



## MEETING SUMMARY

# Restoration Advisory Board Meeting Minutes, Naval Research Laboratory–Chesapeake Bay Detachment, Chesapeake Beach, Maryland

**MEETING DATE:** November 10, 2021

**LOCATION:** Virtual meeting conducted via Cisco WebEx platform

*Note: This meeting summary is based on informal notes taken at the meeting. It is not intended as a verbatim transcript. Rather, it is intended to summarize the overall discussions.*

## Welcome and Introductions

Ryan Mayer from Naval Facilities Engineering Systems Command (NAVFAC)– Washington introduced himself as the Department of the Navy's (Navy's) Remedial Project Manager for Naval Research Laboratory– Chesapeake Bay Detachment (NRL-CBD). He welcomed the Restoration Advisory Board (RAB) members and the public to the third public RAB meeting for NRL-CBD.

Ryan informed the attendees that the RAB meeting presentation was forwarded to the RAB members via email, and were posted to the NRL-CBD website (under the Community Outreach tab at [https://www.navfac.navy.mil/products\\_and\\_services/ev/products\\_and\\_services/env\\_restoration/installation\\_map/navfac\\_atlantic/washington/nrl\\_cbd/outreach.html](https://www.navfac.navy.mil/products_and_services/ev/products_and_services/env_restoration/installation_map/navfac_atlantic/washington/nrl_cbd/outreach.html)) in advance of the meeting.

Ryan then held a moment of silence in recognition of Veteran's Day on the following day.

Following the welcome, Ryan reviewed the meeting agenda (**Attachment 1**). The NRL-CBD Partnering Team was then introduced: Regina Adams (NAVFAC Washington Public Affairs), Scott Lonesome (NRL), Peggy Williams (Maryland Department of the Environment [MDE]), Ira May (MDE), Mark Mank (MDE), Dr. Karl Markiewicz (Agency for Toxic Substances and Disease Registry [ATSDR]), Andy Bogdanski (Jacobs Engineering Group, Inc. [Jacobs]<sup>1</sup>, Navy support contractor), Amy Brand (Jacobs), Laura Lampshire (Jacobs), and Leticia Solaun (Jacobs). A full list of attendees is provided in **Table 1**.

Ryan then introduced the RAB Community Co-Chair, Mr. Kevin Britt, and stated that Kevin was elected by the RAB members during the RAB training session in December 2020. Kevin informed the attendees that he worked with Ryan to develop the meeting agenda and encouraged the participants to provide feedback and ask questions.

Following introductions, the meeting proceeded following the agenda and the PowerPoint presentation (**Attachment 2**).

## Virtual Meeting Logistics

Amy Brand, a senior community involvement specialist from Jacobs, reviewed the WebEx meeting technology basics with the attendees, and requested that public attendees keep their videos off and microphones muted (unless speaking) to conserve streaming bandwidth. Amy informed the meeting attendees that they can click on the "hand mark" if they would like to be called on to ask a question.

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<sup>1</sup> The Navy support contractor, referred to in prior RAB meeting minutes as CH2M HILL, Inc., was acquired by Jacobs Engineering, Inc. in 2017 and is generally referred to as Jacobs.

Alternatively, questions can be typed and submitted to “all co-hosts”. Amy stated that for any issues encountered during the presentation, Leticia Solaun from Jacobs was available for assistance.

## Review and Approve the May 2021 RAB Training Meeting Minutes

The December 2020 RAB training session meeting minutes were distributed to the RAB members via email in May 2021; no comments were submitted at that time. Amy Brand stated that the meeting was held to provide RAB members with an overview of the Comprehensive Environmental Response, Compensation, and Liability Act process, approve the RAB charter, and to elect the RAB Co-Chair (Kevin Britt). The few action items identified during the meeting were addressed and Amy asked if any of the RAB members had any further comments on the minutes; no comments were received or noted. Amy informed the RAB members that if for any reason they could not submit their comments during the meeting, they could follow up with Ryan Mayer and Kevin Britt, whose email addresses were provided at the end of the meeting PowerPoint presentation (**Attachment 2**).

## Restoration Advisory Board Communication and Questions

Ryan Mayer indicated that many questions and comments were received by the Navy following the May 2021 RAB meeting. He thanked those who provided questions and comments and noted that the Navy reviews all of this correspondence and values this input to the Environmental Restoration Program. Multiple factors (for example, preparation of ongoing reports and current fieldwork) have affected the response times for the questions received and NAVFAC is working on an internal process to address questions in a timelier manner. He then introduced the NAVFAC Public Affairs Officer, Regina Adams, and Regina reviewed the process for addressing public questions and comments.

Regina stated that RAB meetings are the best place to ask questions so that everyone can hear the response. RAB meetings are designed to provide the community with information about the Navy’s environmental restoration activities, and have representatives from the Navy, MDE, regulators, as well as other officials from various organizations (that is, ATSDR) who can answer specific questions. Information can also be obtained from the Navy’s Environmental Restoration Program website ([https://www.navfac.navy.mil/products\\_and\\_services/ev/products\\_and\\_services/env\\_restoration.html](https://www.navfac.navy.mil/products_and_services/ev/products_and_services/env_restoration.html)), and the per- and polyfluoroalkyl substances (PFAS) reading room ([https://www.navfac.navy.mil/products\\_and\\_services/ev/products\\_and\\_services/env\\_restoration/pfas\\_reading\\_room.html](https://www.navfac.navy.mil/products_and_services/ev/products_and_services/env_restoration/pfas_reading_room.html)). The PFAS reading room contains reports from Navy sites across the country and information can be searched by individual states; the NRL-CBD PFAS laboratory results are located in the PFAS reading room.

Questions outside the RAB meeting can be emailed to Regina Adams at [regina.f.adams.civ@us.navy.mil](mailto:regina.f.adams.civ@us.navy.mil) and inquiries will be acknowledged within 2 working days of receipt. Based on the nature of the inquiry, some questions may require a Freedom of Information Act request that can take up to 4 to 6 weeks for a response.

Final reports are maintained on the Navy’s NRL-CBD Environmental Restoration website (<https://go.usa.gov/xQFuV>), which also contains the Administrative Record.

## Questions and Comments from Restoration Advisory Board Members

Amy Brand then opened the meeting up to questions/comments from RAB members regarding the RAB communication process; no questions/comments were received.

### Site 10 Site Inspection Questions

Ryan Mayer and Andy Bogdanski then presented information related to questions received after the Site 10 Site Inspection (SI) presented during the May 2021 RAB meeting. Ryan began with an overview of the Site 10 conceptual site model (CSM), followed by reporting of the analytical data, human health screening levels, and next steps in the investigation process. As presented in **Attachment 2**, Site 10 has been in use since approximately 1968 to test fire extinguishing agents on fires started with various fuel sources, including gasoline, diesel, and jet propulsion fuel. Site 10 has multiple structures and the site infrastructure and conveyances have changed over time. From 1968 to 1985, effluent was drained from the former fire testing pad to an open, gravel-lined collection pit. In 1986, construction began of two plastic-lined collection pits within the footprint of the gravel-lined collection pit. Effluent was drained from the plastic-lined collection pits where it was pumped via vacuum truck for offsite disposal. These pits were in use until 1988, when a major infrastructure upgrade occurred that included a new concrete fire testing pad, a concrete collection pit, a pump house, and above ground storage tanks (ASTs). In addition, drain pipes were installed at Buildings 313, 314, and the Fire 1 Test Chamber to convey effluent or wastewater to the concrete collection pit. The pump house then transferred effluent from the concrete collection pit to the two ASTs, that were subsequently pumped out via a vacuum truck for offsite disposal. The ASTs have since been demolished and currently all fire test effluent is contained within the fire test pad or fixed drainage troughs located at the outer perimeter of the fire test pad. The effluent is now pumped to a storage container; waste disposal is conducted in compliance with applicable Federal, State, and local regulations.

Andy then discussed the geology and CSM and began by reviewing the Site 10 hydrogeological conceptual model. The surface geology consists of upland deposits (clay, silts, and silty sands; 20-40 feet thick), with the surficial aquifer (2-20 feet thick) at the bottom of the upland deposits. The Calvert Formation (clay; 65-115 feet thick) underlies the overburden and acts as a confining unit. The Piney Point Formation underlies the Calvert Formation and consists of a green to gray sand where the Piney Point aquifer resides. The Piney Point aquifer is where most of the residential water supply wells are installed. The next deeper aquifer, the Aquia aquifer, is where commercial water supply wells are typically installed (for example, the Town of Chesapeake Beach and on-Base production wells).

Shallow groundwater within the surficial aquifer flows to the north-northeast on the north side of the groundwater divide (in vicinity of Navy Court), and to the south-southeast on the south side of the groundwater divide (in vicinity of Navy Court).

The Site 10 PFAS migration pathways include:

- Direct release of PFAS to surface and/or subsurface soils
- Leaching of PFAS in soil to groundwater and transport of PFAS via advection in groundwater
- Direct release of PFAS to drainage ditches or drainage of groundwater containing PFAS to surface water and sediment
- Overland flow/runoff containing PFAS to surface soil, surface water, and sediment

Andy then reviewed the Site 10 SI potential receptors and exposure pathways. Receptors include those who can be exposed to contaminants and exposure pathways are ways receptors can come into contact

with contaminants through various environmental media. He emphasized that there needs to be a complete exposure pathway in order for a receptor to be exposed to contaminants. For the SI, the focus is primarily on human health receptors and pathways; however, as we move into the Remedial Investigation (RI), we will include additional receptors as new screening criteria become available.

Receptors fall into groups (for example, residents, workers, and trespassers/visitors) and Andy reviewed the various exposure pathways associated with each of these groups. Ryan Mayer noted that all the receptors and exposure pathways noted are being evaluated now under the SI.

Andy then reviewed the PFAS being analyzed under the SI. During the SI, 18 compounds were analyzed under the United States Environmental Protection Agency (USEPA) Method 537.1, of which three (perfluorooctane sulfonate [PFOS], perfluorooctanoic acid [PFOA], and perfluorobutane sulfonate [PFBS]) have risk screening criteria that can be used for evaluation. The remaining 15 PFAS compounds are retained in the SI for comparison if and when new screening criteria becomes available.

The analytical reporting units were then reviewed. Solid samples (soil and sediment) are reported in nanograms per gram which is equivalent to parts per billion (ppb) and aqueous samples (groundwater and surface water) are reported in nanograms per liter (ng/L) which is equivalent to parts per trillion (ppt). There is order of magnitude difference between these reporting units and one needs to pay attention to these units when reviewing the data.

Andy then reviewed the human health screening levels. Human health screening levels for soil and groundwater are available for three PFAS compounds (PFOS, PFOA, and PFBS). Screening levels for sediment and surface water are based on the respective soil or groundwater USEPA regional screening level (RSL) times a multiplier of 10. Ryan informed the attendees that all of these screening levels are being used in the SI; that the Navy has been posting the PFAS lab analytical data to the Navy's online PFAS reading room; and that the NRL-CBD SI results were recently posted to the reading room ([https://www.navfac.navy.mil/products\\_and\\_services/ev/products\\_and\\_services/env\\_restoration/pfas\\_reading\\_room.html](https://www.navfac.navy.mil/products_and_services/ev/products_and_services/env_restoration/pfas_reading_room.html)).

Ryan said that the next phase for Site 10 is the RI. The RI will focus on nature and extent, fate and transport, and human health and ecological risk assessments. Site 10 is also undergoing an interim measures evaluation of possible treatment technologies for surface water.

## Questions and Comments from Restoration Advisory Board Members

Amy Brand then transitioned into a review of the RAB member questions that were received in advance of the meeting and stated that questions from meeting attendees would be taken after the presentations and also toward the end of the meeting.

Mark Mank then asked to speak first. MDE has been investigating PFAS in environmental media for the past 18 months, including in fish. He encouraged the attendees to check the MDE website, which includes data from fish collected in Herring Bay area as well as other parts of the Chesapeake Bay. Three different species of fish were collected: white perch, silver perch, and spot. He explained that PFOS is bioaccumulative and that all PFOS concentrations from the fish samples were less than 10 ppb, below the screening criteria for fish consumption. He encouraged attendees to review the MDE website and send inquiries to MDE (<https://mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx>).

Amy then reviewed the RAB member questions submitted before the meeting; these questions are included in **Attachment 3** along with prepared responses, but were condensed for discussion in the meeting.

- In reference to Slide 20, Kevin Britt asked why current off-base residents are not included as receptors for the exposure pathways listed for on-base residents (groundwater as potable water, dermal contact with surface soil or subsurface soil, and incidental ingestion of surface soil,

subsurface soil, sediment and/or surface water). Ryan Mayer replied that during the SI, the focus is evaluating on-base receptors before looking at off-base receptors. Since NRL-CBD does not have current residents, a hypothetical future resident scenario was used. Prior to the SI data collection, not enough data had been collected to evaluate the off-base receptor and exposure scenarios. As the site moves into the RI phase, the evaluation of off-base receptors (residents) and exposure pathways will be assessed. Additionally, there may not be complete exposure pathways. For example, the data does not indicate that affected soil is migrating offsite and therefore there isn't a complete exposure pathway for an off-base resident to come into contact with soils. However, an exposure pathway for sediment and surface water potentially exists for off-base receptors (residents). Ryan emphasized that while off-base residents could be exposed to surface water and sediment, their exposure to these media would not be the same as what is assumed under a residential use scenario (that is, chronic, lifetime, or 365 days per year). Rather, it would be a reduced exposure frequency/duration more akin to what is assumed under the trespasser/visitor scenario. Overall, during the SI, as a first step to understanding human health risks, a risk screening, which assumes a conservative residential exposure (chronic lifetime) to all media, was conducted to identify constituents of potential concern. During the RI, a more in-depth risk assessment will be completed which evaluates risk to receptors groups under various exposure pathways.

- In reference to Slide 25, Kevin asked what steps (research, fieldwork, and risk assessments) are included in the RI and what is the expected timeline? Ryan replied that the RI was recently initiated in September, and that the Navy's project team is starting to prepare for the scoping of the RI and will use the information gathered from the SI Reports. Scoping of the RI will involve meetings and discussions with the regulator community and preparing a sampling work plan using the latest USEPA guidance of approved methods and Navy policy. The Navy will further evaluate the CSM and provide updates where needed. The RI will move further out from the SI and look at the nature and extent of the PFAS in the media being investigated. Risk assessments will also be performed at this stage to evaluate human and ecological risks where feasible; however, with limited analytical methods and limited toxicity information available, this will make the risk assessments challenging.
- Kevin also asked for a summary of the interim measure investigation (objectives, sample locations, sample results, and timeline). Ryan replied that the Navy has started an Interim Measure evaluation of surface water concentrations on-base. The objective of the Interim Measure evaluation is to find out where these elevated PFAS concentrations are coming from; what should be used as screening levels; and performance goals for the technology that will be applied to ultimately to reduce the surface water levels. The Navy sampled another 17 surface locations on-base in early October 2021 for PFAS to help determine where these elevated PFAS concentrations are coming from, including the north and southeastern streams and in the vicinity of the base wastewater treatment plant. The Navy does not currently have a timeline for the Interim Measures since this is pending the evaluation of the recent surface water analytical results. The site is still at the beginning investigation stages; however, the Navy will report back and provide updates.
- David Harris stated that based on a letter he received, the surface water screening levels for PFOA and PFOS are 400 ng/L. Since the PFAS levels exceed the screening levels, he asked when is the Navy going to stop discharging PFAS-laden water offsite and what is the Navy's plan to treat surface water? Ryan responded that this goes back to the prior question of Interim Measures. The Navy has already conducted another round of sampling in the northern stream and the southeastern stream, along with collection of several samples around the wastewater treatment plant. Part of the Navy's evaluation of Interim Measures is knowing where the PFAS concentrations are coming from and how best to address them. Additionally, some PFAS treatment systems require other sampling parameters to help evaluate the technologies; the Navy also conducted some of this sampling as well. The Navy knows there are issues here and is putting together a plan to address it.

- David Harris also submitted a question asking when the Navy will test stream water off-base, especially when residents have offered access. He indicated that there is a discrepancy in the data provided by the Navy and asked why the concentrations in the southern stream down-gradient of Bayside Road are so much higher? Ryan responded that the Navy will look at any offsite sampling as part of the scoping of the RI, including property along the Navy fence lines. The SI phase was the first time the Navy had sampled for anything else besides drinking water and groundwater. After a review of these results, the Navy initiated another round of surface water sampling in very specific locations to help understand the concentrations David was referring too, including around the wastewater treatment plant.
- John Bacon requested the date and time that the Navy or MDE will be sampling the outfall of the two streams from NRL-CBD. He indicated that residents would like to be there and get a sample from the same bucket to send to an independent lab for analysis. Ryan responded that the Navy has received John's request for what appears to be split-sampling of results. The Navy is looking into this request with personnel in the Navy's environmental program and will provide a response within the next couple of days. The Navy may need to obtain more information (sampling methodology, quality control, and other sampling specifics) from John in order to make a decision on the request. Ryan confirmed that he has John's contact information and will follow up.

Following discussion of the questions submitted in advance, Amy opened the meeting to additional questions from the RAB members.

- David Harris asked about sampling in the northeast stream since PFAS concentrations in surface water from this stream are over 10 times the screening levels of 400 ng/L. Shouldn't this water be treated now? Ryan replied that surface water sampling was recently conducted in the northern and southern streams, as well as in the vicinity of the wastewater treatment plant, to evaluate the elevated PFAS concentrations in surface water. Mark Mark then stated that 400 ng/L is the screening level and that the actual concentrations that you may clean up may be significantly higher or lower based upon the risk assessment outcomes. The 400 ng/L values means they are obligated to evaluate, in a risk assessment, the human health only with direct contact; an ecological number could be much lower. The risk assessments will identify where you take a human health impact and ecological impact, respectively.
- David Harris then stated that he disagreed with the Navy's potential receptors and exposure pathways being onsite only. The PFAS has spread offsite so why delay offsite evaluation? Ryan replied that when the Navy first conducts an SI, it is the first screening level assessment of the concentrations in media within the installation fence line. Once we enter the RI phase, we will look at the nature and extent of PFAS that may be beyond the fence line and look at the migration pathways and receptors at that point.
- William Harris asked whether the Navy will take into consideration that there are neighbors right outside the fence line that have lived here their entire lives? Assuming exposure was limited and temporary may not be appropriate. Ryan replied that the very first priority in 2018 was determining if anyone in the community was being exposed to PFAS in drinking water. In more than 40 drinking water wells sampled, there were no PFAS concentrations above the screening levels; most of the PFAS concentrations were non-detect. Similarly, during the first round of on-base groundwater sampling in the Piney Point aquifer, PFAS concentrations were virtually non-detect and during the second sampling round, low concentrations of PFAS were below the USEPA health advisory levels.

## Overview of PFAS Human Health Effects

Dr. Karl Markiewicz, a toxicologist with the ATSDR then provided a high-level review of PFAS human health effects. He indicated that he has previously been involved here and was present at the 2018 public meeting at Chesapeake Beach.

The ATSDR is part of the Centers for Disease Control (CDC), a Federal public health agency, ATSDR was created to evaluate public or community exposures to hazardous chemicals that could be migrating from hazardous waste sites. Dr. Markiewicz stated that PFAS have been around since the 1950s, are in many products, and have been measured everywhere. The CDC has a biomonitoring project and 99 percent of all people in the study, both adults and children, have PFAS in their bodies. As a class of chemicals, PFAS is a big class, and as a toxicologist, Dr. Markiewicz does not have data for a vast majority of these chemicals. PFAS stay in the human body a long time (months to years), are very persistent in the body, and do not break down. Blood testing is available, but there are a limited number of commercial labs that can conduct PFAS analysis on a commercial basis. The PFAS blood test is generally several hundred dollars and insurance does not yet pay for this analysis.

Dr. Markiewicz then described how people are exposed to PFAS. The number one exposure pathway is ingestion, and drinking water is the primary exposure route. In terms of health impacts, exposure to high levels of certain PFAS chemicals may lead to increased cholesterol levels, changes in liver enzymes, decreases in infant birth weight, decreased vaccine response in children, increased high blood pressure or pre-eclampsia in pregnant women, and increased risk of kidney or testicular cancer. No medical interventions will remove PFAS from the body.

The USEPA has issued lifetime health advisories (LHAs) and RSLs for protecting sensitive populations and the general public against harmful health effects. ATSDR has established minimal risk level (MRLs). He described MRLs and RSLs as the point at which you make a decision. ATSDR MRLs (PFOA, PFOS, and several other PFAS chemicals) are advisory levels only; they are not enforceable.

Dr. Markiewicz reiterated four points regarding PFAS:

- PFAS are everywhere – they are ubiquitous and persistent
- There are many different health end points for both animals and humans
- Four PFAS have intermediate MRLs (PFOA, PFOS, perfluorohexane sulfonate [PFHxS], and perfluorononanoic acid [PFNA])
- ATSDR has many PFAS resources available to the public – just search for “ATSDR and PFAS” online (<https://www.atsdr.cdc.gov/pfas/resources/mrl-pfas.html>)

## Questions and Comments

Amy Brand then opened the meeting to questions from RAB members regarding Dr. Markiewicz’s “Overview of PFAS Human Health Effects” presentation.

Ryan Mayer thanked Dr. Markiewicz and informed the attendees that when the Navy began sampling for PFAS on the base, they only sampled for three PFAS, and then the Navy sampled for 14 PFAS as the analytical method changed. The analytical method now includes 18 PFAS and Ryan suspects there will be more coming along. However, there are only toxicity values for a few PFAS constituents and as we continue to expand what is being sampled, the Navy does not have much in terms of screening values or toxicity information to compare to; this is a challenge for calculating human health and ecological risks. Dr. Markiewicz replied that ATSDR uses MRLs as screening values first, but if the USEPA or a State has one for a PFAS compound that does not have an MRL, then ATSDR will use the USEPA or state screening value.



David Harris then asked, with regard to human health risk and all the different cancers he reads about online – we don't know when the PFAS showed up in his drinking water. If checking off the cancers and someone has a well that is contaminated, would you call this a coincidence? Dr. Markiewicz replied that there are many reasons, genetics being a part, this does not mean the cancer is related to an environmental chemical exposure. If looking at cancers, specifically the study that was conducted with the workers and residents in West Virginia, it was not a definitive where you said this wasn't causation – they never came to the conclusion that because they were exposed to PFAS they had kidney cancer or testicular cancer because the evidence was not strong enough. The agencies, ATSDR and the USEPA, look at whether there is exposure; if so, is there is a completed exposure pathway; and what would be the dose – how much did somebody consume over a certain period of time?

Ryan added that in the Navy's offsite drinking water designated areas where drinking water was sampled for PFAS compounds, the Navy sampled the residents' wells – either shallow or deep well (since the Navy checked with the county and could not determine in all instances which wells are in the Piney Point aquifer) – and no PFAS concentrations were close to the USEPA (Lifetime Health Advisory (LHA)).

Amy then asked if there were any additional questions from meeting attendees who are not RAB members; none were noted.

Dr. Markiewicz then stated that if any attendees had any health questions that were not addressed, they could email him at [kvm4@cdc.gov](mailto:kvm4@cdc.gov).

## Future Meeting Planning and Adjournment

Ryan Mayer informed the RAB meeting attendees that the next RAB meeting is planned for May 2022 (date to be determined). The Navy will email the draft meeting minutes from the December 2021 meeting to the RAB members in 4 to 5 weeks – around mid-December. RAB members will be given 2 weeks to review and comment, and once the Navy incorporates the comments, the Draft Final meeting minutes will be posted to the NRL-CBD website (anticipated in early to mid-January 2022).

Ryan then turned the meeting over to Kevin Britt who thanked all for coming. If anyone needs to contact him, has questions/comments, or anything they would like to discuss, he stated that they can email him at [kev3125@yahoo.com](mailto:kev3125@yahoo.com). Kevin then had one question to add – what are the ATSDR MRLs and how do they compare to EPA RSLs? Dr. Markiewicz replied that they are screening levels for drinking water; specifically, the ATSDR MRLs are 78 ppt (ng/L) (adult)/21 ppt (child) for PFOA; 52 ppt (adult)/14 ppt (child) for PFOS; 517 ppt (adult)/140 ppt (child) for PFHxS; and 78 ppt (adult)/ 21 ppt (child) for PFNA. He referenced ATSDR's PFAS website at <https://www.atsdr.cdc.gov/pfas/resources/mrl-pfas.html>.

Ryan then asked Dr. Markiewicz if USEPA uses the MRLs when developing their LHAs. Dr. Markiewicz replied that USEPA will derive a reference dose, which is very similar to the ATSDR MRL. However, the USEPA's criteria is that if they have already have a reference dose, they will use that; if they don't have or they think the MRL supersedes or is better than their reference dose, they will use the MRL.

Ryan then informed the attendees that since the last RAB meeting, the Navy issued new email addresses and noted that these are included in the presentation slide.

Ryan then reviewed the various website links where additional information can be located. These are included in the meeting presentation (**Attachment 2**) and include information about RABs, Navy's overall Environmental Restoration Program link and specific link for NRL-CBD, MDE and ATSDR PFAS links.

Ryan concluded the RAB meeting at 6:44 p.m.



**Table 1. List of Attendees<sup>2</sup>**

*Restoration Advisory Board Meeting November 10, 2021*

<b>Name</b>	<b>Affiliation</b>
Ryan Mayer	NAVFAC Washington; Co-Chair
Kevin Britt	RAB member; Community Co-Chair
Mark Fisher	RAB member
Will Hager	RAB member
David Harris, II	RAB member
Lawrence Jaworski	RAB member
Regina Adams	NAVFAC Washington
Zoe Johnson	Navy
Anna Lesichar	Navy
Jenny Valentine	Navy
Scott Lonesome	NRL
Barbara Krupiarz	MDE
Mark Mank	MDE
Ira May	MDE
Peggy Williams	MDE
Dr Karl Markiewicz	ATSDR
Amy Brand	Jacobs
Andy Bogdanski	Jacobs
Laura Lampshire	Jacobs
Leticia Solaun	Jacobs
John Bacon	Guest
David Harris	Guest
David Harris, III	Guest
William Harris	Guest
Jim Levin	Guest

<sup>2</sup> Up to four additional unidentified attendees may have also participated by phone.



Attachment 1  
Restoration Advisory Board Agenda,  
November 10, 2021



## **Restoration Advisory Board (RAB) Meeting Naval Research Laboratory – Chesapeake Bay Detachment**

**November 10, 2021, 5:00-7:00 pm  
Virtual Meeting**

Meeting Facilitator: Amy Brand - Jacobs

<b>Meeting Agenda</b>		
<b>Time</b>	<b>Topic</b>	<b>Presenter</b>
5:00-5:10 pm	Welcome and Introductions	Ryan Mayer and Kevin Britt
5:10-5:15 pm	Virtual Meeting Logistics: review ground rules and meeting logistics	Amy Brand
5:15-5:20 pm	Review and Approve May 2021 RAB Meeting Minutes	Amy Brand
5:20-5:30 pm	RAB Communication and Questions	Ryan Mayer and Regina Adams
5:30-5:40 pm	Questions & Comments from RAB Members	RAB Members
5:40-5:55 pm	Site 10 Site Inspection Questions	Ryan Mayer and Andy Bogdanski
5:55-6:10 pm	Questions & Comments from RAB Members	RAB Members
6:10-6:25 pm	Overview of PFAS Human Health Effects	Dr. Karl Markiewicz/ATSDR
6:25-6:40 pm	Questions & Comments	RAB Members and Public Meeting Attendees
6:40-6:45 pm	Future Meeting Planning and Adjournment	Ryan Mayer

ATSDR – Agency for Toxic Substances and Disease Registry

Attachment 2  
Naval Research Laboratory –  
Chesapeake Bay Detachment  
Restoration Advisory Board Meeting  
Presentation, November 10, 2021

# **Naval Research Laboratory – Chesapeake Bay Detachment Restoration Advisory Board Meeting**

**November 10, 2021**

**5:00 - 6:45 p.m.**

# Agenda

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- Welcome and Introductions
- Virtual Meeting Logistics
- Review and Approve May 2021 Meeting Minutes
- RAB Communication and Questions
  - Questions & Comments from RAB Members
- Site 10 – Site Inspection Questions
  - Questions & Comments from RAB Members
- Overview of PFAS Human Health Effects
  - Questions & Comments from RAB Members and Public
- Future Meeting Planning and Adjournment

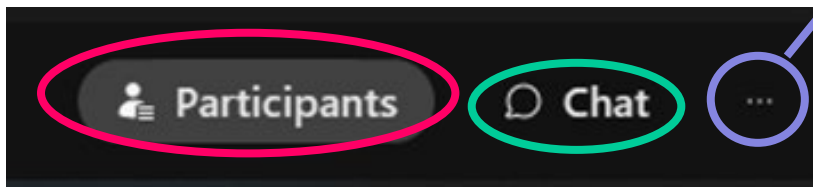
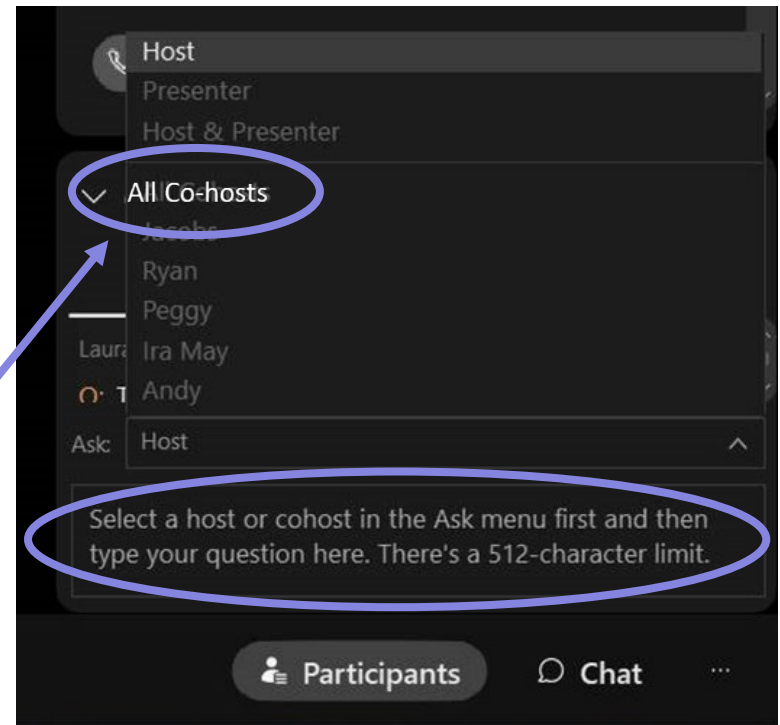
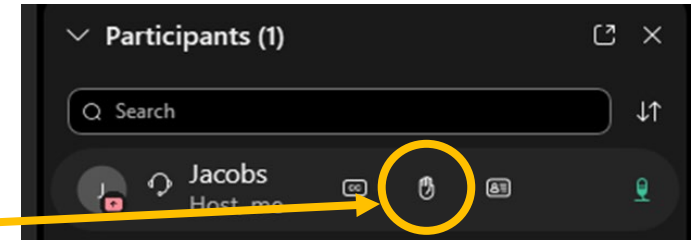


# Virtual Meeting Logistics

**Amy Brand - Jacobs**

# Webex Basics – Computer Access Participants

- Video – OFF except for slide presentation
- Open participants list
- To ask a question:
  1. Raise hand to be called on to speak
    - Scroll over your name in the participant list and click on hand symbol, then unmute yourself
  2. Type a question to “all co-hosts” in the Q&A panel
    - Click on 3 dots in lower right corner, choose Q&A
    - Select “all co-hosts” and type question
- Click Chat to send message to host for help
- Call/text 352-246-5246



# Webex Basics – Computer Access Participants

- To zoom in on a slide



# Webex Basics – Telephone Access Participants

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- Raise your hand to be called on to speak
  - Webex app: click 3 dots at the bottom, then click on hand symbol to raise hand; host will unmute you
  - Dial-in: dial \*3 to raise hand; host will unmute you
    - You will receive a prompt to dial \*6 on the phone to unmute yourself
- Trouble? Call or text 352-246-5246

# **Review and Approval of May 2021 RAB Meeting Minutes**

**Amy Brand - Jacobs**

# Previous Meeting Minutes (December 2020)

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- The Draft May 2021 RAB meeting minutes were distributed to the RAB via email on June 24, 2021 for review and comment
  - No comments were received.
- The Draft Final May 2021 RAB meeting minutes were posted to the NRL-CBD website in early July.
- Comments from RAB members?

# **RAB Communication and Questions**

**Ryan Mayer and Regina Adams  
- NAVFAC Washington**



# Communication and Questions

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- RAB Meetings are the best place to ask questions!
- Questions outside of the RAB meetings can be emailed to the Public Affairs Officer:  
Regina Adams - [regina.f.adams.civ@us.navy.mil](mailto:regina.f.adams.civ@us.navy.mil)
- PAO will acknowledge receipt of the inquiry within 2 working days of receiving the email.
  - If you haven't received an email acknowledging receipt, PAO may not have received your email.
- Some questions may require a Freedom of Information Act (FOIA) request. The PAO will review the inquiry and determine if it can be responded through the PAO, or if it will require a FOIA request. FOIA request instructions will be sent, as needed.
- Prior to sending in a question, information may already be available on the Navy's NRL-CBD Environmental Restoration website:

<https://go.usa.gov/xQFuV> (which also contains the Administrative Record)

# Questions and Comments

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- **Open to RAB Members for discussion of “RAB Communication and Questions” presentation.**
- Questions from the public should be sent to “all co-hosts” in the Q&A box, to be addressed at the end of the meeting (as time allows.)

# **Site 10 Site Inspection Questions**

**Ryan Mayer – NAVFAC Washington**

**Andy Bogdanski - Jacobs**

# Presentation Overview

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- Conceptual Site Model
  - Site History, Geology and Hydrogeology, Migration Pathways, Potential Receptors, and Exposure Routes
- Analytical Data
  - Compounds analyzed vs. evaluated
  - Reporting units
- Human Health Screening Levels
- Next Steps

# Site 10 – Location and Layout



# Site 10 – Site History

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- Site 10 has been used since approximately 1968.
- The site is used to test extinguishing agents on fires started with various fuel sources (gasoline, diesel, and jet-propulsion fuel).
- The site consists of multiple structures (buildings, test pads, collection pit, pump house, storage tanks) that are used in a variety of ways to support fire testing.

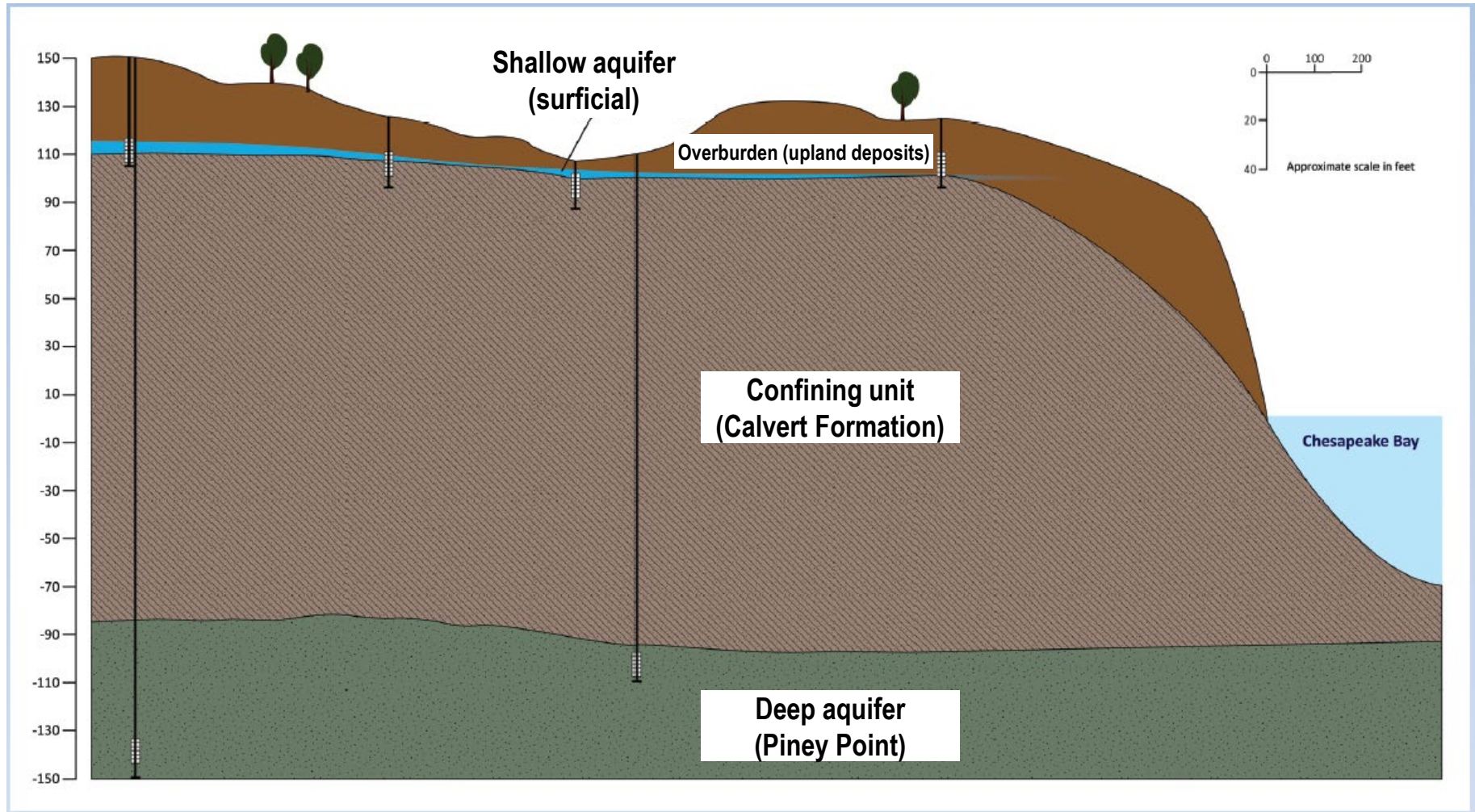
# Site 10 - Operational History

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- Site infrastructure and conveyances have changed over time and the effluent (wastewater) has historically been drained to various collection points:
  - From 1968 through 1985, effluent was drained from the former fire testing pad to open gravel-lined collection pit.
  - In 1986, construction began of two plastic-lined collection pits that were within the footprint of the gravel-lined collection pit. Effluent was drained to the plastic-lined pits, where it was pumped via vacuum truck for offsite disposal. These pits were in use until 1988.
  - In 1988, a major infrastructure upgrade occurred that included a new fire testing pad, a concrete collection pit, a pump house, and aboveground storage tanks (ASTs). Drains from Building 313, Building 314, and Fire 1 Test Chamber conveyed effluent via underground piping to the concrete collection pit. The pump house then transferred effluent from the concrete collection pit to two ASTs that were then pumped out via vacuum truck for offsite disposal.
  - Currently, all fire test effluent is contained within the fire test pan or fixed drainage troughs that are located at the outer perimeter of the fire-test areas. The effluent is then subsequently pumped directly to a storage container. Waste disposal is conducted in compliance with applicable Federal, State, and local regulations.



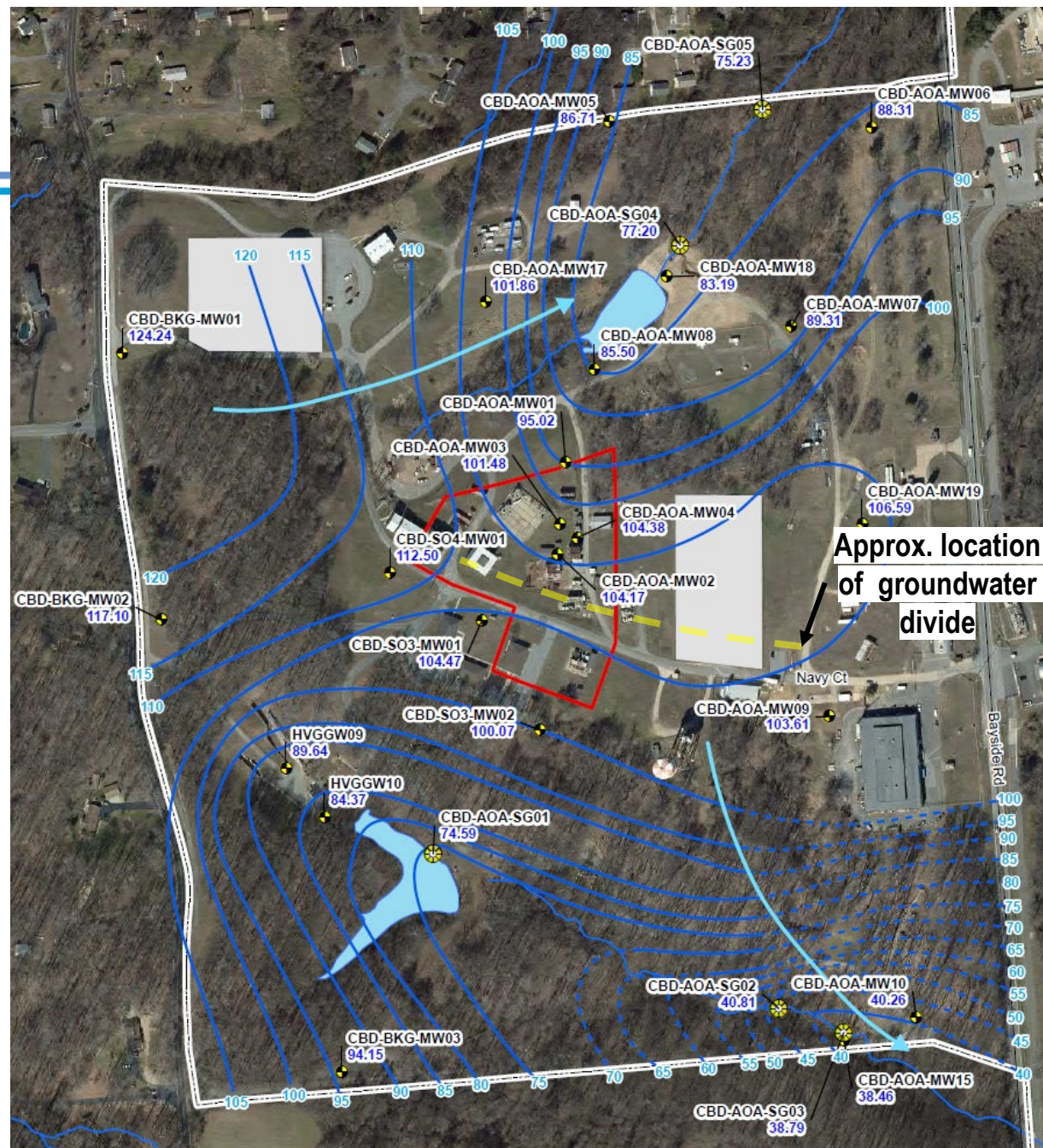
# Hydrogeological Conceptual Model





# Shallow Groundwater Flow Directions

- Groundwater divide occurs along Navy Ct.
  - North of Navy Ct. surficial groundwater flow is to the north-northeast
  - South of Navy Ct. groundwater flow is to the south-southeast
- Groundwater flow direction is calculated from groundwater elevations measured in monitoring wells



# Migration Pathways under the Site Inspection

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- Migration Pathways
  - Direct release of PFAS to surface and/or subsurface soils
  - Leaching of PFAS in soil to groundwater and transport of PFAS via advection in groundwater
  - Direct release of PFAS to drainage ditches or discharge of groundwater-containing PFAS to surface water and sediment
  - Overland flow/runoff containing PFAS to surface soil, surface water, and sediment

# Potential Receptors and Exposure Pathways under the Site Inspection

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## Human Health

- Residents
  - Future residents who use groundwater as a potable water source
  - Future residents through dermal contact with surface soil or subsurface soil
  - Future residents through incidental ingestion of surface soil, subsurface soil, sediment, and/or surface water
- Workers
  - Current and future industrial and construction workers through dermal contact with surface soil, subsurface soil, and/or sediment
  - Current and future industrial and construction workers through incidental ingestion of surface soil, subsurface soil, sediment, and/or surface water
- Trespassers/Visitors
  - Current and future trespassers and visitors through dermal contact with surface soil and/or sediment
  - Current and future trespassers and visitors through incidental ingestion of surface soil, sediment, and/or surface water

# What PFAS are analyzed?

- Navy guidance uses the list of compounds in the approved USEPA analytical [Method 537.1](#) currently 18 compounds

4,8-dioxa-3H-perfluorononanoic acid (ADONA)
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)
Hexafluoropropylene oxide dimer acid (HFPO-DA)
Perfluorooctane sulfonic acid (PFOS)
Perfluoroundecanoic Acid (PFUnA)
Perfluorohexanoic Acid (PFHxA)
Perfluorododecanoic Acid (PFDoA)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic Acid (PFDA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorobutanesulfonic acid (PFBS)
Perfluoroheptanoic acid (PFHpA)
Perfluorononanoic acid (PFNA)
Perfluorotetradecanoic Acid (PFTeDA)
Perfluorotridecanoic Acid (PFTrDA)



# Analytical Reporting Units

- Solid samples (soil, sediment) are typically reported as nanogram/gram (ng/g) = parts per billion (ppb)
- Aqueous samples (groundwater, surface water) are typically reported as nanogram/Liter (ng/L) = parts per trillion (ppt)

Parts per number units		Equivalent units mass per mass or mass per volume units				
Parts per thousand 1:1,000	‰	g/kg	mg/g	g/L	mg/mL	µg/µL
Parts per million 1:1,000,000	ppm	mg/kg	µg/g	mg/L	µg/mL	ng/µL
Parts per billion 1:1,000,000,000	ppb	µg/kg	ng/g	µg/L	ng/mL	pg/µL
Parts per trillion 1:1,000,000,000,000	ppt	ng/kg	pg/g	ng/L	pg/mL	fg/µL

# Human Health Screening Levels

- USEPA human health screening levels for soil and groundwater are available for 3 compounds
- Screening levels for sediment and surface water are based on the respective soil or groundwater USEPA regional screening level (RSL) times a multiplier of 10

Media	Soil	Sediment	Groundwater	Surface Water
Analyte	RSL Soil (HQ=0.1) (ng/g)	RSL Soil x 10 (HQ=0.1) (ng/g)	RSL Tap Water (HQ=0.1) (ng/L)	RSL Tap Water x 10 (HQ=0.1) (ng/L)
Perfluorooctanesulfonic acid (PFOS)	130	1,300	40	400
Perfluorooctanoic acid (PFOA)	130	1,300	40	400
Perfluorobutanesulfonic acid (PFBS)	1,900	19,000	600	6,000

Note: Screening levels for PFOA and PFOS are based on an HQ of 0.1 and were generated using the United States Environmental Protection Agency Regional Screening Level calculator as described in the Assistant Secretary of Defense September 15, 2021 memorandum, "Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program" (DoD, 2021).



# Next Steps

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- **Site Inspection (SI) Report**

- Currently in Navy review and pending comment resolution will be submitted to MDE for review and comment
- Final SI Report anticipated by end of calendar year 2021, pending regulatory reviews (Final Report placed in Administrative Record)

<https://go.usa.gov/xQFuw>

- PFAS were detected in environmental media, and above applicable screening levels, which will move the site to the next step of the CERCLA process
- Data associated with the SI effort will be available on the Navy's PFAS Reading Room website

[https://www.navfac.navy.mil/products\\_and\\_services/ev/products\\_and\\_services/env\\_restoration/pfas\\_reading\\_room.html](https://www.navfac.navy.mil/products_and_services/ev/products_and_services/env_restoration/pfas_reading_room.html)

# Next Steps

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- **Remedial Investigation (RI)**

- Funding awarded at end of September 2021 to start RI process
- RI will focus on nature and extent, fate and transport in environmental media, and human health and ecological risk assessments

- **Interim Measures**

- Additional surface water samples were collected in October 2021, to aid in determining source(s) of PFAS to surface water bodies and evaluating where interim measures may need to be implemented and possible treatment technologies

# Questions and Comments

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- **Open to RAB Members for discussion of “Site 10 Site Investigation” presentation.**
- Questions from the public should be sent to “all co-hosts” in the Q&A box, to be addressed at the end of the meeting (as time allows.)



# **Overview of PFAS Human Health Effects**

**Dr. Karl Markiewicz –  
Agency for Toxic Substances and  
Disease Registry (ATSDR)**



# Per- and Polyfluoroalkyl Substances (PFAS) and Exposure

Additional information can be found online at:  
[www.secnv.navy.mil/eie/pages/pfc-pfas.aspx](http://www.secnv.navy.mil/eie/pages/pfc-pfas.aspx)

For updates as more information becomes available, visit:  
<https://go.usa.gov/xQFuW/>

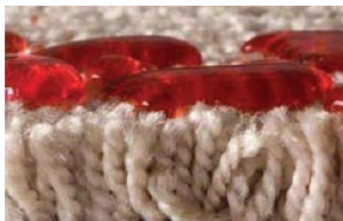
If you have specific questions, please contact ATSDR Region 3 at:  
[kvm4@cdc.gov](mailto:kvm4@cdc.gov)

## Where Do PFAS Come From?

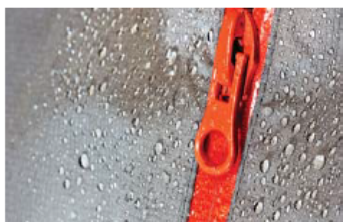
- Manufactured compounds, no natural occurrence.
- Used since 1950s in many products.
- Last a long time in the environment.



firefighting foam



stain-resistant carpets



water-resistant fabrics



personal care products



nonstick cookware



food packaging

## PFAS in People

- Most people in the United States and other developed countries have probably been exposed to PFAS and have PFAS in their blood.
- Some PFAS stay in the body a long time.
- Blood testing for PFAS is available but not a regular test offered by a doctor.
  - Blood tests will not provide information to identify a health problem nor will it provide information for treatment.
  - Laboratory test results can't tell you if PFAS exposure has caused your health condition.

## How Are People Exposed to PFAS?

- PFAS contamination may be in drinking water, food, indoor dust, some consumer products, and workplaces.
- Most non-occupational exposures occur through drinking contaminated water or eating food that contains PFAS.
- Very little PFAS exposure occurs during swimming, bathing, or showering.
- PFAS in a mother's body can move from her blood into her unborn child and from her breast milk into her breastfed baby.
  - However, based on current science, the benefits of breastfeeding appear to outweigh the risks for infants exposed to PFAS in breast milk.
  - If concerned, nursing mothers should consult with their primary care physician.



# Possible Health Effects and Advisory Levels

Additional information can be found online at:  
[www.secnav.navy.mil/eie/pages/pfc-pfas.aspx](http://www.secnav.navy.mil/eie/pages/pfc-pfas.aspx)

For updates as more information becomes available, visit:  
<https://go.usa.gov/xQFuw/>

If you have specific questions, please contact ATSDR Region 3 at:  
[kvm4@cdc.gov](mailto:kvm4@cdc.gov)

## How Might PFAS Exposure Affect People's Health?

- At this time, scientists are still learning about how exposure to PFAS might affect people's health.
- High levels of certain PFAS may lead to the following:
  - Increased cholesterol levels.
  - Changes in liver enzymes.
  - Small decrease in infant birth weight.
  - Decreased vaccine response in children.
  - Increased risk of high blood pressure or pre-eclampsia in pregnant women.
  - Increased risk of kidney or testicular cancer.
- There are no medical interventions that will remove PFAS from the body.
  - The best intervention is to stop the source of exposure (such as drinking water).
  - This allows levels in the body to decrease over time.

## What is the EPA's Lifetime Health Advisory?

- Sets a total concentration of 70 ppt PFOA and PFOS in drinking water.
- Protects against harmful health effects to sensitive populations and the general public.
- Assumes exposure over a lifetime.
- Provides information to state agencies and public health officials on health effects and water treatment needs so they can take steps to reduce exposures.
- Is only an advisory and is therefore non-enforceable.

## How was the EPA Lifetime Health Advisory Calculated?

- Based on studies of health effects from PFOA and PFOS in laboratory animals.
- Considers information regarding health effects on people exposed to PFOA and PFOS.
- Protects sensitive populations including the fetuses and nursing infants of mothers who are exposed.

# Questions and Comments



- **Open to RAB Members for discussion of “Overview of PFAS Human Health Effects” presentation.**
- Questions from the public should be sent to “all co-hosts” in the Q&A box, to be addressed at the end of the meeting (as time allows.)
- You may also send questions to Dr. Markiewicz at [kvm4@cdc.gov](mailto:kvm4@cdc.gov)

# Questions and Comments

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**Questions from  
Public Participants**



# Future Meeting Planning

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- As per charter, plan to meet 2 times per year
  - Navy proposes the next meeting for May 2022
  - Wednesday evenings, 5:00-7:00 p.m.
- RAB agenda topics
  - If there are topics you'd like us to discuss, please communicate them to the RAB Co-Chairs:
    - Navy Co-Chair – Ryan Mayer: [ryan.e.mayer.civ@us.navy.mil](mailto:ryan.e.mayer.civ@us.navy.mil)
    - Community Co-Chair – Kevin Britt: [kev3125@yahoo.com](mailto:kev3125@yahoo.com)

# Websites for More Information

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- **About RABs, including the RAB Rule Handbook:**

<http://www.denix.osd.mil/rab/home/>

- **About the Navy's Environmental Restoration Program:**

<http://www.navfac.navy.mil/go/erb/>

- **About the Environmental Restoration Program at NRL-CBD:**

<https://go.usa.gov/xQFuV> (note: case-sensitive)

- **More about PFAS**

[https://www.navfac.navy.mil/products\\_and\\_services/ev/products\\_and\\_services/env\\_restoration/pfas\\_reading\\_room.html](https://www.navfac.navy.mil/products_and_services/ev/products_and_services/env_restoration/pfas_reading_room.html)

<https://mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx>

<https://www.atsdr.cdc.gov/pfas/index.html>

Attachment 3  
Restoration Advisory Board Questions  
Submitted in Advance  
November 10, 2021

## Restoration Advisory Board Questions November 10, 2022

### Kevin Britt Questions

#### **Question: Refer to Slide 20 Potential Receptors and Exposure Pathways Under the Site Inspection**

- Why aren't current residents who use ground water as a potable water source included? Three of the off-base wells tested in 2018 were positive for PFAS.

**Resp:** During the SI, the focus is evaluating on-base receptors before looking at off-base receptors. Since NRL-CBD does not have current residents a hypothetical future resident scenario was used. Prior to the SI data collection, not enough data had been collected to evaluate the off-base receptor and exposure scenarios. As we move into the RI phase the evaluation of off-base receptors (residents) and exposure pathways will be assessed.

- Why aren't current residents included for dermal contact with surface soil or subsurface soil? Current residents can easily come into contact with PFAS that has migrated off-base.

**Resp:** As previously mentioned, and prior to the SI data collection not enough data had been collected to evaluate the off-base exposure scenario. Additionally, the soils data doesn't indicate that impacted soil is migrating offsite. Therefore, it doesn't appear to be a complete exposure pathway for an off-base resident to contact soils.

- Why aren't current residents included for incidental ingestion of surface soil, subsurface soil, sediment and/or surface water? Current residents could incidentally ingest PFAS impacted surface soil, subsurface soil, sediment and /or surface water that has migrated off-base.

**Resp:** As mentioned, prior to the SI data collection not enough data had been collected to evaluate the off-base exposure scenario. As mentioned, the SI data doesn't support a complete exposure pathway for off-base residents to be exposed to surface/subsurface soil. However, an exposure pathway for sediment and surface water potentially exists for off-base receptors (residents). It's important to note, that while off-base residents could be exposed to surface water and sediment, their exposure to these media would not be the same as what's assumed under a residential use scenario (i.e. chronic, lifetime, 365 days/yr). Rather it would be a reduced exposure frequency/duration more akin to what's assumed under the trespasser/visitor scenario. Overall, during the SI, as a first step to understanding human health risks, a risk screening, which assumes a conservative residential exposure (chronic lifetime) to all media, was conducted to identify constituents of potential concern. During the RI a more in depth risk assessment will be completed which evaluates risk to receptors groups under various exposure pathways.

### Question: Slide 25 Next Steps

- What steps (research, fieldwork, risk assessments, etc.) are included in the Remedial Investigation and what is the expected timeline?

**Resp:** The Remedial Investigation was recently initiated in September, and our Project Team is starting to prepare for the scoping of the RI, and will use the information gathered from the Site Inspection Reports. Scoping of the RI will involve meetings and discussions with the regulator community, and preparing a sampling work plan using the latest EPA guidance of approved methods and Navy policy. We will further evaluate the conceptual site model of the site, and provide updates where needed. We will move further out from the Site Inspection and look at the nature and extent of the PFAS in the media being investigated. A risk assessment will also be performed at this stage and evaluate human and ecological risks where we can; however, with limited analytical methods and limited toxicity information available, will make the risk assessments challenging.

- Can you provide a summary of the Interim Measure investigation (objectives, sample locations, sample results, timeline)?

**Resp:** We have started an Interim Measure evaluation of surface water concentrations on-base. Our objective is to find out where these elevated PFAS concentrations are coming from, what we should use as screening levels, performance goals for the technology, and ultimately to reduce the surface water levels. We sampled at another 17 locations on-base (in early October) for PFAS to help determine where these elevated PFAS concentrations are coming from, including the north and southeastern streams and around the base sewage treatment plant and other areas to help narrow this down. I don't have a timeline for our Interim Measures, we are still awaiting our sample results and the evaluation of those results. We are still at the beginning stages; however, we will report back and provide updates.

### David Harris Questions:

- According to a letter I received on October 26th from Ms. Adams via email it said that the surface water screening levels for PFOA and PFOS are 400 ng/L. Based on that, since the levels of PFOA and PFOS exceed your screening levels, when is the Navy going to stop the discharge of the PFAS laden water offsite? According to the figures provided at the last RAB meeting you are discharging over 12 times the SL amount for PFOS from a stream leaving the facility to the NE. That same stream has just exceeded your SL for PFOA as well. What is your plan to treat the water? You should have one by now.

**Resp:** This goes back to our prior question of Interim Measures, we have already conducted another round of sampling in the northern stream and the southeastern stream, along with several samples around the sewage treatment plant. Part of our evaluation of Interim Measures is knowing where the PFAS concentrations are coming from, and how best to address them; additionally, some PFAS treatment systems require other sampling parameters to help evaluate the technologies, we've also

conducted some of this sampling as well. We know we have issues here and we are putting together a plan to address it.

- I would like to know when the Navy will test the stream water on the farm as I have offered so many times? There is a huge discrepancy in data provided by the Navy and no logic to why the readings down stream of where the water flows through the farm are so much higher.

**Resp:** We will look at any offsite sampling as part of the scoping of the Remedial Investigation, including property along the Navy fence lines. The Site Inspection phase was the first time we had sampled for anything else besides drinking water and groundwater. After a review of these results, we initiated another round of surface water sampling in very specific locations to help understand the concentrations you are referring too, including around the sewage treatment plant.

- I would like to know when the Navy will stop allowing PFAS laden water to discharge across the property as requested in our letter dated July 22, 2021?

**Resp:** As addressed earlier, we have initiated an Interim Measures Plan for these issues and have conducted follow-on sampling to better understand the PFAS concentrations in the surface water.

- I am not asking for a reiteration of the CERCLA process as given to me in the past. I am looking for timeframes. They can be rough as listing something like 1st quarter 2022 as an example.

**Resp:** We will report on the update to the Interim Measures Plan when we have more information available. Preparing sampling plans, conducting sampling and preparing the reports does take time. These RAB meetings are a great place to get up to date information, as we have it.

#### **John Bacon Question**

- What is the date and time that the Navy or MDE will be sampling the outfall of the 2 streams from NRL-CBD. Residents would like to be there and get a sample from the same bucket to send to an independent lab for analysis.

**Resp:** We have received your request with what appears to be split-sampling of results. We are looking into this request with our folks in the Environmental program, and will provide a response within the next couple of days. We may need to obtain more information (sampling methodology, quality control, and other sampling specifics) from you in order to make a decision on the request, we will let you know. We have your contact information.