MEETING SUMMARY

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

MEETING DATE:	September 14, 2022
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 fourth RAB meeting for NRL-CBD. Ryan stated that the last RAB meeting was held on November 10, 2021 and apologized for the delay in scheduling the RAB meeting. Ryan stated that the RAB meeting was postponed from May 2022 until now to allow the Navy time to develop the Interim Measures (IM) plan to address per- and polyfluoroalkyl substances (PFAS) in surface water and complete the Basewide PFAS Site Inspection (SI) Report.

RAB members received meeting presentation slides by email, and presentation slides will be posted to NRL-CBD website (https://go.usa.gov/xSeKn). Ryan reviewed the meeting Agenda (**Attachment 1**) and introduced Anna Lesichar (NRL), Peggy Williams (Maryland Department of the Environment [MDE]), Mark Mank (MDE), Ira May (MDE), Andy Bogdanski (Jacobs), Amy Brand (Jacobs), Laura Lampshire (Jacobs), Leticia Solaun (Jacobs), and Kevin Britt (RAB Community Co-Chair). A full list of attendees is provided in **Table 1**.

Kevin Britt then explained that the RAB meetings are a forum for the public, NRL, and MDE to exchange information and have discussions and that the presentation has a lot of good information. He encouraged everyone to take advantage of the question-and-answer opportunities and not be afraid to ask questions.

Virtual Meeting Logistics

Amy Brand, a community involvement specialist from Jacobs and facilitator for the meeting, reviewed the WebEx meeting technology basics with the attendees, and requested that attendees keep their videos off, with the exception of presenters, to conserve streaming bandwidth. Amy informed the RAB members that they can click on the "hand mark" if they would like to be called on to ask a question. Questions from the public can be typed and submitted to "all co-hosts" and would be addressed at the end of the meeting. Amy stated that for any issues encountered during the presentation, attendees could call or text Leticia Solaun from Jacobs and that she would provide assistance.

Review and Approve the November 2021 RAB Meeting Minutes

Amy Brand described the review and approval process for the November 2021 meeting minutes. The draft meeting minutes were distributed to the RAB members via email on March 24, 2022; no comments were submitted at that time. The meetings were then posted as draft on the NRL-CBD public website in early July 2022. Amy asked the meeting attendees to raise their hand if they had any questions or comments on the November 2021 meeting minutes. No hands were raised; therefore, the minutes will be finalized and posted on the NRL-CBD website.

Site 10 Site Inspection Conclusions and Path Forward

Andy Bogdanski, a project manager with Jacobs, introduced the first technical topic – the Site 10 Site Inspection (SI) Conclusions and Path Forward. The Site 10 SI Report was finalized in June 2022 and is available on the NRL-CBD website (under the Community Outreach tab at https://go.usa.gov/xSeKn). Andy provided a summary of the SI conclusions as they pertained to the SI objectives.

The first SI objective was to determine if PFAS are present in soil, surface water, and/or sediment and if so, whether concentrations exceeded the human health screening levels. During the Site 10 SI, PFAS were detected in all media sampled; however, only two constituents of potential concern (COPCs) were identified: perfluorooctanoic acid (PFOA, a COPC in surface water) and perfluorooctane sulfonate (PFOS, a COPC in soil).

The second objective of the Site 10 SI was to refine the lateral and vertical extents of PFAS in the surficial aquifer and to determine whether the current PFAS concentrations exceed screening levels. PFOA and PFOS were detected in the surficial aquifer above the screening level, and perfluorobutane sulfonic acid (PFBS, another PFAS contaminant) was detected below the screening level. As such, PFOA and PFOS were identified as COPCs.

The third objective of the Site 10 SI was to determine the current concentrations of PFAS in the Piney Point aquifer, which is the same aquifer used off-Base for drinking water. PFOA, PFOS, and PFBS were detected in the Piney Point aquifer; however, all detected concentrations were below the screening levels and no COPCs were identified in the Piney Point aquifer.

The fourth objective of the Site 10 SI was to determine the potential for PFOS, PFOA, and PFBS in groundwater and surface water to migrate off-Base. Based on measurements of the groundwater and surface water elevations, it was determined that groundwater is migrating toward and into the two streams that are located to the north and south of Site 10. In the northern stream, PFOA and PFOS were detected at concentrations that exceeded human health screening levels. In the southern stream, PFOS was detected at concentrations exceeding human health screening levels at the two most downgradient locations immediately below the wastewater treatment plant (WWTP). PFOS was also identified as a COPC for surface water.

The fifth objective of the Site 10 SI was to further characterize the nature of impacts of total petroleum hydrocarbons (TPH) in the surficial aquifer, since the Navy used various sources of fuels to start the fires while testing PFAS. These various fuels included kerosene, diesel, gas, and jet fuel. Two analyses for TPH were conducted for TPH- Diesel Range Organics (DRO) and TPH-Gasoline Range Organics (GRO) to determine whether TPH-DRO or TPH-GRO related fuels might be present in groundwater. TPH-DRO and TPH-GRO were detected at concentrations exceeding the screening level in the surficial aquifer. The TPH levels were consistent with previous levels of TPH detected in the shallow aquifer.

Ryan then presented a summary of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process and the path forward for Site 10. The Site 10 SI Report was finalized in June 2022 and posted on the NRL-CBD website; the website link is included at end of the presentation slides (**Attachment 2**). The Site 10 SI phase is now complete, and the site is recommended for the Remedial Investigation (RI) phase of investigation. Ryan noted that a removal action can be conducted anywhere along CERCLA process if warranted. During the RI phase, data and information are collected to make human health and ecological risk-based cleanup decisions. This is accomplished by delineating the nature and extent of PFAS. During the RI, Applicable or Relevant and Appropriate Requirements (ARARs) are identified and risk assessments (human health and ecological) are conducted. However, due to limited available toxicity values for PFAS, it will be difficult to conduct an ecological risk assessment (ERA) for PFAS, so the risk assessment may be limited to human health at this time. The RI will provide information needed for the Feasibility Study (FS), which evaluates technologies to clean up those media screened through the RI. RIs are not designed to clean up through investigation nor designed to investigate the entire site area.

Ryan reviewed the RI process (development of the work plan through reporting) and the RI objectives associated with various media (soil, groundwater, surface water, and sediment) (**Attachment 2**, slides 17 and 18). While the early PFAS investigation efforts focused on Site 10, Ryan stated that the Navy is also conducting a Basewide PFAS Preliminary Assessment (PA) and SI to identify and investigate other installation areas where potential PFAS source releases to the environment may have occurred.

Questions and Comments from Restoration Advisory Board Members

Amy Brand opened the meeting to questions and comments from RAB members regarding the Site 10 SI Conclusions and Path Forward presentation.

- David and Robin Harris asked the following two questions:
    1. On slide 14 regarding the fuel levels/TPH in the water, it is only noted that levels are consistent with previous levels detected. However, the levels are high, and those products should not be in the water. Comparing these concentrations to previous levels is not a wise determination that these levels are okay. Ryan agreed and stated because these TPH concentrations are similar to the previous concentrations, the Navy is going to carry TPH forward and not stop the investigation in regard to TPH. However, the Navy is going to differentiate the individual chemical constituents during the RI. The reason for this is because TPH is a mixture of compounds and a risk assessment cannot be conducted using overall TPH data. Instead, the individual compounds made up of volatile organic compounds and semi volatile organic compounds will be sampled in future investigation work.
    2. Since PFAS is being discharged onto private property via the streams, when will off-Base investigations start? When PFAS are included on the hazardous chemical list, who will be responsible for cleanup - the private property owners since it is on their property? Ryan replied that the Navy had to start on-Base regarding the SI to understand what constituents are potentially leaving the Base. The next phase will include off-Base investigation and the Navy will be stepping off-Base to conduct sampling. Two separate sampling plans – one for on-Base and one for off-Base – are being prepared by the Navy.

Amy asked if there were any additional questions; no additional questions were received.

Site 10 Interim Measures – Surface Water Treatment

Andy Bogdanski then began the Site 10 IM discussion and noted that the Navy is looking to conduct an interim removal action for PFAS in surface water. He explained that the CERCLA process is lengthy and includes the investigation part and the cleanup part. Given that there are PFAS in the northern stream and there is the potential for off-Base migration, the Navy has decided to implement an interim removal action for surface water. This step allows the Navy to move more quickly to begin cleanup of PFAS without having to wait for the site to move through the whole investigation process, which can take years.

Ryan Mayer then reviewed the removal action – what it consists of, some of steps that have been completed, and steps that are in progress as the Navy works through the removal action. The Navy is undergoing a removal action to reduce high concentrations of PFAS in surface water mainly in two areas of the Base: the northern stream and the WWTP effluent (discharge). To design these systems, pre-design data were collected from both of these areas. These data will aid the understanding of PFAS concentrations over time and in sizing the treatment systems.

The PFAS treatment system basis of design is currently underway and identifies the applicable regulations, treatment goals, treatment technology, treatment process, and other relevant considerations. The design is iterative, and the Navy is at a 30% design now and will then go to 60% design. The remedial action contractor (RAC) will complete the final design and then construct and fabricate the system and put them in place. The Navy will prepare an Action Memorandum (AM) describing the removal action that will be implemented, and the AM will be issued for a 30-day public comment period. After that, the RAC will fabricate, install, and operate the treatment systems. Two systems will be installed: The north pond treatment system will be designed to intercept surface water from the existing stormwater retention pond, remove PFAS, and discharge treated water back into the north stream. The second PFAS treatment system will be located at the WWTP and will be designed to intercept WWTP discharge, remove PFAS, and discharge treated water back into the receiving stream. Both systems are designed to remove significant concentrations of PFAS. The treatment process will rely on a sand filter, granulated activated carbon, a bag filter, and an ion exchange resin system.

Questions and Comments from RAB Members

Amy Brand then opened the meeting to questions and comments from RAB members regarding the Site 10 IM – Surface Water Treatment presentation.

- David Harris noted that for the stream to the south, the Navy will not be doing anything except starting treatment at the WWTP, correct? From prior RAB meetings and discussion, the Navy has said that is does not dump PFAS-laden water into the sewer system. If so, (1) how does PFAS get into the WWTP? And (2) starting the treatment process downgradient does not stop the PFAS coming off the Base and onto private property. He stated that he was upset because the Navy was bypassing his property to treat at the WWTP and not treating the PFAS contamination upgradient near the source(s) where it is getting into the stream. Ryan thanked David for his question and stated that the treatment systems are not designed to catch every surface water body, but to capture the bulk of the PFAS contamination.

  With regard to how the PFAS is getting into the WWTP, the Navy was also concerned about this and collected water samples in the sanitary sewer lines to understand what was going on. The PFAS levels coming out of the WWTP mirror the PFAS levels in the surficial groundwater near Site 10. The Navy assumes that there is groundwater intrusion into the sanitary sewer lines and that is how PFAS is entering the WWTP. The Navy does not dump PFAS into the sanitary sewer lines and will be further evaluating the sanitary sewer lines during the RI investigation to determine where

groundwater is entering them. Mark Mank (MDE) added that this is an interim action to capture as much PFAS as you can as quickly and efficiently as you can. This is something that can be done now and MDE and the Navy are being proactive. With regard to not treating farther upstream, the WWTP is an area with greater PFAS concentrations. Some of the concentrations farther upstream are not as high as those in the WWTP. This step should get a lot of PFAS mass out and minimize further movement of mass in the shallow aquifer. This treatment is an encouraging sign and there will be more to come. Ryan replied that the Navy will be doing more sampling during the RI in the southern stream to find out what is going on there. David Harris then added that the Navy is welcome to test the stream going across his property and that, at a minimum, the Navy should be doing some sort of interim measure at the property boundary, as is being done at NRL-CBD's northern boundary, and he is discouraged they are not doing more in the southern stream. Ryan replied that the Navy understands, and that the surficial aquifer is contributing to the levels in the north stormwater retention pond and receiving water body, and that for the WWTP, the main culprit is the sanitary sewer lines along with some stormwater contribution. The Navy is looking into installing additional groundwater monitoring wells in the vicinity of the southern stream to understand this area better. At this time, there is not an effective treatment that can be placed on the southern stream because the Navy needs to understand what is going on before they can do that, and they are taking steps to do that. Ryan added that as far as PFAS being a hazardous waste, there is proposed rulemaking in progress with the United States Environmental Protection Agency (USEPA) to list PFAS as hazardous waste – he noted there may be Public Comment on that now until November – but this primarily will be for industries and processors, and they are probably several months away from a final regulation.

Amy then asked if RAB members had additional questions; no additional questions were received and she reminded the public that they can place any questions in the Q&A chat to be addressed at the end of the meeting.

Regulatory Updates

Peggy Williams, MDE project manager for NRL-CBD, provided a summary of MD House Bill 275, effective July 1, 2022, which includes:

- No incineration of PFAS-containing foam in Maryland
- No land disposal of PFAS-containing foam in Maryland
- Maryland will take back PFAS-containing foam from fire departments and plan for proper disposal
- A PFAS summary report to be provided to the General Assembly by December 2022
- MDE and Maryland Department of Health will draft a PFAS Action Plan by December 2023

Peggy reviewed MDE's PFAS sampling locations for fish tissue, oyster, and surface water. MDE also started sampling crabs for PFAS during the summer of 2022; however, these results are not yet available. Additionally, MDE has implemented monitoring efforts for PFAS in public drinking water systems and discharges from WWTPs.

With regard to fish tissue, in 2021, a fish consumption advisory for PFAS was issued in Piscataway Creek in Prince George's County. Fish tissue monitoring for 2022 will conclude this fall, and the data gathered will be used to develop fish consumption advisories in other water bodies across Maryland. For the most up-to-date information, please refer to the PFAS landing page on the MDE website (link provided in **Attachment 2**, slide 37).

Peggy then pointed to a USEPA document regarding the current and future use of PFAS that includes information on current research, how to reduce exposure to PFAS, and new technologies to clean up

PFAS in the environment (link provided in **Attachment 2**, slide 31). Peggy reviewed the June 2022 updated USEPA PFAS Health Advisories (**Attachment 2**, slide 32) and noted that they are not yet final.

Open Questions and Comments

Amy Brand opened the meeting to questions and comments from RAB members regarding the Regulator Updates presentation.

- David Harris asked Peggy Williams if the Navy is exempt from Maryland House Bill 275 (HB275)? Peggy replied by asking Ryan Mayer if this question had been referred to the Navy's legal counsel. Ryan replied that the Navy is in compliance with HB275. There are provisions in the law for research and for the Navy to conduct its mission. David replied that it is a great law, but he wanted to make this point clear that it does not apply to this facility and that the Navy feels it is exempt from this law and will continue to do the testing of PFAS regardless of the law because they feel they are in compliance with the law because of the exemption that was written into the law for the Navy.
- David Harris then had three questions for the Navy or MDE, or both:

  (1) Are there going to be new screening levels implemented based on new USEPA criteria for water?

  (2) What does the Navy plan to do with all the private wells that now, based on the new criteria, exceed the lifetime health advisory levels? Mark Mank asked to answer the questions one at a time. For the first question, the USEPA advisories are not standards and are not actionable at this time. When actionable standards are issued, actions will begin to occur that are applicable to a potable (drinking water) well if they discover something in excess of the standards. Regarding the law and some of the legal questions – for any facility, release of hazardous materials that are adversely impacting waters of the State is an uncontrolled process. The Navy has taken steps at this facility to modify procedures and avoid uncontrolled releases; the Navy must not release materials that would adversely impact the environment.

  (3) With standards about to be issued in the next 3 to 6 months, are screening levels going to change to implement the new USEPA criteria? Ryan replied they could. USEPA is working on maximum contaminant limits which will apply for everybody. Ryan reiterated that the Navy initiated off-Base drinking water sampling near NRL-CBD in 2018 and that out of the 42 samples collected, no samples exceeded the lifetime health advisory of 70 parts per trillion (ppt) for combined PFOA and PFOS set by USEPA in 2016. The Navy is not conducting any additional offsite sampling at this time. If a property was not previously sampled within the designated sampling area, then the Navy can sample. The Navy is currently evaluating how to implement USEPA's new interim lifetime health advisories that came out in June 2022. The Navy has taken response actions if drinking water contains 70 ppt or higher of combined PFOS and PFOA at a residential property. David Harris then asked what the Navy plans to do with all the private wells that have been tested that exceed the new lifetime health advisories? Ryan replied that the Navy is currently evaluating the new lifetime health advisories and how to respond to them. Right now, these are voluntary levels – they have no regulatory standing. David replied correct, but the writing is on the wall, and wouldn't it be wise or prudent or smart or in good conscience of the Navy to be prepared for when new standards are issued, for the Navy to be ready because it's just around the corner and all we keep getting is evade, evade, evade, evade. Ryan replied that they are not doing that, and the Navy is committed to protecting the human health of its workforce and our surrounding communities, and have a comprehensive strategy to address PFAS through the CERCLA process. Secondly, the Navy proactively evaluates any drinking water that could be impacted due to PFAS migrating from past use on Navy installations; the Navy uses the USEPA drinking water health advisory levels for PFOS and PFOA. There is a lot of emerging science on PFAS, and the regulation around PFAS will be

changing. The Navy is responding to this and does not want anyone drinking these chemicals and will take action if the levels are higher than USEPA levels.

Amy asked for additional questions from the RAB and the public; no additional questions were received.

Future Meeting Planning and Adjournment

Ryan Mayer stated that for future meeting planning, the Navy still plans to have two RAB meetings per year. The next RAB meeting is expected to be in May 2023, on a Wednesday evening, 5 to 7 p.m., and he will communicate those plans with the RAB Community Co-Chair and put together an agenda.

The Navy will email the draft minutes for this meeting about 4 to 5 weeks later, probably by the end of October, and will give RAB members about 2 weeks for review and comment. Once we incorporate review comments, we will post the meeting minutes to the NRL-CBD website in about 2 weeks, so they will be posted to the NRL-CBD website sometime in early December. Ryan stated that prior questions submitted to the Navy and MDE and the responses are also posted on the NRL-CBD website for the review.

Amy presented Ryan with a question from the chat from Amalia Pleake-Tamm – Is the data being shared with CBL or Pearl (Morgan's Lab)? Are they doing the analysis or involved at all? Ryan did not recognize the names mentioned. Mark Mank responded that CBL is a Maryland research facility and does not do the analysis since the Navy has a protocol and quality assurance process that certain research facilities are not in the process of doing. MDE has not seen any comments or questions from CBL or Pearl directly but encourages anybody doing academic research on PFAS to work cooperatively with MDE. MDE has a lot of information on the PFAS landing page, and Mark encouraged attendees to look at the landing page. Ryan added that the Navy only uses accredited laboratories. With the surge in PFAS sampling, what used to take 30 days to analyze now takes laboratories 6 to 8 weeks or longer; he is hopeful more laboratories will join through the accreditation process.

Kevin Britt provided final comments. While he had nothing additional to add, he thanked everyone for coming out; David for asking questions; Ryan and Jacobs for presenting; and MDE for providing the updates.

Ryan reviewed the websites/links where additional information can be found (**Attachment 2**, slide 37) and stated that if there are questions that come to mind after the meeting, please email Ryan or Kevin (see **Attachment 2**, slide 36 for email addresses).

Ryan concluded the RAB meeting at 6:28 p.m.

Table 1. List of Attendees[1]

Restoration Advisory Board Meeting September 14, 2022

Name	Affiliation
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
Robin Harris	RAB member
Lawrence Jaworski	RAB member
Greg Morris	RAB member
Rodney Aguirre	Navy
Anna Lesichar	Navy
Barbara Krupiarz	MDE
Mark Mank	MDE
Ira May	MDE
Peggy Williams	MDE
Amy Brand	Jacobs
Andy Bogdanski	Jacobs
Laura Lampshire	Jacobs
Leticia Solaun	Jacobs
Matthew Klimoski	Guest
Amalia Pleake-Tamm	Guest

[1] Additional unidentified attendees may have also participated by phone.

Attachment 1
Restoration Advisory Board Agenda, September 2022

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

September 14, 2022, 5:00-7:00 pm
Virtual Meeting

Meeting Facilitator: Amy Brand - Jacobs

Meeting Agenda		
Time	**Topic**	**Presenter**
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 November 2021 RAB Meeting Minutes	Amy Brand
5:20-5:30 pm	Site 10 SI Conclusions and Path Forward	Ryan Mayer and Andy Bogdanski
5:30-5:40 pm	Questions & Comments from RAB Members	RAB Members
5:40-5:55 pm	Site 10 Interim Measures – Surface Water Treatment	Ryan Mayer and Andy Bogdanski
5:55-6:10 pm	Questions & Comments from RAB Members	RAB Members
6:10-6:25 pm	Regulatory Updates	Peggy Williams/MDE
6:25-6:40 pm	Open Questions & Comments	RAB Members and Public Meeting Attendees
6:40-6:45 pm	Future Meeting Planning and Adjournment	Ryan Mayer

MDE – Maryland Department of the Environment

Attachment 2
Naval Research Laboratory – Chesapeake Bay Detachment Restoration Advisory Board Meeting Presentation, September 14, 2022

Naval Facilities Engineering Systems Command
NAVFAC Washington

Naval Research Laboratory – Chesapeake Bay Detachment Restoration Advisory Board Meeting

September 14, 2022

5:00 - 7:00 p.m.

Agenda

- Welcome and Introductions
- Virtual Meeting Logistics
- Review and Approve November 2021 Meeting Minutes
- Site 10 Site Inspection Conclusions and Next Steps
  - Questions & Comments from RAB Members
- Site 10 Interim Removal Action – Surface Water Treatment
  - Questions & Comments from RAB Members
- Regulatory Updates
  - Questions & Comments from RAB Members and Public
- Future Meeting Planning and Adjournment

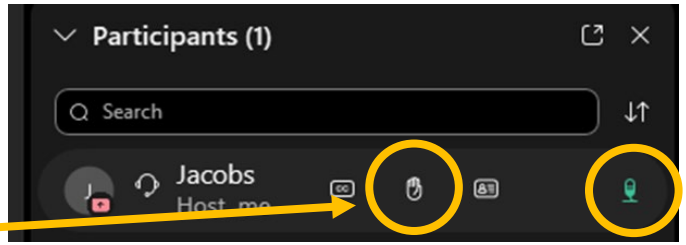
Naval Facilities Engineering Systems Command
NAVFAC Washington

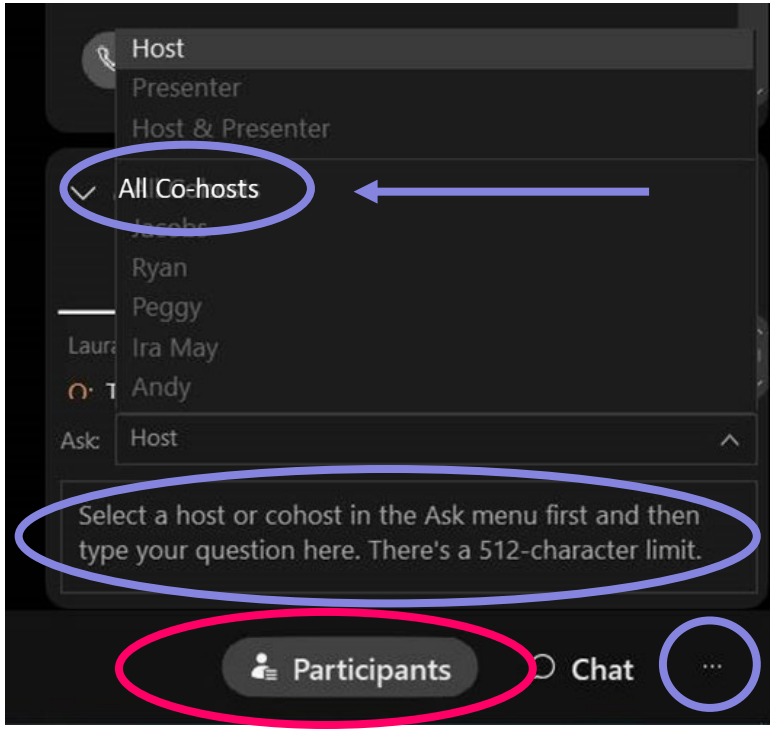
Virtual Meeting Logistics

Amy Brand - Jacobs

Webex Basics – Computer Access Participants

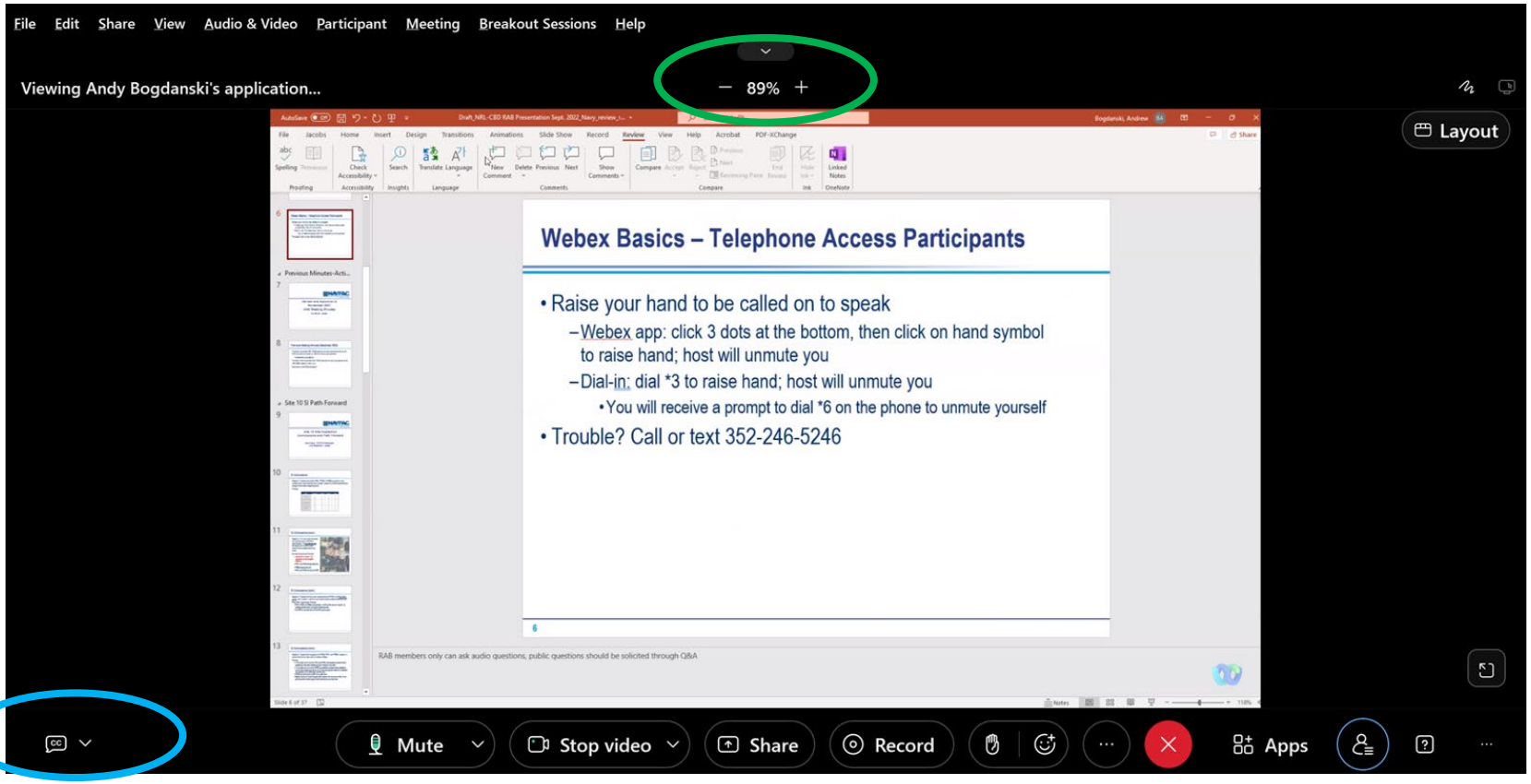
- Video – OFF except for presenters
- Open participants list
- To ask a question:
  1. RAB Members - Raise hand to be called on to speak
     - Scroll over your name in the participant list and click on hand symbol
     - Unmute yourself when called on
  2. Public participants - Type a question to "all 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
     - Questions will be answered at the end of the meeting
- Problems? Call/text 352-246-5246





Webex Basics – Computer Access Participants

- To zoom in on a slide



- To enable closed captioning

Webex Basics – Telephone Access Participants

- Follow along on slides sent by email to RAB members
- Raise your hand to be called on to speak
  - Dial *3 to raise hand; host will unmute you
  - You will receive a prompt to dial *6 on the phone to unmute yourself
- Problems? Call or text 352-246-5246

Naval Facilities Engineering Systems Command
NAVFAC Washington

Review and Approval of November 2021 RAB Meeting Minutes

Amy Brand - Jacobs

Previous Meeting Minutes (December 2020)

- The Draft November 2021 RAB meeting minutes were distributed to the RAB via email on March 24, 2022 for review and comment
  - No comments were received.
- The Draft Final November 2021 RAB meeting minutes were posted to the NRL-CBD website in early July.
- Approval to finalize?

Naval Facilities Engineering Systems Command
NAVFAC Washington

Site 10 Site Inspection Conclusions and Path Forward

Andy Bogdanski - Jacobs

Ryan Mayer - NAVFAC Washington

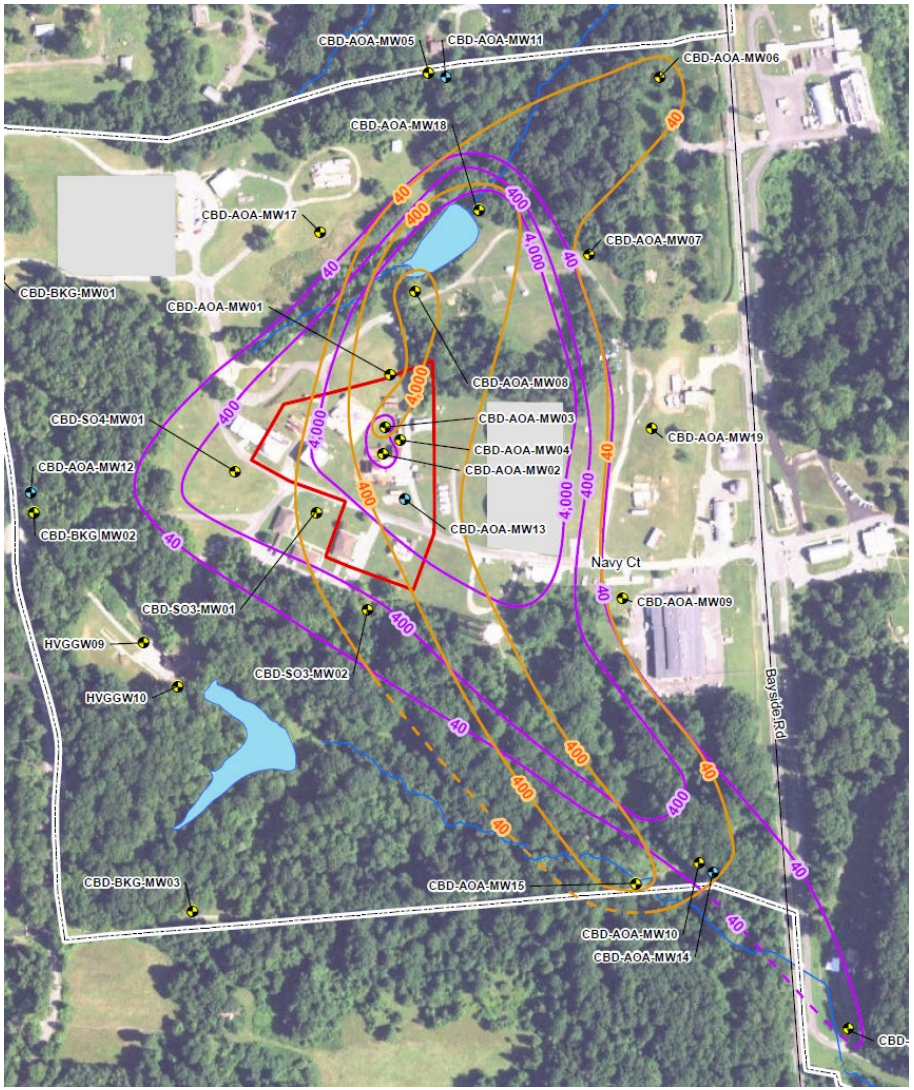
SI Conclusions

- Objective: To determine whether PFOA, PFOS, or PFBS are present in soil, surface water, and/or sediment and if present, determine whether concentrations exceed human health screening levels
- Findings:

Media	Compound	Detected	Above Screening Level	Constituent of Potential Concern
Soil	PFOA	Yes	No	No
	PFOS	Yes	Yes	Yes
	PFBS	Yes	No	No
Surface Water	PFOA	Yes	Yes	No
	PFOS	Yes	Yes	Yes
	PFBS	Yes	No	No
Sediment	PFOA	Yes	No	No
	PFOS	Yes	Yes	No
	PFBS	No	No	No

SI Conclusions (cont.)

- Objective: To further refine the lateral and vertical extents of PFAS in groundwater in the surficial aquifer and determine whether current concentrations exceed screening levels
- Surficial Groundwater Findings:
  - Lateral extent refined in the upgradient and downgradient directions
  - PFOA and PFOS detected above screening level
  - PFBS detected below screening level
  - PFOA and PFOS identified as constituent of potential concern



SI Conclusions (cont.)

- Objective: To determine the current concentrations of PFAS in the Piney Point aquifer, and if present, whether current concentrations exceed screening levels
- Piney Point Groundwater Findings:
  - PFOA, PFOS, and PFBS were detected in the Piney Point aquifer; however, all detected concentrations were below screening levels.
  - No constituents of potential concern were identified for Piney Point groundwater.

SI Conclusions (cont.)

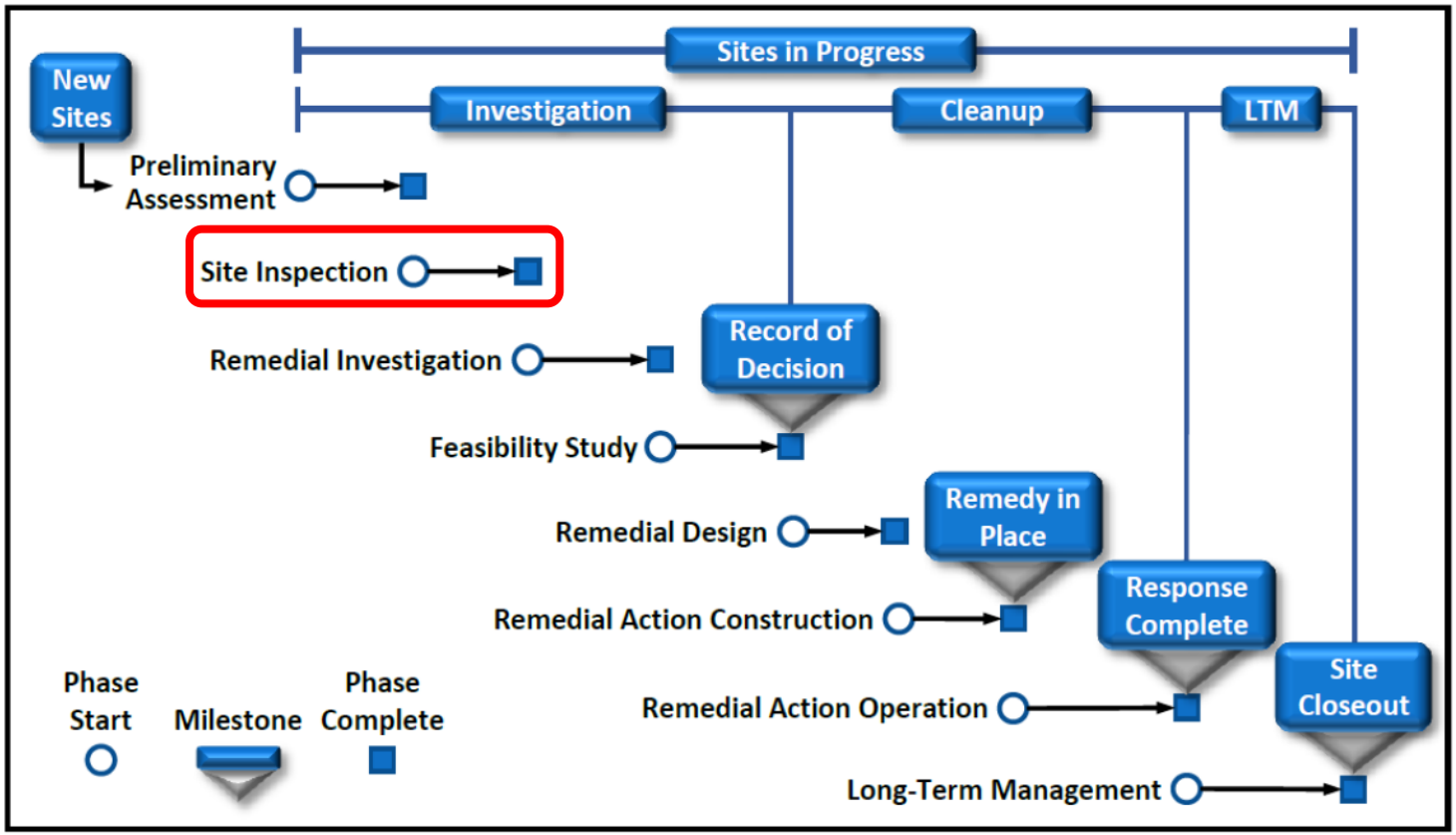
- Objective: To determine the potential for PFOS, PFOA, and PFBS (if present) in groundwater and surface water to migrate off-Base
- Findings:
  - In the stream north of the site, PFOA and PFOS were detected at concentrations exceeding human health screening levels throughout the stream.
  - In the stream south of the site, PFOS was detected at concentrations exceeding human health screening levels at the two most downgradient locations immediately downgradient of the wastewater treatment plant.
  - PFOS was identified as a constituent of potential concern for surface water.
  - Based on results of the staff gauges, both streams north and south of Site 10 are gaining streams indicating groundwater contributes to surface water.

SI Conclusions (cont.)

- Objective: To further characterize the nature of impacts of total petroleum hydrocarbons (TPH) in the surficial aquifer
  - From burning kerosene, diesel, gasoline, and jet propulsion fuel
- Findings:
  - TPH-Diesel Range Organics (DRO) and TPH-Gasoline Range Organics (GRO) were detected at concentrations exceeding the screening level in the surficial aquifer.
  - The TPH levels were consistent with previous levels of TPH detected in the shallow aquifer.

Path Forward

- Overall, Site 10 is recommended to be carried forward to the Remedial Investigation (RI) phase



Remedial Investigation

- RIs are designed to:
  - Collect enough data and information to make human health and ecological risk-based cleanup decisions that include:
    - Delineate nature and extent of PFAS
    - Identifying Applicable or Relevant and Appropriate Requirements (ARARs)
    - Risk assessments (Human and Ecological)
    - Support the feasibility study that looks at applicable cleanup technologies and cost estimates to remediate (soil, groundwater, surface water, and sediment that are above cleanup standards and goals)
- RIs are not designed to:
  - Conduct remediation/cleanup thru investigation: not every square inch requires investigation.
    - Investigation objectives help guide the investigation team (both Navy and Regulators) and define how much data is required to answer the question as well as how the data will be used to answer the question.

Remedial Investigation Process

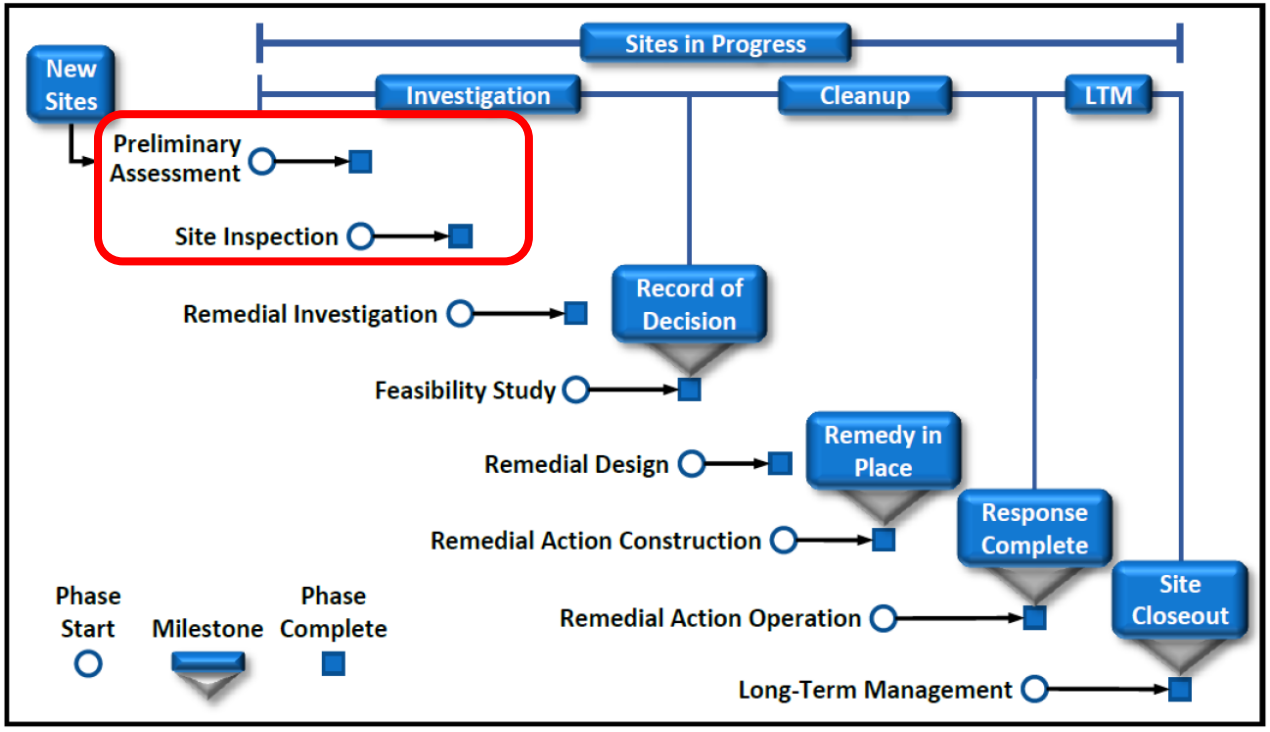
- RI phase consists of the following steps:
  - Workplan (UFP-SAP)
  - Fieldwork and data collection
  - Laboratory analysis and data management
  - Data analysis and risk assessment
  - Data gap fieldwork and data collection (if needed)
  - Reporting

Investigation Objectives

- Potential Soil Investigation Objectives
  - Define the extent of PFAS in soil
  - Determine the potential for soil impacts to leach into groundwater
  - Evaluate potential risks to receptors
- Potential Groundwater Investigation Objectives
  - Define the extent of PFAS in groundwater
  - Define the extent of fuel-related constituents (volatile organic compounds [VOCs] and semi-volatile organic compounds [SVOCs]) in the surficial aquifer
  - Define hydrogeologic properties to evaluate fate & transport of PFAS
  - Evaluate potential risks to receptors
- Potential Surface Water/Sediment Investigation Objectives
  - Define the extent of PFAS in surface water/sediment
  - Define the hydrologic understanding to evaluate fate and transport
  - Evaluate potential risks to receptors

Basewide PFAS Preliminary Assessment and Site Inspection

- Early PFAS efforts were focused on Site 10; however, the Navy is undertaking a Basewide Preliminary Assessment (PA) and Site Inspection (SI)
- Basewide PA:
  - Identifies potential PFAS source releases to the environment.
  - Typically involves desktop review of files, interviews, and a site visit
- Basewide SI:
  - Aims to determine, through sample collection and analysis, whether a release to the environment has occurred.
  - A workplan (UFP-SAP), fieldwork and reporting will be conducted at sites across the facility as identified in the PA.



Questions and Comments

- Open to RAB Members for discussion of "SI Conclusions and Path Forward" 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.)

Naval Facilities Engineering Systems Command
NAVFAC Washington

Site 10 Interim Removal Action for Surface Water

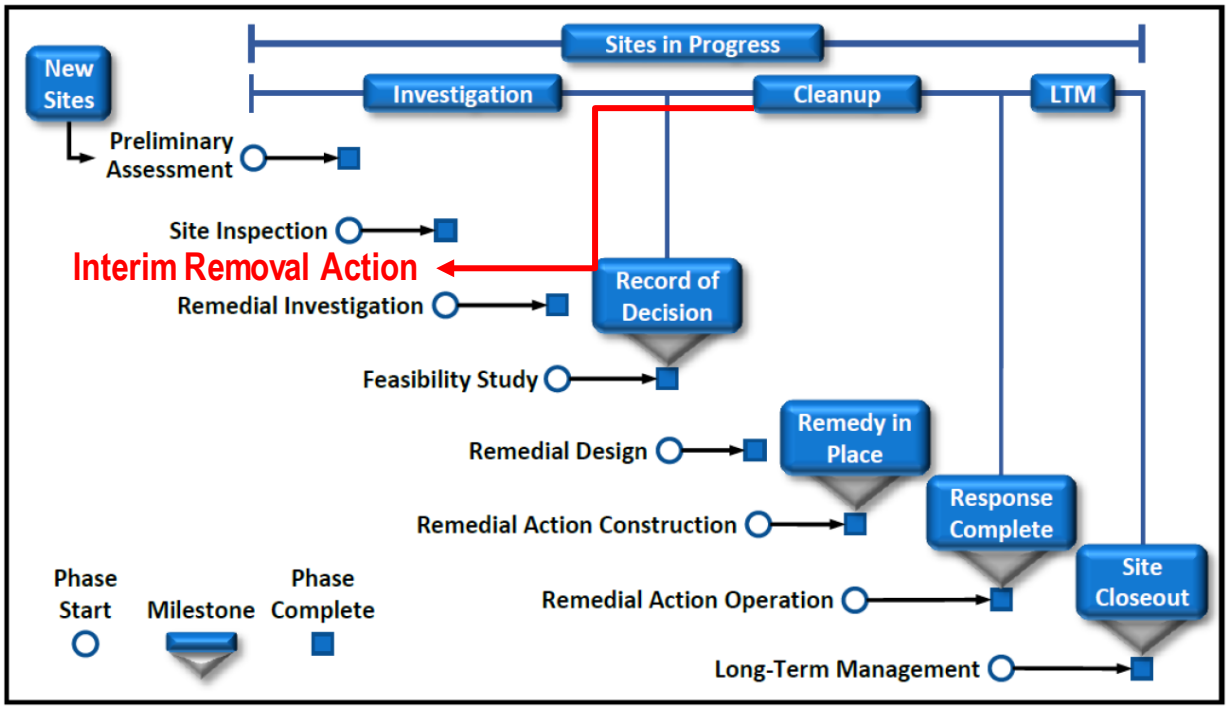
Andy Bogdanski - Jacobs

Ryan Mayer – NAVFAC Washington

Interim Removal Action

- Site Inspection sampling showed elevated PFAS concentrations in northern stream and an order of magnitude increase in PFAS concentrations in the downgradient portion of the southern stream.
- Follow-on sampling showed that the WWTP influent and effluent contained PFAS

- Based on the PFAS concentrations and the off-Base migration through surface water, **the Navy decided to implement an Interim Removal Action to reduce PFAS concentrations in surface water.**



Interim Removal Action

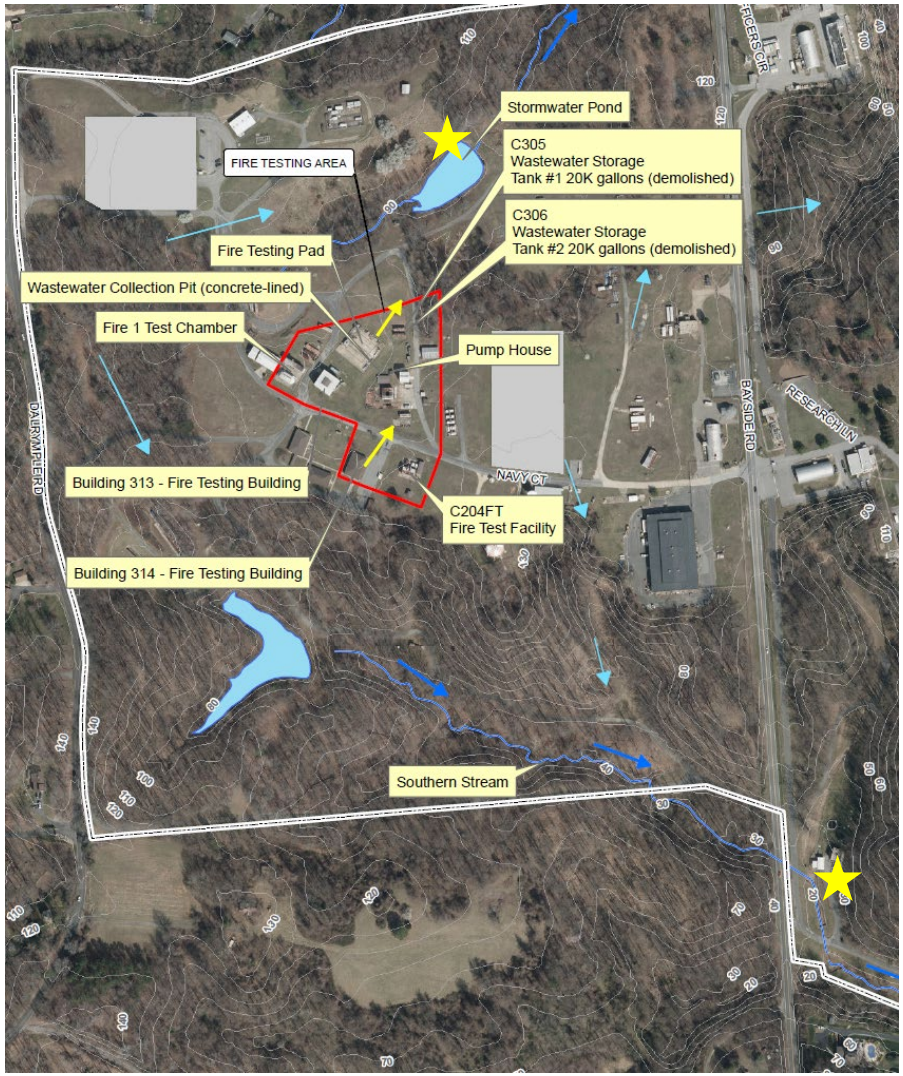
- Pre-Design Characterization
  - Determine stream and treatment plant flow rates
    - Aids in properly sizing treatment system components
    - Flow rates collected using data loggers and reviewing WWTP operation logs
  - Further characterize PFAS concentrations in streams, WWTP influent and effluent
    - Aids in understanding of PFAS concentrations overtime
    - Two additional rounds of PFAS sampling collected from streams/WWTP influent
  - Collect water quality data
    - Aids in PFAS treatment system process selections and design
    - One round of sampling from streams/WWTP influent

Interim Removal Action

- Basis of Design
  - Basis of design identifies the applicable regulations, treatment goals, treatment technology, treatment process, and other relevant considerations
  - Design will be iterative with 30% and 60% designs completed to allow for revisions and adjustments during the design process
  - Final design (100%) will be completed by the remedial action contractor prior to constructing the treatment systems
- Action Memorandum
  - Document that describes the removal action that will be implemented
    - 30-day public comment period for Action Memorandum
- Design Implementation
  - Remedial action contractor will finish design and construct the treatment systems

Interim Removal Action

- Two systems
  - North pond/stream: Intercept water from existing storm pond
  - WWTP: Intercept water from WWTP
- Treatment Process
  - Sand Filter
  - Granulated Activated Carbon
  - Bag Filter
  - Ion Exchange Resin



Questions and Comments

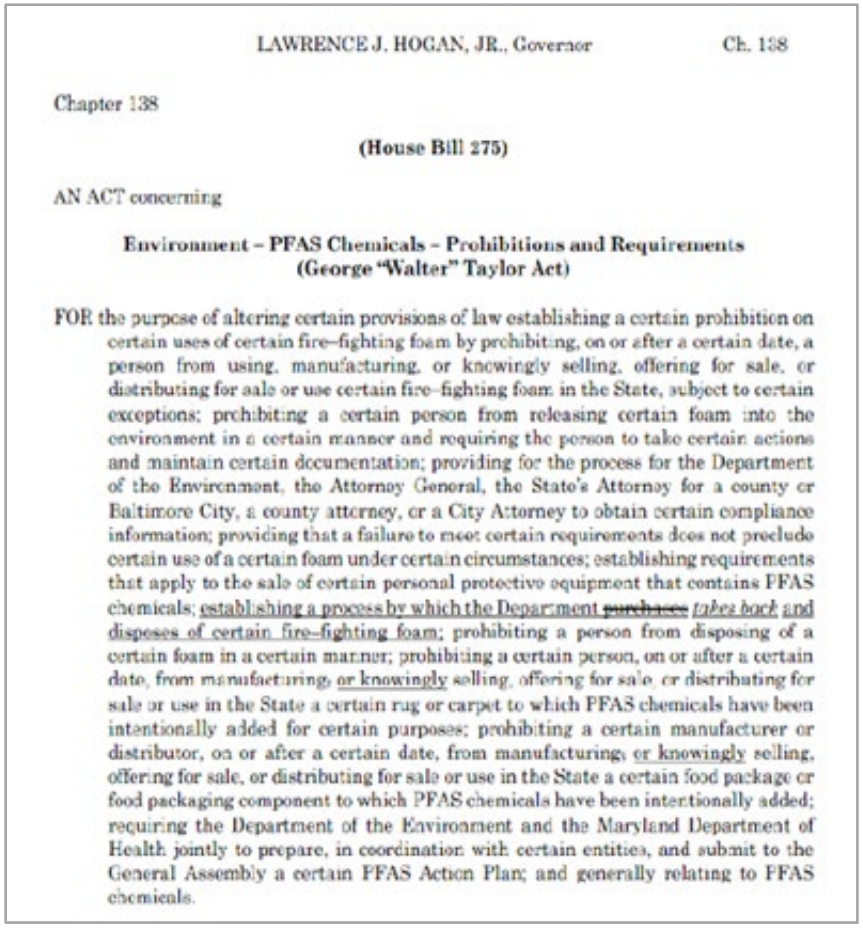
- Open to RAB Members for discussion of "Site 10 Interim Measures" presentation.
- Questions from the public should be sent to "all co-hosts" in the Q&A box, to be addressed at the end of the meeting (as time allows.)

Regulatory Updates

Peggy Williams and Mark Mank –
Maryland Department of the Environment

Maryland House Bill 275 (HB275)

(Became effective July 1, 2022)



LAWRENCE J. HOGAN, JR., Governor Ch. 138

Chapter 138

(House Bill 275)

AN ACT concerning

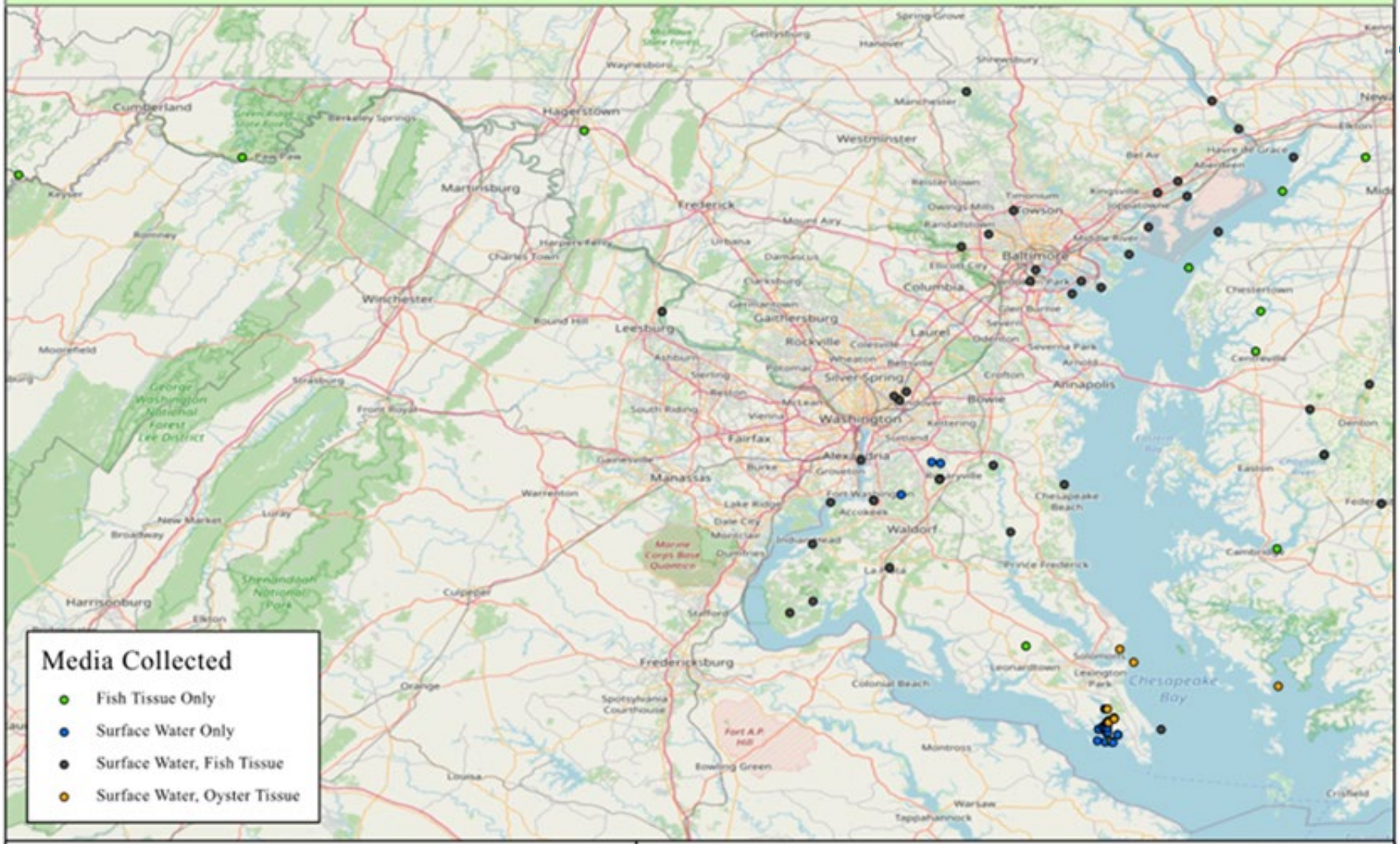
Environment – PFAS Chemicals – Prohibitions and Requirements
(George "Walter" Taylor Act)

FOR the purpose of altering certain provisions of law establishing a certain prohibition on certain uses of certain fire–fighting foam by prohibiting, on or after a certain date, a person from using, manufacturing, or knowingly selling, offering for sale, or distributing for sale or use certain fire–fighting foam in the State, subject to certain exceptions; prohibiting a certain person from releasing certain foam into the environment in a certain manner and requiring the person to take certain actions and maintain certain documentation; providing for the process for the Department of the Environment, the Attorney General, the State's Attorney for a county or Baltimore City, a county attorney, or a City Attorney to obtain certain compliance information; providing that a failure to meet certain requirements does not preclude certain use of a certain foam under certain circumstances; establishing requirements that apply to the sale of certain personal protective equipment that contains PFAS chemicals; establishing a process by which the Department ~~purchases~~ *takes back* and disposes of certain fire–fighting foam; prohibiting a person from disposing of a certain foam in a certain manner; prohibiting a certain person, on or after a certain date, from manufacturing, or knowingly selling, offering for sale, or distributing for sale or use in the State a certain rug or carpet to which PFAS chemicals have been intentionally added for certain purposes; prohibiting a certain manufacturer or distributor, on or after a certain date, from manufacturing, or knowingly selling, offering for sale, or distributing for sale or use in the State a certain food package or food packaging component to which PFAS chemicals have been intentionally added; requiring the Department of the Environment and the Maryland Department of Health jointly to prepare, in coordination with certain entities, and submit to the General Assembly a certain PFAS Action Plan; and generally relating to PFAS chemicals.

https://mgaleg.maryland.gov/2022RS/Chapters_noln/CH_138_hb0275e.pdf

- No incineration of PFAS-containing foam in Maryland
- No land disposal of PFAS-containing foam in Maryland
- Maryland will take back PFAS-containing foam from fire departments and plan for proper disposal of it
- A PFAS summary report to be provided to the General Assembly by December 2022
- MDE and DOH will draft a PFAS Action Plan by December 2023

PFAS Sampling Locations for Fish Tissue, Oyster, and Surface Water



Larry Hogan - Governor
Boyd K. Rutherford - Lt. Governor
Horacio Tablada - Secretary

N

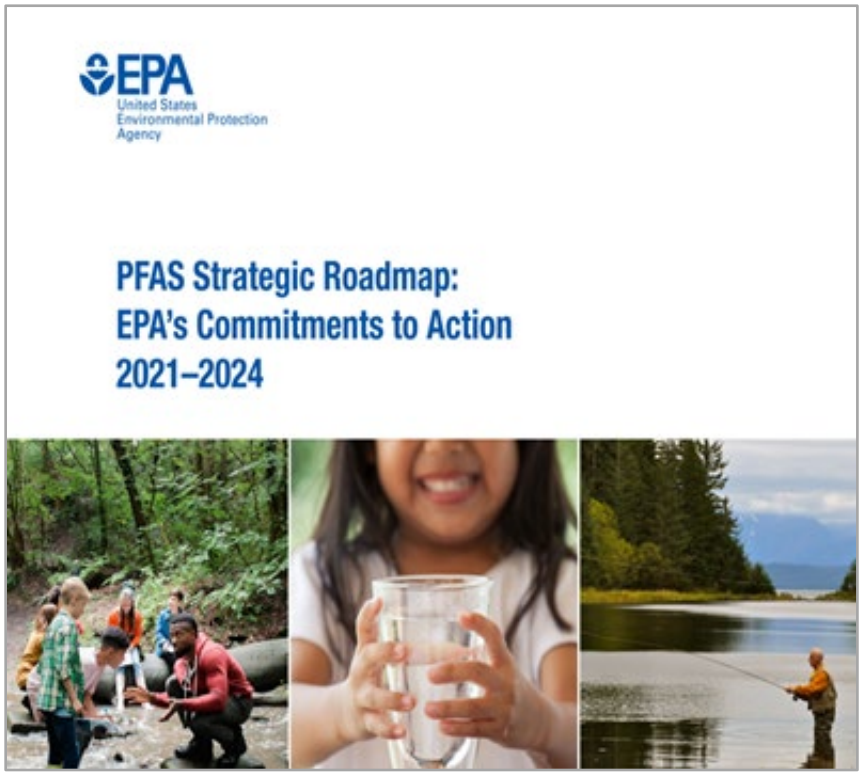
0 20 40 80 Miles

Scale: 1:1,500,000
Date: 07/20/2022

Fish Tissue - Status and Path Forward

- 2021 - Fish consumption advisory for PFAS issued in Piscataway Creek
- Complete fish tissue monitoring in 2022
- Use data to develop fish consumption advisories in other water bodies

EPA PFAS Roadmap (October 2021)



- **Research - Research and better understand PFAS**
- **Restrict - How to reduce our exposure to PFAS**
- **Remediate - New technologies to clean up PFAS from our environment**

https://www.epa.gov/system/files/documents/2021-10/pfas-roadmap_final-508.pdf

New EPA Health Advisories for PFAS (June 2022)

Summary of Four PFAS Health Advisories

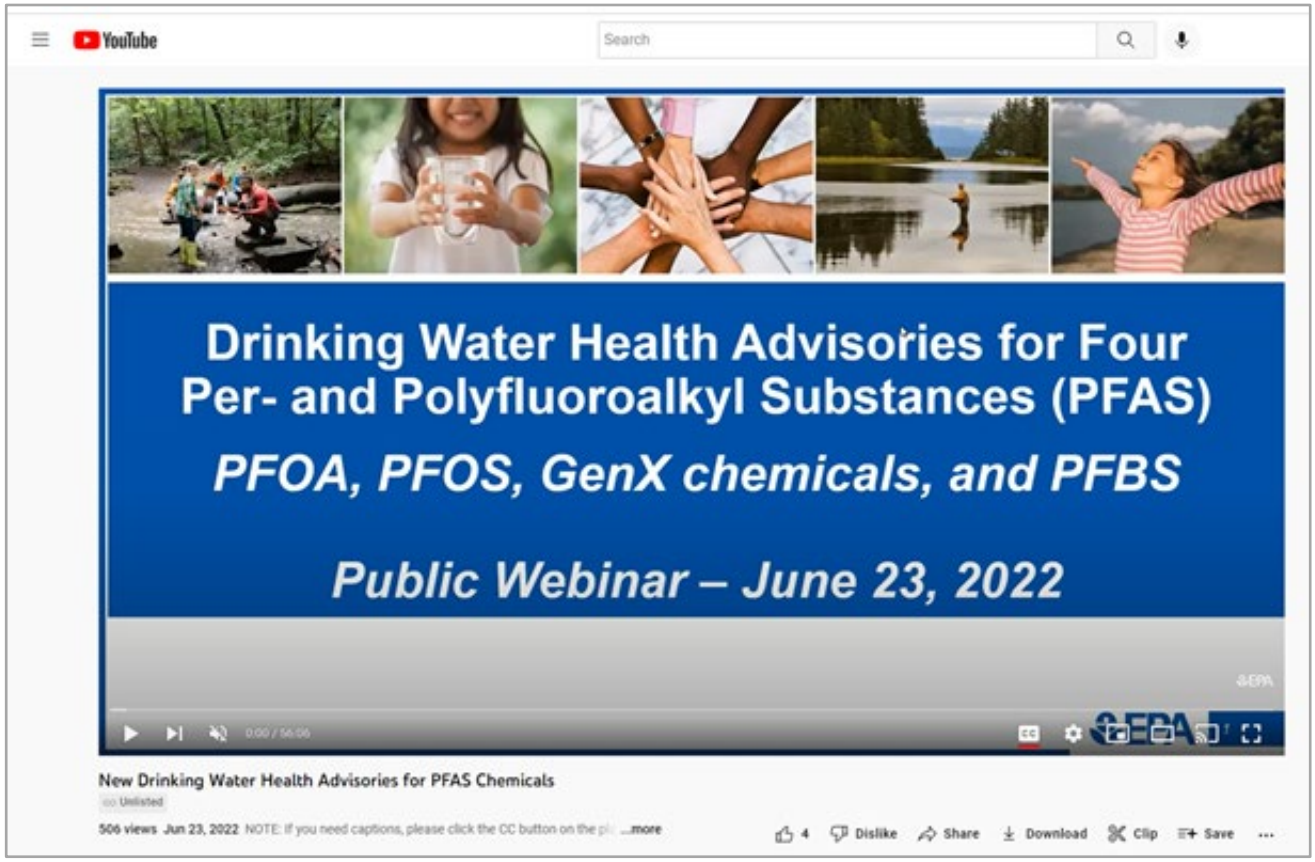
- **Interim Health Advisories**:
  - Perfluorooctanoic acid (PFOA)
  - Perfluorooctane sulfonate (PFOS)
- **Final Health Advisories**:
  - GenX chemicals (PFOA replacement)
  - Perfluorobutane sulfonic acid (PFBS) (PFOS replacement)
- For PFOA and PFOS, some negative health effects may occur at concentrations that are near zero and below our ability to detect at this time.
- The lower the level of these chemicals in drinking water, the lower the risk to public health.

Chemical	Health Advisory Value (ppt)	Minimum Reporting Level (ppt)
PFOA	0.004 (Interim)	4
PFOS	0.02 (Interim)	4
GenX Chemicals	10 (Final)	5
PFBS	2,000 (Final)	3

EPA United States Environmental Protection Agency — Office of Water

https://www.epa.gov/system/files/documents/2022-06/PFAS%20Health%20Advisories%20Public%20Webinar-%20FINAL%20FINAL.pdf

Video on New Health Advisories



Explains new PFAS Health Advisories and treatment technologies (same technologies being used in cleanup projects)

(https://www.youtube.com/watch?v=AGODLCl0QCg)

Questions and Comments

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Questions and Comments

Questions from Public Participants

Future Meeting Planning

- As per charter, plan to meet 2 times per year
  - Navy proposes the next meeting for May 2023
  - 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

    Community Co-Chair – Kevin Britt: kev3125@yahoo.com

Websites for More Information

- **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/xSeKn (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://mde.maryland.gov/PublicHealth/Pages/PFAS-Landing-Page.aspx

  www.epa.gov/pfas

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