: the former industrial waste disposal area (Site 55), which received acids, caustics, and solvents between the 1970s and 1980s and liquid sludge between 1969 and the mid-1970s, and the Area 6 landfill, which received Navy waste from 1969 through the mid-1990s. There is no known disposal of regulated wastes at the Area 6 landfill since 1983.

In September 2015, the Navy conducted on-Base groundwater sampling at Ault Field to evaluate the presence of PFAS in groundwater at Areas 16, 31, and Hangar 5. Similarly, in December 2017, the Navy conducted an on-Base groundwater study for PFAS at Area 6. PFAS were detected above the USEPA Health Advisory[1] for PFOA and PFOS in on-Base groundwater monitoring wells at both Ault Field and Area 6 in 2015 and 2017 sampling events. Following the 2017 on-Base PFAS sampling event, a second phase of groundwater sampling was conducted between February and August 2018 for Area 6 which included additional on-Base groundwater monitoring wells and off-Base groundwater monitoring wells. PFAS were detected in both on-Base and off-base groundwater monitoring wells; however, the concentrations were all below the USEPA Health Advisory for PFOA and/or PFOS.

Following detections of PFOA and PFOS above the USEPA Health Advisory in on-Base groundwater at Ault Field, the Navy conducted voluntary Phase 1 off-Base drinking water sampling of drinking water wells within 1-mile in the direction of groundwater flow of confirmed AFFF release areas for PFAS from November 2016 to June 2017. The Phase 1 results indicated PFOA and/or PFOS above the Health Advisory in one off-Base drinking water well south of Ault Field (Residence 2) (CH2M, 2017). Based on the Phase 1 results, the Navy initiated Phase 2 drinking

[1] On May 19, 2016, the EPA issued a Health Advisory level for PFOA and PFOS. This Health Advisory level offers a margin of protection for all Americans throughout their life from adverse health efforts resulting from exposure to PFOA and PFOS in drinking water. The concentration in drinking water should not exceed 70 parts per trillion when detected PFOA and PFOS concentrations occur alone or are added together.

water sampling and expanded the drinking water investigation an additional 1/2-mile in the direction of groundwater flow in some portions south and east of Ault Field. The Phase 2 results indicate that PFOA and/or PFOS are above the USEPA Health Advisory in one off-Base drinking water well east of Ault Field (Residence 1) (CH2M, 2017). Based on the Phase 2 results, the Navy initiated Phase 3 drinking water sampling and expanded the drinking water investigation an additional 1/2-mile in the direction of groundwater flow from this property. There were no exceedances of the USEPA Health Advisory for PFOA and/or PFOS in the Phase 3 area. Based on the Phase 3 results, the Navy did not expand the drinking water sampling area near Ault Field beyond the Phase 3 area. In October 2018, the Navy identified PFAS in a storm water drain near Hangar 6 and in an associated storm water drainage system that empties into Clover Valley Stream and Dugualla Bay. As a result of this new information, the Navy initiated Phase 4 of drinking water sampling for wells located within a half mile to the north-northeast and south-southeast of the surface water body where the PFAS was detected above the USEPA Health Advisory. There were no exceedances of the USEPA Health Advisory for PFOA and/or PFOS in the Phase 4 area.

Eleven new monitoring wells, including two off-Base wells (one each at Ault Field Residence 1 and Residence 2), were drilled and sampled between January and March 2018 as part of the Ault Field Phase 1 SI (CH2M, 2019). The two new Ault Field Residence 1 and Residence 2 monitoring wells met State and County drinking water well construction standards to allow the wells to be converted and permitted as household drinking water wells if the water quality could be proven appropriate. The Ault Field Residence 1 new well was installed deeper than the existing, impacted residential water supply well, below a potential confining clay layer. At Ault Field Residence 2, no viable deeper water-bearing unit was identified, so the new well was screened at a similar depth to the existing PFAS-impacted residential water supply well (although the existing well construction is uncertain). The initial sample from the Ault Field Residence 1 new monitoring well was non-detect for PFAS. The initial samples from the Ault Field Residence 2 new monitoring well had detections of PFOA and PFOS that were below the USEPA Health Advisory. Therefore, these new monitoring wells were selected for aquifer testing and additional PFAS sampling (CH2M, 2018b). Aquifer testing was performed in July 2018 at Ault Field Residence 1 and in June 2018 at Ault Field Residence 2. Results from aquifer testing and PFAS sampling at the new Ault Field Residence 1 monitoring well (MW-611) showed PFOA and/or PFOS remained nondetect with no evidence of hydraulic connection with the existing, impacted drinking water well (CH2M, 2018c). Results from aquifer testing and PFAS sampling at the new Ault Field Residence 2 monitoring well (MW-615) showed a slight increase in PFOA and/or PFOS concentrations during aquifer testing and pumping of the new well-induced measurable drawdown in the pre-existing drinking water well, indicating significant hydraulic connection between the newly installed well and the existing, impacted drinking water well.

Due to the detection of PFOA above the USEPA Health Advisory in one of the Area 6 monitoring wells during the December 2017 groundwater sampling event, the Navy conducted two voluntary off-Base drinking water well sampling events for wells hydraulically downgradient of Area 6. The Phase 1 sampling event, conducted in winter/spring 2018, included wells one-half mile to the west and south of the Area 6 boundary in the direction of groundwater flow. The Phase 2 sampling event, conducted in the summer 2018, included parcels within the Phase 1 sampling area that were not sampled in the spring and wells within one-half mile in the direction of groundwater flow to the southwest of the drinking water wells with PFAS exceedances in the Phase 1 sampling area. One additional well within the Phase 1 sampling area was sampled in the summer of 2018. No responses to sample request letters were received from drinking water wells within the Phase 2 area. Drinking water samples were collected from 17 wells during the Phase 1 and Phase 2 events. Results from the Phase 1 and Phase 2 sampling events indicate that 5 of the 17 drinking water wells sampled contain PFOA and/or PFOS above the USEPA Health Advisory; the exceedances occurred at the Evergreen Mobile Home Park and four Easy Street Residences.

Following the initial phased voluntary drinking water sampling performed at Ault Field, a periodic drinking water sampling program was developed in 2017 to monitor PFAS within drinking water wells. As part of the periodic drinking water sampling, residences with PFAS detections and residences adjacent to residences with PFAS exceedances would be sampled bi-annually to evaluate temporal and spatial variability of PFAS. In spring 2019

Area 6 residences were added to the periodic drinking water sampling program for Ault Field. In preparation for the November 2019 sampling event, request letters were sent to seven residences adjacent to the five exceedances on Easy Street and Evergreen Mobile Home Park. Of the seven residences, one residence located on Easy Street responded to the request and was added to the fall 2019 periodic drinking water sampling event. PFOS was above the Health Advisory for the additional Area 6 residence; thus, the residence was added to the periodic drinking water sampling program and this EE/CA.

An emergency removal action was implemented in December 2016 (CH2M, 2017) to supply bottled water for drinking and cooking to residences near Ault Field and Area 6 Landfill where PFOA and/or PFOS was detected in drinking water wells above the USEPA Health Advisory level.

III. Threats to Public Health or Welfare or the Environment, and Statutory and Regulatory Authorities/Endangerment Determination

Potential releases of pollutants and contaminants may present an imminent and substantial endangerment to public health, welfare, and the environment. Any historical release on Navy facilities has the potential to impact groundwater and drinking water adjacent to the Navy facilities. However, the source and extent of PFOS and PFOA is not yet known. The Navy is continuing to assess potential exposure through drinking water adjacent to the facilities and will implement subsequent site inspections and remedial investigations based on findings.

The Navy has identified eight off-base drinking water wells near NAS Whidbey Island and Area 6 potentially impacted by past releases of PFAS-containing materials. The eight property owners and tenants whose drinking water supply wells contain concentrations of PFOA and/or PFOS above the USEPA Health Advisory level were notified within 24 hours of receipt of preliminary analytical results and were provided bottled water within 48 hours. Property owners and tenants have been scheduled for routine bottled water deliveries as an Emergency Response Action under CERCLA. Bottled water will be provided to all impacted property owners until a long-term solution is implemented to provide drinking water with concentrations of PFOA and PFOS below the USEPA Health Advisory levels.

IV. Proposed Actions and Estimated Costs

An EE/CA was conducted to identify long-term removal actions to protect human health exposure to impacted groundwater through ingestion via off-Base drinking water wells (CH2M, 2020). The EE/CA develops and evaluates removal action alternatives for protecting human health by preventing human ingestion of impacted groundwater from the eight off-Base drinking water wells with total combined PFOA and PFOS concentrations above the USEPA Health Advisory level. The nature and extent of PFOA and PFOS in groundwater and potential risks associated with future use of impacted groundwater are being evaluated separately.

The removal action objective (RAO) in the EE/CA addresses current human receptors ingesting groundwater used as drinking water at levels above the Health Advisory for PFOA and/or PFOS. The RAO was designed to protect current human receptors from ingestion of PFOA and/or PFOS at levels that exceed the Health Advisory level in groundwater used as drinking and cooking water.

The EE/CA compares four general categories of removal actions based on their effectiveness, implementability, and cost, to address current exposure to drinking water at off-Base properties impacted with PFOA and/or PFOS at levels greater than the USEPA Health Advisory level.

- No Further Action (continue the current TCRAs) (provide bottled water)

- Point-of-Entry Water Treatment of Affected Off-Base Well Water (to treat whole-house water from the existing drinking water well)
- Connection to Navy or Public Water Supply (to connect the homes to the nearest existing Navy, city, or community water supply line)
- New (Replacement) Well (to provide a new drinking water well in an unimpacted aquifer unit, if available)

Based on location and unique characteristics which affect removal action evaluations, the impacted properties have been split into four removal action areas (**Figure 2**):

- Ault Field Residence 1 – A single-family residence located east of Ault Field.
- Ault Field Residence 2 – A single-family residence located south of Ault Field.
- Easy Street Residences – Five single-family residences southwest of Area 6.
- Evergreen Mobile Home Park – A mobile home community currently with 19 units, with the possibility of up to 21 units, that is served by a single drinking water well.

The EE/CA evaluated the effectiveness, implementability, and cost of each of the four potential removal actions to address current exposure to drinking water at the four removal action areas listed above. Based on the results of the EE/CA, the recommended removal action alternatives are provided for each of the four removal action areas.

The EE/CA was made available for a 30-day public comment period. Notice of its availability for public review, along with a summary of the EE/CA, was published in the *South Whidbey Record* and *Whidbey News-Times*. Public comments and Navy responses are provided in **Attachment 1**.

Because this removal action has been designated as non-time-critical, the start date of the removal action will be determined by factors other than the immediate urgency of the threat. Possible factors include, but are not limited to, weather, availability of resources (contract, fiscal year funding, materials, vendors), necessary real estate agreements, and site constraints. The estimated project period is anticipated as follows:

- Award contract for NTCRA (September 2020)
- Design/Work Plans (September 2020-June 2021)
- Construction (July-December 2021)
- Construction Reporting (January-July 2022)

Estimated costs of the recommended remedial action alternatives are provided for each of the remedial action areas below:

- Ault Field Residence 1: Conversion of existing monitoring well to a drinking water supply well and annual PFAS sampling of the new drinking water well (assumed duration of 30 years) – $323,400
- Ault Field Residence 2: Connection to on-Base Navy water line – $288,700
- Easy Street Residences: Connection to City of Oak Harbor water line – $515,500
- Evergreen Mobile Home Park: Connection to City of Oak Harbor water line – $406,900

The estimated costs are provided to an expected accuracy of +50 percent and -30 percent. The cost estimates are in 2019 dollars, and the unit pricing is based on costs from similar projects, vendor quotes, or engineering estimates. The EE/CA contains details on the costs associated with each alternative (CH2M, 2020).

V. Expected Change in the Situation Should Action Be Delayed or Not Taken

If recommended remedial action alternatives are not constructed or construction is delayed at one of the remedial action areas, bottled water will continue to be provided. Failure to provide clean drinking water to residents with impacted drinking water would result in continued exposure to PFOS and/or PFOA above the USEPA Health Advisory level.

VI. Outstanding Policy Issues

The Navy is conducting this NTCRA based on the USEPA Health Advisory level for PFOS and PFOA. The science surrounding PFAS is still evolving. As the scientific community learns more, the USEPA Health Advisory levels may change or additional standards may be developed by other federal, state, or local agencies. These changes may necessitate additional actions to be taken by the Navy.

VII. Recommendation

This memorandum documents approval of the NTCRA documented in the EE/CA to address off-Base drinking water exposure to PFOS and PFOA for off-Base residences near NAS Whidbey Island in Oak Harbor, Washington. Conditions at the site meet the NCP Section 300.415(b) criteria for a response action. NAVFAC Northwest approved this action and is undertaking this NTCRA.

Approval:

Matthew L. Arny
Captain, U.S. Navy
Commanding Officer

6/29/30
Date

VIII. References

CH2M HILL, Inc. (CH2M). 2017. *Emergency Response Action Memorandum, Naval Air Station Whidbey Island, Ault Field, Oak Harbor and Outlying Landing Field, Coupeville, Island County, Whidbey Island, Washington.* February 13.

CH2M. 2018a. *Preliminary Assessment for Per- and Polyfluoroalkyl Substances, Ault Field, Naval Air Station Whidbey Island, Oak Harbor, Washington.* Final. November.

CH2M. 2018b. *Final Sampling and Analysis Plan Addendum Phase I Site Investigation for Per- and Polyfluoroalkyl Substances in Soil and Groundwater, Ault Field, Naval Air Station Whidbey Island, Oak Harbor, Washington.* Addendum. Prepared by CH2M. June.

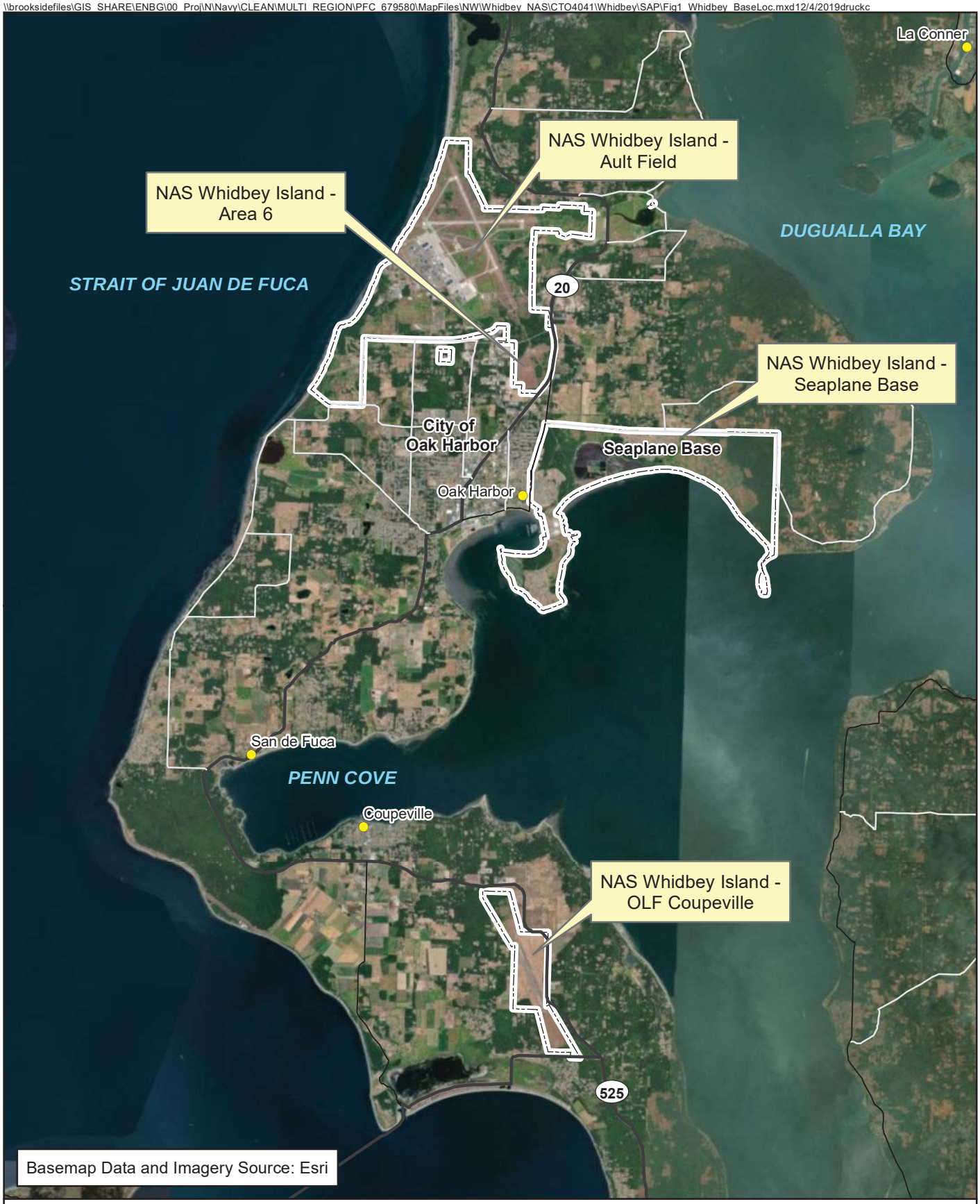
CH2M. 2018c. *Final New Residential Well Remedial Alternative, Ault Field, Naval Air Station Whidbey Island, Coupeville, Washington.* Technical Memorandum. Prepared by CH2M. October.

CH2M. 2019. *Final Evaluation of Per- and Polyfluoroalkyl Substances in Groundwater, Ault Field, Naval Air Station Whidbey Island, Oak Harbor, Washington*. Technical Memorandum. Prepared by CH2M. March.

CH2M. 2020. *Engineering Evaluation/Cost Analysis, Long-term Solutions for Ault Field and Area 6 Drinking Water, Naval Air Station Whidbey Island, Oak Harbor, Washington.* Final. March.

Figures

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MULTI_REGION\PFC_679580\MapFiles\NW\Whidbey_NAS\CTO4041\Whidbey\SAP\Fig1_Whidbey_BaseLoc.mxd12/4/2019druckc



Legend

- City
- Secondary Road
- Local Connecting Road
- Important Local Road
- Base Boundary

NAS - Naval Air Station
OLF - Outlying Landing Field

N

0 1 2 Miles

1 inch = 2 miles

Figure 1
Base Location Map
Ault Field
Oak Harbor, WA
Outlying Landing Field (OLF) Coupeville,
Coupeville, WA

For Official Use Only

Action Memorandum
Ault Field and Area 6 Drinking Water
Naval Air Station Whidbey Island
Oak Harbor, Washington

NOTIFICATION: FIGURE 2 CONTAINS SENSITIVE BUT UNCLASSIFIED INFORMATION WHICH IS PROTECTED BY THE FREEDOM OF INFORMATION ACT

FOIA Exemption 6 (5 USC 552(b)(6))
Personal Information Affecting an Individual's Privacy

TO REQUEST A COPY OF THE DOCUMENT

PLEASE CONTACT

Department of the Navy
Freedom of Information Act Office

http://www.secnav.navy.mil/foia/Pages/default.aspx

Distribute to U. S. Government Agencies Only

Attachment 1
Response to Comments from Public Comment Period - *Final Ault Field Drinking Water Engineering Evaluation Cost Analysis Naval Air Station Whidbey Island, Oak Harbor, Washington*

Navy Responses to "EPA Recommendations for the Navy on NTCRA Alternate Water Supply at Naval Air Station Whidbey Island"		
1. costs for NTCRA	The Navy will fund the initial cost for connections to a public water system but proposes to have the distribution of that water paid by the recipients. Since the removal action would not be complete until the users receive clean water, this approach means that the Navy plans to bear the costs of only a portion of the NTCRA. Prior to contamination of the groundwater by activities associated with the Navy, the effected residences had been obtaining household water from individual wells. Given that the water users are not responsible for the contaminated groundwater, the payment obligation being imposed by the Navy does not comport with the liability framework of CERCLA. The groundwater has been impacted by various per- and polyfluoroalkyl substances (PFAS) which are each a "pollutant or contaminant" within the meaning of Section 101(33) of CERCLA, 42 U.S.C. § 9601(33). According to Sections 120(a)(1) and 104(a)(1) of CERCLA, 42 U.S.C. §§ 9620(a)(1) & 9607(a)(1), the Navy has the responsibility to respond to these releases of PFAS, but in so doing does not have recourse under CERCLA to recover its response costs from others. This is because there is no liability under Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1), for parties to repay the Navy for the costs incurred to respond to releases of pollutants or contaminants. As a result, having the users pay for water which is to be provided as component of the protections afforded by a NTCRA appears to be contrary to the liability scheme of CERCLA. To effectuate a response action which consists of providing drinking water vis-à-vis a connection to a local water distribution system, there must be both construction and operation components. The funding of both components is therefore essential to completing the response action and affording the users protection against exposure to contaminated water. The obligation of the Navy to absorb the cost of supplying water could be reasonably calculated and need not be for an infinite amount of time. It would be fair to have the Navy's obligation limited to paying the difference between the cost to users of obtaining well water and the costs to obtain water from a public distribution system. This approach would obligate the Navy to only fund the incremental amount that the users are forced to absorb due to the change in water source. Then, once the Navy restores the contaminated groundwater to a beneficial drinking water use such that the effected households could again obtain well water, the Navy would arguably no longer have an obligation to pay for the supply of water from the distribution system because these households would have the ability to resort to their original source of water.	The Navy is responding to PFAS contamination found in drinking water under the CERCLA removal action authority found in Section 104(a)(1). The Navy is authorized to act consistent with the National Contingency Plan (NCP). Under 40 C.F.R. 300.415(e)(9) of the NCP, the lead agency conducting a removal action may provide a "Provision of alternate water supply – where necessary immediately to reduce exposure to contaminated household water and continuing until such time as local authorities can satisfy the need for a permanent remedy." The Navy is providing the alternate water supply by installing the necessary water lines to connect the affected residents to the local authority's water system. The local authority can then "satisfy the need" by providing the water. The need is based on each individual's usage for drinking water or for any other purpose they desire. EPA's opinion that construction and operation components are essential to completing a response action is not found within the NCP and no other reference was provided. The Navy's position is consistent with the NCP.

Navy Responses to "EPA Recommendations for the Navy on NTCRA Alternate Water Supply at Naval Air Station Whidbey Island"		
2. Release and Use of PFAS-Contaminated Well Water	In regard to the irrigation allowance of PFAS contaminated water, the EE/CA states for Ault Field Residence 2, "Under this alternative, it is assumed that the off-Base private drinking water well would remain in place but would no longer be used as the water supply for the home. However, it may be used for irrigation purposes." There are several problems with this approach. First, if the Navy's assumption about the limited irrigation use of this water turns out to be incorrect then contaminated water from this well may be consumed or otherwise used by persons in a manner which exposes them to PFAS, especially if the user decides they do not want to pay for water from the public water system. Second, this decision would amount to the allowance of a release of a pollutant or contaminant into the environment thereby creating potential liability for the Navy and homeowner to respond to such a release under Sections 104(a) and 120(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9620(a). Third, if the water is used on a garden, studies have shown that the PFAS can be taken up by crops which means that persons or animals who feed on those crops would be exposed to PFAS. Fourth, if the irrigation water runs off the property through a ditch or in some other manner, then the PFAS-contamination can spread to other locations and thereby result in further exposure scenarios for persons and liability issues for the Navy and perhaps, the individual homeowner. In order to avoid exposure and liability issues of the resident and the Navy, the best option would be to remove the pump from the well but retain the well as a monitoring location. Once Ault Field Residence 2 is connected by the Navy to a public water supply, there would be no need to use the water from this well for irrigation or any other purpose other than monitoring.	The Navy is taking action to address drinking water exposure for the two PFAS compounds, PFOS and PFOA, for which EPA has established a drinking water lifetime health advisory. Though there are currently no federal or state regulations for PFAS in groundwater, the Navy is acting proactively to provide a source of drinking water to residents with water above the EPA's lifetime health advisory. The Washington State Department of Ecology is responsible for managing the state's water resources and administers the permit systems for water rights for ground water. (See Chapter 90.44 RCW – Regulation of Public Groundwaters) A resident is granted the right to use a volume of water, for a defined purpose, in a specific place according to state law. The Washington Department of Health public website states "based on limited information – and PFAS water levels in Washington – we expect little to no plant uptake of PFOA, PFOS, PFNA, or PFHxS in garden vegetables." The Navy acknowledges that the science of PFAS effects in agriculture is still evolving. EPA is currently seeking grant applications that help improve the agency's understanding of potential impacts of PFAS in rural communities and agriculture operations. It is premature to address irrigation in the drinking water response action. Following the CERCLA process the Navy will be conducting a remedial investigation to define nature and extent of these compounds, the exposure pathways and potential human health risks consistent with risk assessment guidance. Currently, there are no federal or state regulations for PFAS in groundwater; there is only an EPA lifetime health advisory level (LHA) for drinking water. Based on the lack of regulations, the Navy does not have the authority to extinguish the water rights that have been given to a resident by the State of Washington. The Navy is acting proactively to provide a source of drinking water. The Navy has discussed this issue with the EPA, and they acknowledged, that PFAS contaminated well water use for irrigation should be addressed by the State.

Community Comments			
Comment Number	**Transmitted**	**Comment**	**Comment Response (includes exact response and a paraphrased response)**
Community Comment Set 1			
1	email	Exact comment (names removed): "Hi XXX, we are at great wolf lodge with grandkids. The email you sent won't let me open on my iPhone. I will try to get on a computer today to open it. I'm very interested in what it says about water usage. Can you tell me what that part says. Thanks XXX." Paraphrased comment: I'm very interested in what it (EE/CA) says about water usage.	Exact response (names removed): "Hi XXX, I hope you are having fun! Sorry you are not able to open the email. The water usage estimate is 181 gallons day (based on information you provided on 9/15/2017). We understand that usage may change but that is the estimate. Thanks! XXX" Paraphrased response: The water usage estimate is 181 gallons day (based on information you provided on 9/15/2017). We understand that usage may change but that is the estimate.
2	email	Exact comment: "Are you saying that we will not be charge for that amount of water usage?"	Exact response (names removed): "Hi XXX, No. That is only the estimated amount of water your homes uses per day. You will be responsible for your monthly water bill. Please let me know if you have any questions. Thanks, XXX." Paraphrased response: Clarification that this water usage amount is estimated and that homeowner will be responsible for monthly water bill was provided via email on 11/8/19.
3	email	Exact comment: "Then we choose the filtration system as we should not be penalized for the Navy contamination our personal well."	Exact response (names removed): "Thank you for your comment, XXX. I understand your frustration. We will take your concern into consideration. XXX" Paraphrased response: The concern for water cost if hooked up to city water is understood.
Community Comment Set 2			
1	email	Water restrictions in effect every year. Oak Harbor has a historic issue with water supply to Oak Harbor. The current connection to the city of Anacortes water supply from the Skagit river is problematic in that any natural disaster may very well leave Oak Harbor in a water supply emergency as they do not have enough potable water to supply the city without this pipeline. Also the 2013 State Supreme Court instream flow rules leaves in doubt whether the current water allocation can be increased and there is a possibility that the water usage allocation that the city of Anacortes has who supplies our water can be decreased in future court decisions. Every year in late summer and fall there are water restrictions placed on the Oak Harbor water supply due to low instream flow in the Skagit river. This is at a time that our water usage is at its maximum. We have farm animals, pasture and over 20 fruit and nut trees that if they are to produce any fruit need watered every year during the time Oak Harbor has its water restrictions.	While there is certainly always potential for any water supply to become adversely impacted, and for usage curtailments and rationing to become necessary, according to the City of Oak Harbor the reality is that maintaining adequate and resilient water supplies for communities is always a priority, both for the City of Oak Harbor and the State of Washington. The City of Oak Harbor indicated that it is highly unlikely that the water right would be reduced.

Community Comments			
Comment Number	**Transmitted**	**Comment**	**Comment Response (includes exact response and a paraphrased response)**
2	email	We currently have a water right claim that allows us 5000 acre feet per year, approximately 3571 gallons per day. During the Oak Harbor water shortages, the city may place limits on usage of city water (OHMC Chapter 13.10) with appropriate fines for using too much water. The city of Oak Harbor has water usage goals of 64 gallons of water per day per person during times of no water emergencies or restrictions, this is a far cry from the 3571 gallons per day we are currently allows to use. This is a drastic decrease in allowed water use and very restrictive for those not in a residential setting as we are with farm animals, pasture and fruit trees to water. Even if the city says we can keep and use our well with appropriate backflow prevention nothing the city says can be trusted. I can see a scenario that just a complaint to the city of us using well water during times of water restrictions may be enough for them to curtail our well usage.	According to communications with the City of Oak Harbor, they do not have a right to condemn if you are connected to city water service. They will require cross connection controls to keep the well system separated from the City potable water system. In addition, City of Oak Harbor indicated that they have not taken a water right due to connection to the water supply system but could be negotiated as a condition of service. Note that there appears to be some inconsistency in the water right values and volumes described, as 3,571 gallons per day equates to 4, and not 5,000, acre feet per year (3,571 gallons per day x 365 days per year / 7.4805 gallons per cubic foot / 43,560 square feet per acre = 4 acre feet per year). The 64 gallons per person per day Oak Harbor goal is an overall planning goal and target for average usage as a means to promote efficient and responsible use of water, and appropriate stewardship of water supply resources relative to other water needs, and is not a limit or restriction to individual use. There have been restrictions in previous years which reached Level 1 which is a voluntary water reduction of water use and reduction of irrigation use was implemented. For supply alternatives that involve connecting affected properties into the Oak Harbor municipal water supply system, the Navy can continue to explore the potential for owners of private wells impacted by groundwater contamination to be allowed to continue using their wells onsite for nonpotable uses as desired. This has been the approach for private properties being connected by the Navy into the Town of Coupeville municipal water supply system. Property owners there are being allowed to retain and continue using their wells onsite for their nonpotable needs, while also receiving municipal water supply to meet potable water needs. If a similar approach can be accommodated and agreed to by involved parties in and around Oak Harbor, the Navy can explore and will consider reasonable approaches to establish a legal agreement framework documenting that property owners would retain the right to continue using their private wells onsite for nonpotable uses as desired.

Community Comments			
Comment Number	**Transmitted**	**Comment**	**Comment Response (includes exact response and a paraphrased response)**
3	email	Safety of existing water for other uses. Even if we are allowed to connect to the city water supply and keep our existing well the question comes up as to how safe is it to use our existing well for any purposes? We do have animals that we raise and slaughter for food and so far I have seen no studies that show any pro or con concerning this. We do suspect that the contaminated water may have had some influence on the problems we have had with cancer and our canines with the last 4 dogs we have had while living here have died at a very young age from various forms of cancer. Before moving back here where I have lived most of my life (since 1 years old) we have never had a dog die of cancer but this location sure has been a cancer hot spot for us and our pets with the last 4 dogs...	It is unfortunate that your family has observed an increase in cancer in your canines. Unfortunately, it is not possible to confirm the true cause of the cancers that your animals have endured. There are many types of cancers and many causes of cancers. Adequate tools are not available to perform an after-the-fact assessment of contributing factors to the cancer with any reliable degree of certainty. The state-of-the-science for evaluating cancer risk in canines or other animals from exposure to PFAS through drinking water is not sufficiently developed at this time. Similarly, impacts from specific food crops and to livestock exposed to PFAS are still being researched. The EPA has issued drinking water health advisories for human exposure to PFOS and PFOA in drinking water, addressing drinking water is currently the Navy's primary focus. As more toxicology studies are conducted the Navy will continue to evaluate these chemicals through the CERCLA process.
4	email	Your chosen option not viable for our uses. While the option to connect to the city of Oak Harbor's water system may be a viable answer for most residential uses we certainly do not have usual residential uses on our property. We have grandfathered rights to keep and maintain farm animals and have close to 3 acres and much of it needs irrigated either for our fruit and nut trees or pasture for our sheep or other farm animals. Connecting to the city water supply without a firm commitment from the city to allow us to keep and use our existing well is a scary option for us. I would hate to see us lose our fruit and nut trees and our animals as this is a major part of our lives. Without a continuous and reliable water supply our property is nothing to us.	It is recognized that water needs at this property is greater than typical residential property use due to the livestock and pasture.

Community Comments			
Comment Number	**Transmitted**	**Comment**	**Comment Response (includes exact response and a paraphrased response)**
5	email	In conclusion. Thank you for all the hard work you and your team have put into this. Your efforts certainly undermine the claims that the Navy has dropped the ball on this issue. While we have suffered some minor hardships your effort to help has certainly been 100% and I and my wife, and our animals thank you for that. As for the solution that you have decided on as outlined above this appears to be a non-workable solution for our problem. We would much rather see a new well dug or as a second option GAC whole house filtering even though this still leaves the question concerning the farm animals and irrigation as outstanding. Using GAC filtered water for irrigation is a total waste of resources and filtering media so maybe a combination of GAC filtering and straight well water for irrigation would be acceptable. The city of Oak Harbor option is just fraught with questions and tainted by the city of Oak Harbors practice of being an untrustworthy partner in anything…	The concern that the proposed alternative is a non-workable solution is noted.
Community Comment Set 3:			
1	email to PAO	NAS Whidbey pumps PFAS laden stormwater into Dugualla Bay. Tidal flows carry this polluted storm water within 300 ft of my private well intake. Polluted storm water effects fisheries and crabs in Skagit Bay upon which I feed. I would like for the Navy to test my well water for PFAS content. I would like for the Navy to test fisheries and crustaceans in Skagit Bay for PFAS contamination. I would like for the Navy to cease and desist pumping polluted storm water into the Dugualla Bay	Regarding sampling the well: Your home is outside our sampling areas near Ault Field, so we cannot sample your well. Regarding the other concerns: The Navy is addressing drinking water exposure during this removal action. Following the CERCLA process that Navy will be conducting additional investigations to address other exposure pathways consistent with risk assessment guidance.