

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

February 6, 2018

Fort Ord Base Realignment and Closure (BRAC) Office, Building 4463 Gigling Road,
Seaside, CA

The below listed material was provided to attendees:

- An agenda
- Presentation Slides –Fort Ord Operable Unit 2 Landfills
- Presentation Slides – Groundwater Cleanup Update
- Fact Sheet: What Happens Next

Agenda Topics

1. Review of Issues Raised During the Community Involvement Mobile Workshop on February 3, 2018
2. Update: Fort Ord Reuse Authority (FORA) Environmental Services Cooperative Agreement (ESCA) Remediation Program (RP) (10 minutes)
3. Presentation: Fort Ord Operable Unit 2 (OU2) Landfills
4. Presentation: Groundwater Cleanup Update
5. Schedule for 2018 Outreach Actions

Meeting Participants

- Bill Collins, Fort Ord BRAC
- David Eisen, U.S. Army Corps of Engineers (COE)
- Rayna Appelton, Circlepoint (meeting facilitator)
- Stan Cook, FORA ESCA
- Derek Lieberman, Ahtna
- Tammy Pickens, California Department of Toxic Substances (DTSC on phone)
- Layne Long, City of Marina
- Sandra Tauriac, Monterey County Health Department (MCHD)
- Ric Encarnacion, MCHD
- Maria Ferdin, MCDH
- Patty Velez, California Department of Fish and Wildlife (Cal F&W)
- Ken Folsom, California State University Monterey Bay
- Thomas Barkhurst, Marina Coast Water District (MCWD)
- Mark Ogonowski, U.S. Fish and Wildlife Service (on phone)
- Derek Cray, MCWD
- Chieko Nozaki, Chenega
- Donna Roman, Chenega
- Cary Stiebel, Chenega
- Melissa Broadston, Chenega
- Roy Evans, HydroGeoLogic

Review of Issues Raised During the Community Involvement Mobile Workshop on February 3, 2018

Mr. Bill Collins, Fort Ord BRAC Environmental Coordinator opened the TRC meeting. There were no outstanding community comments or questions raised during the February 3, 2018, Community Involvement Mobile Workshop. The Community Involvement Mobile Workshop included an open house, bus tours, and presentations with question/comment opportunities. Participants were provided handouts that pertain to these cleanup topics for each area as well as comment cards. During the open house and tour, the BRAC Cleanup Team members, Fort Ord staff and consultants were available for informal discussions with community members and to answer questions. Over 130 community members participated in the Community Involvement Mobile Workshop.

FORA ESCA RP Update

Mr. Stan Cook of FORA provided an update of the FORA ESCA RP including summaries of the activities and documents related to each of the ESCA munitions response areas (MRAs). He provided an orientation to the ESCA MRAs in portions of Fort Ord by group followed by a brief history of the ESCA program under which FORA is conducting munitions cleanup with funding provided by the Army and with regulatory agency oversight. For each group, Mr. Cook provided status in the ESCA remediation process, and the proposed reuse.

The upcoming document schedule was presented. Mr. Cook concluded his presentation with a brief review of places to access ESCA resources, including the ESCA information hotline (831-883-3506) and the ESCA web site (www.foraescarp.com). He also posted a list of the acronyms used in the presentation.

There were no questions.

Update of the Army's OU2 Landfill

This presentation by Mr. Derek Lieberman (Ahtna) began with an overview of the operations and maintenance activities on the Fort Ord OU2 Landfills. Mr. Lieberman provided the history of the Fort Ord Landfills and explained that the Landfills originally consisted of six areas (A through F). He then discussed the closure of Area A and the use of soils to build a foundation for the landfill cover on other cells. The Landfills are covered with an engineered cover system that includes a geomembrane that is 60 mil (1.5 millimeters) thick. The geomembrane prevents rainwater infiltration through the landfilled waste to the groundwater. Samples of the geomembrane material welded together were circulated among the meeting participants. Mr. Lieberman described how the geomembrane is covered with about 2 feet of soil to support growth of native vegetation.

A vertical expansion at a portion of Area E of the Landfills was implemented in 2013. Photos of the 2013 engineered cover project at Area E were presented. Additional landfill cover maintenance activities in 2018 included vegetative cover erosion repairs and maintenance of concrete lined drainage ditches. In addition, owl boxes and raptor perches

were added to the landfill site to encourage natural removal of gophers and ground squirrels. Mr. Lieberman described 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. Mr. Lieberman presented a map showing the locations of the landfill gas monitoring probes. Mr. Lieberman presented a map showing 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 because Areas B and C are older and are no longer generating significant quantities of landfill gas. The TTU is operated intermittently. Reports and documents related to the landfill are available at the Army's web site www.FortOrdCleanup.com.

In response to Ms. Velez's questions on what portion of Area F required erosion repair and what is the depth of the vegetative cover layer, Mr. Lieberman responded that about 3-4% of Area F required repair and the vegetative cover is typically 2 feet thick. Burrowing rodents created a preferential pathway for rain water which, in turn, caused erosion. He added that the installation of the owl boxes with raptor perches are an integrated pest management technique. Ahtna consulted with an expert to design, orient and place the owl boxes throughout the landfill site.

Overview: Groundwater Cleanup Update

The workshop continued with a presentation on groundwater cleanup at the former Fort Ord by Mr. Lieberman. He provided definitions related to groundwater cleanup then presented a conceptual site model 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 plumes 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 currently 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 area and maximum historic extent of these groundwater contamination plumes. There are over 450 groundwater monitoring wells in the northern portion the former Fort Ord which were shown on a presentation map.

Mr. Lieberman provided the status of the groundwater treatment systems as of December 31, 2017. 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, and Sites 2/12 include groundwater extraction and treatment with granular activated carbon. Mr. Lieberman provided a diagram of the components of the groundwater extraction and treatment systems and explained how the treatment system worked to extract, clean, and return cleaned water to the aquifer. A sample of granular

activated carbon was circulated to the meeting participants.

Both the Landfills and the new OU2 groundwater treatment plant were highlighted at Saturday's Community Involvement Mobile Workshop bus tour. The new OU2 groundwater treatment plant includes a system expansion that will significantly enhance the treatment for OU2 groundwater contamination and reduce the time required for treatment. Mr. Lieberman presented maps of each groundwater area comparing the historic maximum extent of the contaminant plumes with the extent as of September 2017 to demonstrate the Army's cleanup progress and described the suspected sources of contamination to each aquifer.

Concentrations of all OU1 chemicals of concern have been below aquifer cleanup levels since September 2014 and attainment monitoring has determined there is no rebound of chemical concentrations. This area has recently received regulatory concurrence for closure. The components of the groundwater treatment system have been removed.

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 each of the carbon tetrachloride enhanced *in situ* bioremediation areas for the A-Aquifer includes injection and extraction wells. The sodium lactate is added to the groundwater via the injection wells then recirculated underground by pumping from the extraction wells. He referred to the treatment system schematic in the presentation and photograph depicting the treatment system that includes metering pumps, the mixing tank and other equipment. In 2017, the Army completed additional *in situ* bioremediation in an area near the Marina Municipal Airport. This area was highlighted during a stop on the February 3, 2018, bus tour.

At Site 12, the original source of the groundwater contaminant plumes was assumed to be historical use and improper disposal of solvents. In 2011, PCE was detected at concentrations above the cleanup level in an area where it had not been detected before. Therefore, the Army has done additional work at Site 12, including a soil gas investigation, to find out how much PCE there is and has implemented additional remedial actions. 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 by pumping from wells 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 systems. Based on recent progress with these remedial systems, it is estimated that remedial action objectives will be achieved in the next few years. The groundwater treatment system continues to treat and clean the groundwater and is successfully addressing the chemical of concern at this site. Mr. Lieberman concluded by noting the on line Administrative Record search tool at www.FortOrdCleanup.com. There were no questions.

The Army presented videos of the various groundwater contamination plumes which depicted the cleanup progress of the plumes. It was noted that several factors, such as annual precipitation can have an effect on the cleanup progress.

What Happens Next

The Army will participate in Earth Day events. A guided nature walk inside the Impact Area will likely take place in late March; however, the date will depend on the winter rains. The Army will also share an information booth with the Fort Ord National Monument at the April 19-22 Sea Otter Classic event. The next scheduled Community Involvement Mobile Workshop is July 14, 2018. The next TRC meeting is scheduled for July 17, 2018 and the agenda topics include the Army's munitions response program and the related prescribed burns.

The meeting was closed.