

St. Juliens Creek Annex Restoration Advisory Board Meeting Summary: November 2, 2022 Meeting

MEETING ATTENDEES	Robert Bray, NAVFAC Mid-Atlantic Robert Stroud, EPA Region 3 William (Weel) Lindsay, VDEQ Katherine Childs, Norfolk Naval Shipyard Kathryn Smith, CH2M HILL, Inc. (CH2M) Christian Conover, CH2M Juliana Dean, CH2M	Pam Boatwright, Elizabeth River Project Bob Mann, RAB Community Co-Chair and Representative of Geneva Shores Bracey Parr, Craddock Civic League April Strickland, Chesapeake Bay Foundation Patrick Childs, Navy Community Planning and Liaison Officer
LOCATION	Microsoft Teams Conference Call	
MEETING DATE:	November 2, 2022	
PREPARED BY	Christian Conover/CH2M	
MINUTES DATE:	June 26, 2023	

Restoration Advisory Board Welcome and Introductions

At 5:07 p.m., Mr. Robert Bray presented opening remarks and introductions to the Restoration Advisory Board (RAB). Mr. Bray thanked everyone for coming and explained that he is the Naval Facilities Engineering Systems Command (NAVFAC) Mid-Atlantic Remedial Project Manager for St. Juliens Creek Annex (SJCA). The other RAB members and guests introduced themselves. Ms. Kathryn Smith then provided a brief summary of best practices for virtual meetings including methods to unmute through Microsoft Teams or phone. Mr. Bray reviewed the agenda prior to beginning the presentations.

St. Juliens Creek Annex Fiscal Year 2023 Environmental Restoration Program Goals and Schedule

Mr. Bray led the topic and projected a presentation. The objectives of the presentation were to provide an overview of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, provide an update on the SJCA Environmental Restoration Program (ERP) sites and fiscal year (FY) 2023 goals, highlight FY 2022 successes, and solicit questions and comments from the RAB.

Mr. Bray provided a brief overview of the CERCLA process. Mr. Bray explained that the CERCLA process is generally thought of in a traditional process. The process starts with a preliminary assessment (PA), which is a desktop study. The site inspection (SI) stage is conducted by sampling for the presence or absence of any of the contaminants identified in the PA. The next step is the Remedial Investigation/Feasibility Study, and eventually the Record of Decision (ROD), which outlines the path forward for the site. The Remedial Design describes the remedy designed for the site, and the remedial action (RA) is the build of the remedy. The down arrows in the chart presented signified a shift into other phases. The ultimate goal is to get to response complete and site closeout, which can be accomplished by different phases and milestones.

The FY begins October 1 and ends September 30 every year; the year is planned out based on the FY calendar. The FY calendar serves as a budgeting tool and a schedule for program actions. Sites are prioritized based on potential risk to human health and the environment, and the goal is to keep remediation projects on schedule.

Figures were presented that depicted the 56 no further action ERP sites and the three currently active ERP sites (Sites 2, 4, and 21) at SJCA. Two sites are RA sites and the other is response complete with land use controls (LUCs).

An update on Site 2 was provided. Site 2 (Waste Disposal Area B) is an unlined waste disposal area that operated from 1921 to 1942. Investigations conducted at the site identified concerns from waste; chlorinated solvents, one polycyclic aromatic hydrocarbon (PAH), and one pesticide in the shallow aquifer groundwater; chlorinated solvents and metals in the surface water; and PAHs, pesticides, polychlorinated biphenyls, and metals in the sediment and soil.

Site 2 is currently in the remedial action-operation (RA-O) phase. The RA-O activities currently consist of biannual groundwater monitoring and LUC maintenance. The first Five-Year Review (FYR) for Site 2 was completed for the site in May 2015, and the second review was completed in May 2020. The second FYR for Site 2 concluded that the remedy is protective to human health and the environment. The potential unacceptable risk has been addressed by previous actions and is currently controlled by a soil cover and LUCs, and RA-O maintenance and monitoring. The next FYR will be conducted in May 2025.

The recently completed and ongoing activities for Site 2 are as follows:

- RA-O groundwater monitoring
 - Conducted Event 13 in November 2021
 - Conducted Event 14 in May 2022
 - Currently conducting Event 15 in November 2022
- Conducting the annual LUC inspection in December 2022
- Preparing the Site 2 Treatability Study (TS) Sampling and Analysis Plan

The FY 2023 goals for Site 2 are as follows:

- Annual LUC inspection and reporting
- RA-O Groundwater Monitoring Event 14 Report
- RA-O Groundwater Monitoring Event 15 Report
- TS Sampling and Analysis Plan

An update on Site 4 was provided. Site 4 is a sanitary landfill that operated from 1970 to 1981. Soil and sediment contaminated with PAHs, polychlorinated biphenyls, and metals were identified at the site. The RA to address the contamination, consisting of a soil cover, excavation of drainage ditch sediment, and LUCs was completed in 2005. Site 4 is currently in the response complete phase with ongoing LUCs maintenance and FYRs. The first FYR for Site 4 was completed in May 2010, the second FYR in May 2015, and the third FYR in May 2020. The third FYR concluded that the remedy is protective of human health and the environment. The fourth FYR is scheduled for May 2025.

The recently completed and ongoing activities for Site 4 are as follows:

- Conducting the annual LUC inspection in November 2022

The FY 2022 goal for Site 4 is as follows:

- Conducting annual LUC inspections and reporting

An update on Site 21 was provided. Site 21 is the primary industrial area of the facility, where buildings were historically used for maintenance, electrical shops, and munitions loading, and outdoor areas were used for equipment and chemical storage. The fuel service station is no longer present at the site. The environmental concern at Site 21 is chlorinated volatile organic compounds in the shallow aquifer groundwater. In situ chemical reduction, enhanced reductive dechlorination, and LUCs were the selected remedies to address the contamination at the site. The site is currently in the RA-O phase. The RA-O activities consist of biannual groundwater, storm water, and vapor intrusion monitoring; emulsified vegetable oil (EVO) injections; and LUC

maintenance. Figures presented show that the concentrations of constituents of concern in the groundwater over time is ultimately decreasing. The first FYR for Site 21 was completed in May 2015 and the second FYR was completed in May 2020. The second FYR for Site 21 concluded that the remedy is protective of human health and the environment. The fourth FYR is scheduled for May 2025. The potential unacceptable risk has been addressed by previous actions and is currently controlled by LUCs and RA-O maintenance and monitoring.

The recently completed and ongoing activities for Site 21 are as follows:

- Conducting the annual LUC inspection in November 2022
- RA-O vapor intrusion monitoring
 - Conducted Event 19 in January 2022
 - Conducted Event 20 in July 2022
- RA-O groundwater and storm water monitoring
 - Conducted Event 19 in November 2021
 - Conducted Event 20 in May 2022
 - Currently conducting Event 21 in November 2022

The FY 2023 goals for Site 21 are as follows:

- Conduct annual LUC inspections and reporting
- Finalize the RA-O Groundwater and Storm Water Monitoring Event 20 Report
- Finalize the RA-O Groundwater and Storm Water Monitoring Event 21 Report

The facility-wide goals for SJCA for FY 2023 are as follows:

- Complete the FY 2024 through 2028 Site Management Plan update
- Complete the per- and polyfluoroalkyl substances (PFAS) SI Report in FY 2023

Mr. Bray presented the FY 2022 successes. The successes for SJCA during FY 2022 were the following:

- COVID-19 Pandemic
 - Continued to successfully accomplish team goals and kept projects moving forward during the pandemic
- Research Projects
 - Facilitated Engineering and Expeditionary Warfare Center/GSI and Naval Research Laboratory projects at Site 2 and Site 21
- Basewide PFAS Investigation
 - Completed the PFAS SI fieldwork at five areas
- LUC Inspections and Maintenance
 - Completed LUC inspections at Sites 2, 4, and 21
- RAB and Community Outreach
 - Hosted virtual RAB meeting in November 2021
 - Conducted RAB site visit in May 2022
 - Kept public website updated throughout COVID-19 pandemic with information regarding canceled RAB meeting

Mr. Bray asked if there were any additional questions or comments. No comments were received.

Site 2 Treatability Study

Ms. Smith led the topic and projected a presentation. Ms. Smith mentioned that the ROD and remedy in place have already been established, but this study is to determine whether there is another process that may be more effective for the site. The overview of the presentation was to review the Site 2 background, remedy, and RA-O components; discuss challenges during remedy implementation; present summary and status of optimization activities completed to date; provide an overview of the path forward; and solicit questions and comments from the RAB.

Site 2 is an unlined waste disposal area that operated from 1921 to 1942. Site 2 received mixed municipal wastes, organics, inorganics, solvents, waste ordnance, and abrasive blast media that were reportedly disposed of. The site was investigated between 1997 and 2010. The remedy for soil, waste, sediment, and groundwater was implemented between 2011 and 2014. The RA-O activities began in 2014 following the remedy in place. The groundwater constituents of concern are monitored semiannually. The TS is being conducted to explore potential future modifications to the overall remedy and aid in determining the path forward.

The Site 2 remedy consists of the following:

- Soil cover over waste, soil, and inlet sediment
- Excavation of St. Juliens Creek sediment
- Enhanced reductive dichlorination with injections of EVO within the high concentration target area of the shallow aquifer groundwater
- Monitored natural attenuation within the low concentration target area
- LUCs
- Contingency permeable reactive barrier (PRB)

RA-O was initiated in July 2014, is ongoing, and includes the following:

- Groundwater monitoring to evaluate the remedy effectiveness
- Compensatory mitigation wetland monitoring to ensure successful mitigation; monitoring was completed in 2020
- LUC maintenance
- Installation of a PRB (if necessary)
- Additional injections (as necessary)
 - During the most recent injections in 2019, only 65 percent of the intended EVO injection volume was able to be injected due to issues with the permanent injection well network. Repairs and rehabilitation activities were completed in the past and this is another reason this TS is being conducted.

The general objectives of the Site 2 TS were presented. The objectives are to:

- Provide information to evaluate the effectiveness of in situ chemical reduction (ISCR) and determine whether it is a feasible option for groundwater constituents of concern (COCs)
- Complete field activities prior to injection to refine the understanding of dense nonaqueous phase liquid (DNAPL)

The approach consists of the following:

- Conduct a dye-enhanced laser induced fluorescence (DyeLIF) investigation to evaluate potential presence of DNAPL.
- Inject zero valent iron (ZVI) using two different approaches at two separate locations to evaluate the effectiveness and feasibility of implementing ISCR technology at Site 2.
 - ISCR was selected because it has been shown to abiotically degrade groundwater COCs and limit the production of daughter products at Site 2.
- Inject two different substrate mixtures.
 - Injecting sulfidated ZVI only in the vicinity of SJS02-MW32S (sulfidated ZVI is more reactive, for faster treatment)
 - Injecting ZVI and EVO in the vicinity of SJS02-MW15S.
- Conduct postinjection monitoring by collecting groundwater samples from existing monitoring wells to evaluate treatment technology.

A map of the COC plumes were shown for Site 2. Ms. Smith showed the RAB where SJS02-MW32S and SJS02-MW15S are located and where the injections will be approximately located. Ms. Smith presented that the approximate DyeLIF locations are shown as red triangles on the figure shown.

Ms. Smith stated that the injections will be immediately upgradient of SJS02-MW32S and SJS02-MW15S. The two locations were selected because they have high concentrations of volatile organic compounds. SJS02-MW32S has not previously had EVO injections completed in the vicinity, therefore there is minimal vinyl chloride (VC) at this location. SJS02-MW15S has both high trichloroethene and high VC concentrations.

Injections will consist of three injection points around each injection area. The sulfidated ZVI will be injected at SJS02-MW32S at up to seven different vertical intervals to achieve distribution and ZVI and EVO will be injected at SJS02-MW15S at up to four different vertical intervals to achieve distribution.

The following path forward was presented:

- TS Sampling and Analysis Plan is being prepared.
- Fieldwork will be conducted over multiple phases in 2023.
- A TS Report will be prepared to document the work completed and evaluate the results.

Ms. Smith asked if there were any questions. Mr. William Lindsay asked if the TS was added to speed up the degradation or why was it being conducted? Ms. Smith said that the team was having issues with the current wells that were installed. Also, ZVI (process of ISCR) was evaluated in the early 2000s, which required pneumatic fracturing and was a much larger particle and created injection difficulties. The past ISCR evaluation concluded that it would need to be implemented by mixing with soil, which may be difficult with potential munitions onsite. Now, the particles in ZVI are much smaller and may be easier to implement. Ms. Smith mentioned that with the various types of ZVI and size differences, potentially injecting different types of ZVI in different portions of the site can potentially determine the effectiveness of ISCR. Ms. Smith also mentioned that the daughter products may be further reduced with ZVI products.

Mr. Bob Mann asked how deep the wells are at the site. Ms. Smith mentioned that the wells in the north are approximately 20 feet deep. Ms. Smith said that the confining unit varies in depth and gets deeper as it gets further south on site. The wells in the southern portion of the site are approximately 38 feet deep.

Per- and Polyfluoroalkyl Substances Site Investigation Update

Mr. Bray reviewed the topics and objectives of this presentation, which is to provide the background and history for PFAS, discuss recent regulatory changes and the Congressional Mandate and CERCLA process timeline, present a summary of activities completed to date, provide an overview of the path forward, and provide resources and answer any questions.

Mr. Bray stated that PFAS are human-made compounds that have been used in products since the 1950s. Presently, PFAS can be found in many household items. The useful properties of PFAS result in their persistence in the environment. PFAS are heat-resistant, flame-retardant, oil-resistant, and water-resistant. They work by forming a film over surfaces. PFAS are found in the blood of people, wildlife, and fish worldwide.

Mr. Bray provided a brief history of PFAS, when they were developed, and some of the typical uses over the past decades. At Department of the Navy (Navy) facilities, the most common source of PFAS to the environment is the use of aqueous film-forming foam (AFFF) in past firefighting training activities and emergency response. The Navy's use of AFFF started in the late 1960s and early 1970s following issuance of the military specification (MILSPEC) for a fluorocarbon-based AFFF in 1969. MILSPEC are performance-based and there are different formulations.

In May 2022, United States Environmental Protection Agency (EPA) released updated Regional Screening Levels (RSLs) for six PFAS constituents. The Navy is currently comparing all data collected as part of the SI to these RSL values. Ms. Juliana Dean noted that the RSL values for perfluorooctanoic acid (PFOA) and (perfluorooctane sulfonic acid (PFOS) were reduced by an order of magnitude with the May 2022 update.

There is a congressional mandate to have all PFAS SIs completed by the end of FY 2023. SJCA is currently on track to meet the deadline.

Activities completed to date:

- PA Report finalized in February 2021
 - Assesses the potential PFAS release areas and determines areas that warrant further investigation
- The Final PFAS PA concluded that:
 - 44 areas were recommended for no further action
 - 5 areas were identified to move forward to the SI phase of the investigation
 - Regional Fire Training Academy
 - Building M-5
 - Site 5 – Burning Grounds Group which include a Potential Fire Training Area
 - Site 15 – Fire Training Area Group which includes Building 271 – Former Fire Station
 - Site 21 – Industrial Area including Site 9, Building 249, and Building 104
- The SI is currently being conducted:
 - Areas that were determined to warrant further investigation in the PA were carried forward into the SI phase (next phase of the CERCLA process)
 - SI SAP was finalized in September 2021
 - Fieldwork was conducted between February 2022 and July 2022 and included:
 - Installing new monitoring wells
 - Collecting groundwater samples from new and existing monitoring wells
 - Collecting soil samples from select sites

The path forward for SJCA was presented. The SI fieldwork is complete, the sample results are currently being analyzed by the lab and sent to the data validators, and then the results of the fieldwork and evaluation will be documented in an SI Report.

Mr. Bray presented the following resources that provide additional information for PFAS:

- Secretary of the Navy: <https://www.secnav.navy.mil/eie/Pages/pfc-pfas.aspx>
- Virginia Department Environmental Quality (VDEQ): <https://www.deq.virginia.gov/get-involved/the-environment-you/per-and-polyfluoroalkyl-substances-pfas>

- Agency for Toxic Substances and Disease Registry (Division of the Centers for Disease Control): <https://www.atsdr.cdc.gov/pfas/index.html>
- EPA: www.epa.gov/pfas
- Interstate Technology Regulatory Council: <https://pfas-1.itrcweb.org/fact-sheets/>

Mr. Bray asked if there were any additional questions or comments. Mr. Lindsay asked when the Final SI Report will be completed. Mr. Bray replied it will be completed by the end of FY 2023. No additional questions or comments were received.

Roundtable/Question and Answer

Mr. Bray asked if there were any additional question or comments. Mr. Bray asked the RAB if they would be open to meeting once a year instead of twice a year. The RAB members in attendance agreed with this proposal. Mr. Bray suggested conducting the RAB meeting annually in May, and continuing site visits while also providing a site status update during the site visits. Mr. Bob Mann said he felt this would be helpful and was ok with changing to annual RAB meetings. Ms. Smith asked if the site visits during lunch time would be okay. Mr. Bracey Parr stated that he will not be here for the next meeting because a new Craddock league president will be taking over the position, but noted that an after-work timeframe would be preferred. Ms. April Strickland asked if she could be added to the list of regular updates. Ms. Smith replied they would add her to the RAB list. No additional questions were received.

Next Meeting

The next RAB meeting is scheduled for May 2023.

Meeting Adjourned