

**Workshop Summary Notes
Fort Ord Environmental Cleanup
Technical Review Committee (TRC)**

February 15, 2022
Via Conference Call

The materials listed below were provided to attendees:

- An agenda
- Presentation Slides – Environmental Service Cooperative Agreement (ESCA)
- Presentation Slides – Operable Unit 2 (OU2) Landfill Operations & Maintenance Update
- Presentation Slides – Groundwater Cleanup & Per- and Polyfluoroalkyl Substances (PFAS) Update (2 Parts)

Agenda Topics

1. Review of the February 12, 2022 Online Community Involvement Workshop
2. Presentation: Environmental Service Cooperative Agreement (ESCA)
3. Presentation: Operable Unit 2 (OU2) Landfill Operations & Maintenance Update
4. Presentation: Groundwater Cleanup & PFAS Update (2 Parts)

Meeting Participants

- Bill Collins, U.S. Army Fort Ord Cleanup BRAC Environmental Coordinator
- Maeve Clancy, U.S. Environmental Protection Agency (EPA)
- Bridget Floyd, U.S. Army Corps of Engineers (COE)
- Derek Lieberman, Ahtna
- Eric Schmidt, Ahtna
- Melissa Broadston, City of Seaside ESCA
- Ben Havens-Stokes, City of Seaside
- ESCA
- Arianne Tucker, California State University Monterey Bay (CSUMB)
- Dan Waligora, California Fish & Wildlife
- Maureen Hamilton, Monterey Peninsula Water Management District
- Jason No, Chenega
- Chieko Nozaki, Chenega
- Betsy Hibbits, Chenega

Opening Remarks

Mr. Collins opened the meeting welcoming everyone to the call. Mr. Collins introduced the presentation topics for the meeting. Mr. Collins then introduced and handed the meeting over to Jason No, the new Public Outreach Specialist for Fort Ord Cleanup.

Community Involvement Workshop Update

Due to COVID, the February 12th Community Involvement Workshop was hosted online with a specially created webpage. The link to the online Community Involvement Workshop can be found at FortOrdCleanup.com. On there, community members are able to learn the latest updates about Fort Ord Cleanup with recorded presentations by the cleanup technical staff. An online form is also available to provide feedback and ask questions. As

for the outreach, the Army sent emails and mailers to community members and newspaper ads were placed in the Monterey Herald and Weekly. The online webpage launched Friday, Feb 11th and will be available for 30 days through March 14th, 2022. There were no questions.

Environmental Services Cooperative Agreement (ESCA)

Ms. Broadston with the City of Seaside provided presentation updates on the ESCA program. The Environmental Services Cooperative Agreement (ESCA) is a grant from the Army. The original grant was issued to the Fort Ord Reuse Authority to complete the munitions cleanup in approximately 3,300 acres of the former Fort Ord property. The reuse authority was dissolved in June 2020 and succeeded by the City of Seaside. The current purposes of the program are to address residual safety issues associated with former munitions training conducted in Fort Ord and the responsibility for the long-term implementation of the land use controls for public safety until June 30, 2028. After June 2028, this responsibility will return to the Army. A timeline of the status and history of the agencies related to ESCA was shown. All 3,300 acres have completed all munitions cleanup activity and transferred to the intended recipients. In 2007, when ESCA first started, all 3,300 acres were consolidated into 4 groups and the Interim Action Ranges, all according to similar cleanup and closure characteristics. This was a way to organize the properties located within different jurisdiction and future property re-uses. A color-coded map was shown, displaying the groups. The County North Munitions Response Area (MRA) is a part of a Record of Decision that requires no munitions cleanup and does not have land use control requirements. All other areas have completed munitions cleanup as outlined in their Record of Decision. Each Record of Decision includes land use control remedies which are further described in the land use controls implementation plan. The presentation then continued into the cleanup status and proposed reuses for each group.

- Group 1: Seaside and Parker Flats MRAs: removals complete, land use control requirements are described in Group 1 Land Use Control Implementation Plan/Operation and Maintenance Plan (LUCIP/OMP) (ESCA-0361E), land transferred. Proposed future reuses: residential, non-residential, habitat reserve, and Veteran's cemetery.
- Group 2: CSUMB Off-Campus MRA: removals complete, land use controls requirements are described in Group 2 LUCIP/OMP (ESCA-0305B), land transferred. Proposed future reuses: Residential and non-residential development.
- Group 3: Del Rey Oaks/Monterey, Laguna Seca Parking, Military Operations in Urban Terrain (MOUT) Site MRAs: removals complete, land use controls requirements are described in Group 3 LUCIP/OMP (ESCA-0301B), land transferred. Proposed future reuses: Habitat management, non-residential development, continued use as overflow parking for Laguna Seca, and continued use as MOUT training area by Monterey Peninsula College (MPC).
- Group 4 Future East Garrison MRA: removals complete, land use control requirements are described in Group 4 LUCIP/OMP (ESCA-0364B), land transferred. Proposed future uses: residential, non-residential development, and habitat reserve.
- Interim Action Ranges MRA: removals complete, land use control requirements are described in the Interim Action Ranges MRA LUCIP/OMP (ESCA 0337B), land

transferred to MPC. Proposed future reuses: non-residential development, and habitat reserve.

The presentation continued with a review of the land use controls which include (1) safety recognition training, (2) construction support, (3) residential use restrictions and (4) habitat reserve restrictions. The presentation continued with a discussion of instruments that are used to enforce the land use controls, which include: local digging and excavation ordinances, memorandum of agreement with DTSC regarding monitoring and reporting of land use controls, covenants to restrict the use of property, and deed restriction. Safety training is available at FortOrdSafety.com and a review of the 3R's were given: Recognize, Retreat, Report.

The presentation concluded with recent activities that included updates to the signs in transferred ESCA properties and reminders of land use control requirements for property owners.

There were no questions.

Operable Unit 2 (OU2) Landfill Operations & Maintenance Update

This presentation by Mr. Schmidt of Ahtna, began with an overview of the operations and maintenance activities on the Fort Ord OU2 Landfills. The history of the Fort Ord Landfills was presented. Mr. Schmidt noted that the Landfills originally consisted of six areas (A through F). Area A was clean-closed after the waste was relocated to the other landfill cells. The Landfill cells B-F are covered with an engineered cover system that includes a geomembrane that is 60 mil (1.5 millimeters) thick. The geomembrane prevents rainwater from infiltrating through the landfilled waste to the groundwater. Mr. Schmidt described how the geomembrane is covered with about 2 feet of clean soil to support growth of native vegetation. Maps were shown of the Fort Ord OU2 landfills location and the status of each area. The engineered cover was cover constructed in 3 phases, 1997 to 1998, 2002 to 2003, and 2013. The 2013 work included incorporating contaminated soils from range cleanup projects under a second layer of geomembrane. He showed a cross section of the landfill structure and photos of the process for the 2013 installation of the engineered cover system. Covering Area E in 2013 was shown in 6 steps and photos; geomembrane factory inspection, rolling out geomembrane, joining geomembrane seams, welding geomembrane seams, placing vegetative cover soil, and hydroseeding with native seed.

The presentation continued with landfill cover maintenance, vegetative cover erosion repairs, and perimeter road erosion repairs. Photos showing recent erosion repairs and landfill perimeter road repair were shown. Owl nest boxes and raptor perches were added to the landfill site to encourage natural removal of gophers and ground squirrels. Maps were shown with locations of the owl boxes and raptor perches to show optimal coverage. Mr. Schmidt then continued to describe how landfill gas is produced in all landfills when organic waste decomposes. Landfill gas concentrations are monitored at probes in and around the Landfills for compliance with California regulations to keep the methane concentrations below the lower explosive limit of 5%. The landfill gas is actively pulled from the landfills and sent to the treatment system. Mr. Schmidt presented a map showing the locations of the landfill gas monitoring probes and another map detailing the locations

of the landfill gas extraction wells and treatment system, consisting of a thermal treatment unit (TTU). He described how landfill gas is extracted and piped to the TTU to destroy the methane and other compounds, and noted landfill gas extraction is occurring in Areas D, E and F. Charts that showed trends of methane and volatile organic compound concentration over time were also provided.

Mr. Dan Waligora, California Fish & Wildlife, asked for clarification on why methane concentrations shown on slide 18 are above 5% when Mr. Schmidt said monitoring probes demonstrated no impact earlier in the presentation. Mr. Schmidt clarified the chart shown on slide 18 was for the methane concentration at the influent to the TTU. The methane concentrations at the compliance probes placed at the perimeters of the Landfills do not exceed the lower explosive limit of 5% (slide 15).

There were no additional questions or remarks.

Groundwater Cleanup Update

The meeting continued with a presentation on groundwater cleanup at the former Fort Ord by Mr. Derek Lieberman of Ahtna. This presentation was provided in two parts, groundwater cleanup and PFAS.

Mr. Lieberman provided definitions related to groundwater cleanup then presented a geologic cross section to explain the aquifer system in the northern portion of the Fort Ord area.

The presentation continued by discussing the background, location, and cleanup details for the Fort Ord groundwater contamination plumes. There are three groundwater contamination areas undergoing treatment on the former Fort Ord. At Operable Unit 2, trichloroethene or TCE is the primary chemical of concern. Carbon tetrachloride is the primary chemical of concern for the groundwater contamination area called Operable Unit Carbon Tetrachloride Plume, or OUCTP. Tetrachloroethene or PCE, is the primary chemical of concern at Sites 2 and 12. The primary chemical of concern at Operable Unit 1 was TCE, and the Army has met the cleanup objectives for this site. He provided a map that showed the locations of the current groundwater contamination plumes and a composite perspective of the maximum historic extent of these groundwater contamination plumes. There are over 300 groundwater monitoring wells in the northern portion the former Fort Ord which were shown on a presentation map. A schematic of the groundwater extraction and treatment system was shown and Mr. Lieberman explained how the treatment system worked to extract, clean, and return cleaned water to the aquifer. The groundwater is treated by passing through granular activated carbon vessels, similar to the water filters people use at homes but just in a larger scale. The clean water is then pumped back in to prevent spreading of the plume and saltwater intrusion. The used carbon in the treatment process is recycled.

Mr. Lieberman provided the status of the groundwater treatment systems as of December 31, 2021. He noted the number of gallons of water treated and the amount of contaminants removed and the aquifers where the treatment is on-going. He noted that the treatment systems for OU2 (which includes an OUCTP extraction well connection) and Sites 2/12

include groundwater extraction and treatment with granular activated carbon.

Mr. Lieberman presented maps of each of the groundwater contamination plumes comparing the historic maximum extent of the contaminant plumes to the plume extent as of September 2021 to demonstrate the Army's cleanup progress and described the suspected sources of contamination for each plume.

At OU2, the original source of the groundwater contaminant plumes was from the former Fort Ord Landfills. The plumes in the A-Aquifer eventually migrated west and into the Upper 180-foot Aquifer. With active treatment, the plumes have seen a significant reduction in size and concentrations.

At Site 12, the original source of the groundwater contaminant plumes was assumed to be historical use and improper disposal of solvents. Groundwater cleanup began in 1999 with TCE as the primary chemical of concern. In 2011, PCE was detected at concentrations above the cleanup level in an area where it had not been detected before. Therefore, the Army conducted additional work at Site 12, including a soil gas investigation, to find out how much PCE there was and has implemented additional remedial actions. The investigation showed the soil gas was not a human health concern but it was acting as a source to the groundwater contamination. The Army monitors soil gas probes and operates a soil vapor extraction system to prevent contaminants from getting to the groundwater. When contaminated soil gas is removed from the subsurface and is then treated, it is referred to as soil vapor extraction and treatment. The Fort Ord system uses granular activated carbon as a part of the treatment process, just like the groundwater treatment system. The cleanup project has been successfully addressing the chemicals of concern at this site. As of September 2021, there is a very small PCE plume extent and Sites 2 and 12 remedial action is nearing completion in the very near future.

For OUCTP, treatment is different for each of the three affected aquifers. In the A-Aquifer, enhanced *in situ* bioremediation is the remedy; in the Upper 180-Foot Aquifer it is groundwater extraction and treatment; and the remedy for the Lower 180-Foot Aquifer is monitored natural attenuation. Mr. Lieberman noted that the enhanced *in situ* bioremediation system was deployed in several areas. The system includes injection and extraction wells. Sodium lactate substrate is added to the groundwater via the injection wells then recirculated underground by pumping from the extraction wells. The sodium lactate is a food source for microbes and bacteria already in the groundwater, so the extra food makes the population of microbes grow. Afterwards the food is taken away, the microbes look for another energy source and start breaking down the carbon tetrachloride into harmless components, such as methane, ethane, and ethene.

Mr. Lieberman noted through the presentation that the drinking water is provided by the Marina Coast Water District. The drinking water supply wells are located outside the plume extents. The water is safe, regularly tested, and meets all regulatory standards. A link was provided to the latest Marina Coast Water District Consumer Confidence Report.

Mr. Dan Waligora, California Fish & Wildlife, asked where the drinking water came from and Mr. Lieberman explained that they are in the wells outside of the plume areas. Some of

the wells are screened in the Lower 180-Foot and 400-Foot Aquifers; other wells are screened in the deeper 900-Foot Aquifers.

There were no additional questions.

Per- and Polyfluoroalkyl Substances (PFAS) Update

Per- and polyfluoroalkyl substances (PFAS) are a diverse group of emerging chemical compounds that are resistant to heat, water, and oil. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are the most extensively studied and historically the most widely-used throughout the U.S. In the 1970s, the Department of Defense (DoD) began using Aqueous Film-Forming Foam (AFFF) that contained PFOS and, in some formulations, PFOA. AFFF is considered to be most critical because it quickly extinguishes petroleum-based fires. PFOS, PFOA, and other PFAS have been found in people, the environment, wildlife, and fish all over the world and do not break down easily in the environment. In 2016 USEPA established a lifetime health advisory levels for PFOS and PFOA in drinking water at 70 parts per trillion. Mr. Lieberman noted it's important to know that research is still ongoing for these emerging chemicals.

The presentation continued with Mr. Lieberman explaining that the Army conducted investigations to assess for the presence of PFOA and PFOS in groundwater at Operable Unit 1 (OU1) and Operable Unit 2 (OU2). OU1 includes a former Fire Drill Area operated from the 1960s to 1980s where AFFF was used during training exercises. Two of the eight wells sampled had concentrations of PFOA that exceeded USEPA health advisory levels. OU2 includes a landfill that operated from the 1950s to 1980s and may have received waste materials containing PFAS. One of the twelve wells sampled had concentrations of PFOA and PFOS that exceeded USEPA health advisory levels.

Mr. Lieberman explained that the Army follows the CERCLA (Superfund) process to fully investigate releases, prioritize responses, and determine appropriate cleanup actions based on risk. In 2021, the Army started the first step by conducting a Preliminary Assessment (PA) for PFAS at the former Fort Ord. The PA is a review of historical activities at the former Fort Ord to determine whether a release of PFAS may have occurred and to identify potential sources and types of releases. Extensive site-wide research and investigations, including interviews with site personnel, were conducted during the development of this report. The report indicates there was limited historical use of PFAS-containing material at the former Fort Ord but further investigation in a Site Inspection (SI) is recommended for six sites. Mr. Lieberman explained that 103 sites were initially reviewed to determine if they were in one of the categories of historical uses that have the potential to result in storage, use or release of PFAS-containing material. Of those, 39 sites were identified for further evaluation to determine if a release may have occurred. Six sites advanced to the tertiary assessment where additional information such as geology, residential populations, groundwater use, etc. were determined. The information gathered was then used to develop a pathway and target assessment for each site. A "pathway" is the environmental medium through which a hazardous substance may threaten targets and a "target" is a physical or environmental receptor that is within the target distance limit for a particular pathway. He noted that although six sites were recommended, other sites can still be evaluated for further investigation.

Mr. Lieberman then continued the presentation describing each of the six sites and its findings:

- Site 10 Former Burn Pit: Historical use of AFFF for training and demonstration purposes; Potential adverse effects on groundwater and drinking water supply
- Site 40A, East FAAF Helicopter Defueling Area: Use of AFFF during a response to fuel spill; No pathway to drinking water supply
- Building 514, FAAF Fire & Rescue Station: Discharge of old or expired AFFF; No pathway to drinking water supply
- Building 4400, Main Garrison Fire Station: Discharge of old or expired AFFF; No pathway to drinking water supply
- FAAF Fire Drill Area (OU1): Historical use of AFFF for training; No pathway to drinking water supply
- OU2: Use of AFFF during responses to landfill fires and disposal of waste containing PFAS; Potential adverse effects on groundwater and drinking water supply

Mr. Lieberman explained that the drinking water is safe and is provided by the Marina Coast Water District. The water is tested and meets all regulatory standards. A link was provided to the latest Marina Coast Water District Consumer Confidence report. Additional information and all reports mentioned in the presentations can be found at the Army's website, www.FortOrdCleanup.com

No questions were asked.

What Happens Next

In April, Fort Ord Cleanup will be looking to attend various local Earth Day celebrations and the Fort Ord National Monument 10-year anniversary celebration event. On May 14th, the guided nature walk will take place and reservations will be required. All information can be found at www.FortOrdCleanup.com. The next TRC meeting will hopefully be in person and is scheduled for July 19, 2022.

The meeting was closed.