Marine Corps Installations East-Marine Corps Base Camp Lejeune (MCIEAST-MCB CAMLEJ) Restoration Advisory Board (RAB) Meeting Minutes

MEETING DATE: August 26, 2015

LOCATION: Coastal Carolina Community College, Business Technology Building, Room 105 in Jacksonville, North Carolina

ATTENDEES:

Charity Delaney/MCIEAST-MCB CAMLEJ
Dave Cleland/NAVFAC Mid-Atlantic
Gena Townsend/EPA
Jennifer Tufts/EPA
Randy McElveen/NCDENR
Laura Bader/RAB Member
Thomas Mattison/RAB Member
Karen Sota/RAB Member
Steven Thompson/RAB Member
Jim Wheeler/RAB Attendee
Dale Weston/RAB Member
Amanda Todd/RAB Attendee
Kim Henderson/CH2M
Dan Hockett/CH2M
Matt Louth/CH2M

FROM: Kim Henderson/CH2M

DATE: September 21, 2015

I. Welcome and Introductions

Ms. Delaney began the meeting and reviewed the agenda. She displayed Camp Lejeune's award for the Fiscal Year (FY) 2014 Secretary of Defense award for environmental restoration.

II. Update on Treatability Studies

Objective: The purpose of this agenda item was to review the Treatability Studies at Site 88 and long-term monitoring (LTM) Sites 3, 36, and 93.

Overview: A presentation was reviewed by Mr. Louth.

Site 88 is the former Base Dry Cleaners (Building 25) where there are volatile organic compounds (VOCs) in soil and groundwater. A draft Feasibility Study (FS) was prepared to evaluate remedial alternatives and prior to finalizing the FS, a phased Tracer Study was initiated in 2015 to better understand In Situ Chemical Oxidation (ISCO) amendment (permanganate) distribution. The objectives of the Tracer Study are to evaluate the radius of influence using a horizontal injection well, determine optimal permanganate quantities and injection rates, evaluate recirculation to improve permanganate distribution, and refine cost estimates. Phase I of the study is planned to begin in September 2015 for horizontal well installation and vertical extraction well installation followed by permanganate injections and post-injection geophysical mapping to assess distribution and performance in October 2015. Phase II of the study will also begin in October 2015 including installation of conveyance line borings and recirculation system installation/start-up that is planned for 30-day operation. Post-recirculation performance monitoring, geophysical mapping, and site restoration is planned in November and December 2015.

A RAB member asked whether the boring would be closed or open. The process was described and it will be an open, double-ended well with the distal end finished off below grade. A RAB member asked about cost and the cost for the remedy for the entire site is $8MM to $10MM and this is a small portion of the remedy that will test effectiveness prior to full-scale implementation. A RAB member asked how effective the previous soil mixing was. There was previously free product in the soil mixing area and concentrations have been reduced by at least 90%. The clay mixed in also has bound any remaining contamination for migration and parking lot installed over the area also reduces infiltration.

Site 3 is the Old Creosote Plant with semi-volatile organic compounds (SVOCs) in soil and groundwater and VOCs in groundwater. A Record of Decision (ROD) is in-place and the Selected Remedy was soil removal, groundwater LTM, and land use controls (LUCs). VOCs was removed from LTM after four rounds of groundwater samples were below clean-up levels. Biennial LTM for SVOCs is ongoing and the last samples were collected in December 2014. After the soil removal in 2000, concentrations in groundwater declined, then stabilized. Benzo(a)anthracene is the remaining chemical of concern and degrades under aerobic conditions; however, anaerobic conditions exist in the subsurface, indicated by low dissolved oxygen. Therefore, a Pilot Study was initiated to try to treat the benzo(a)anthracene and reduce the duration of LTM. In June 2015, Oxygen Release Compound (ORC) was injected to stimulate aerobic degradation.

Site 36 is a Former Dump Area with metals in soil and VOCs in groundwater. A ROD is in-place and the Selected Remedy was groundwater and surface water LTM and LUCs. Biennial LTM for VOCs is ongoing and the last samples were collected in December 2013. Trichloroethene (TCE) and degradation products were detected above cleanup levels in groundwater and there have not been detections in surface water. Over time, the VOC concentrations are stable and conditions are generally favorable for natural attenuation but the total organic carbon (TOC) is lower than optimal. Therefore, a Pilot Study was initiated in June 2015 to inject bio-augmented emulsified vegetable oil (EVO) to facilitate enhanced reductive dechlorination (ERD). Red yeast rice extract was also injected to assess its potential application as a methane inhibitor at other locations on-Base where VOC degradation may cause an increase in methane that can be a vapor intrusion issue when buildings are located nearby.

Site 93 is the Former Waste Oil Underground Storage Tank (UST) at Building TC-942. A ROD is in-place and the Selected Remedy was (ISCO) to treat VOCs in groundwater, groundwater LTM, and LUCs. Annual LTM for VOCs is ongoing and the last samples were collected in December 2014. Tetrachloroethene (PCE) and degradation products were detected above cleanup levels in groundwater. Over time, the degradation product concentrations are stable or slightly increasing, there is insufficient population of microbes present, conditions are only somewhat favorable for dechlorination, and complete biodegradation not occurring. Therefore, a Pilot Study was initiated in June 2015 to treat VOCs through a bioreactor of EVO mulch and gravel that is recirculated.

Follow-up monitoring at Sites 3, 36, and 93 is planned in October 2015, January 2016, and April 2016 to evaluate the results.

III. Update on UXO-22 Investigation

Objective: The purpose of this agenda item was to review the site history and results of recent investigations.

Overview: A presentation was reviewed by Mr. Hockett.

UXO-22 is a 75-acre former munitions disposal area that is co-located with Operable Unit 2 (OU 2) (Sites 6 and 82) where munitions items were found during previous investigations from 1994 to 2010. The site was entered into the Military Munitions Response Program (MMRP) in 2010 and Preliminary Assessment/Site Inspection (PA/SI) field activities were completed in December 2011 to evaluate whether releases of munitions constituents occurred and potential risks to human health and the

environment. Soil and groundwater samples were collected and analyzed for munitions constituents. The results indicated potential human health and ecological risk from exposure to metals in soil and potential explosive hazards from discovered munitions items. The recommendations were to define the nature and extent of munitions items, conduct surface clearance to minimize explosive hazards in former DRMO, and evaluate the extent of a battery disposal area in a ravine as a potential source of metals.

An Expanded Site Investigation (ESI) was initiated in 2012 to address recommendations from the PA/SI and included digital geophysical mapping (DGM) and intrusive investigation of anomalies; surface clearance and soil sifting in the former DRMO lot; a geophysical survey, test pits, and soil sampling in battery disposal area; and a site walk.

The DGM identified over 9,000 anomalies and over 10% were intrusively investigated; no munitions and explosives of concern (MEC) were found but over 1,000 inert munitions items were found at over 90 locations at depths ranging from the surface to 4 feet.

In the DRMO lot, to reduce risks to site workers and potential trespassers, removal of remaining large metal debris was conducted followed by surface clearance and soil sifting. No MEC was found but over 6,000 inert munitions items were found. Over 5 tons of munitions debris was recycled, 50 tons of metallic debris was recycled, and 79 tons of other debris was disposed.

A phased battery investigation was conducted to address exposed batteries as a continuing source to a ravine. Other debris such as communication wire; pressure vessels that were insulation covered and tested negative for asbestos; a black unknown substance that was tested and the results indicated elevated petroleum-related constituents; over 250 munitions items were found; and various other debris (e.g., crockery and commodes). Soil samples were collected from the base and sidewalls of the disposal area and analyzed for metals. There were exceedances of background plus one or more screening criteria. No unacceptable human health risk was identified. Potential ecological risk was identified due to mercury and zinc but the samples are now covered with 2 feet of backfill. Approximately 400 tons of non-hazardous waste and 180 tons of hazardous waste for lead was disposed of off-site.

The site walk was conducted in wooded areas of the site to document debris and munitions items on the surface. Widespread discarded debris was identified including inert munitions items, scrap metal, drums/tanks, and batteries. Mounded areas that are possible disposal areas were also identified.

The ESI report is currently being prepared and concludes that there is widespread waste disposal on the surface and subsurface and munitions items are present; however, the explosive hazard is low since the items found were inert. Recommendations are to consider surface clearance to focus on wooded areas not previously cleared and prepare an Explanation of Significant Differences to update the OU 2 ROD to include UXO-22 findings, add LUCs to include an intrusive activities control for MEC, and consider additional fencing and gates to prevent trespassers from accessing the waste disposal areas.

IV. Environmental Restoration, Navy (ER, N) Funding Overview

Objective: The purpose of this agenda item was to review the current status of Navy funding for the environmental restoration program.

Overview: A presentation was reviewed by Mr. Cleland. At the previous meeting, there was a lot of discussion about where funding comes from and this presentation was to explain what sites qualify for ER,N funding.

Following the implementation of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), in the early 1980s, an Initial Assessment Study was conducted at Camp Lejeune, where 76 sites were identified and 22 were recommended for investigation. Following implementation

of Superfund Amendments and Reauthorization Act (SARA), a Defense Environment Restoration Account was established to set aside funds to clean-up hazardous waste sites for each service and the Navy's account is the ER,N. Prior to 2008, eligibility for ER,N funding was for sites where contamination occurred pre-1986 when SARA was implemented; however, in 2008, that date restriction was eliminated.

The Navy is the lead agent for Marine Corps environmental restoration. Funding is summarized in an annual report to Congress and in FY 2015, approximately $277MM was funded for ER,N and over $8MM was allocated for Camp Lejeune. To-date, $209MM has been spent at Camp Lejeune and 60 sites have been cleaned up with no further action and over 20 sites have remedies in-place. Approximately $116MM is estimated to complete the cleanups at Camp Lejeune and that number is updated every six months.

V. RAB Business

Ms. Delaney suggested that the next RAB meeting for November 18, 2015. Suggestions for meeting topics were requested. The Five-Year Review will be finalized prior to the next meeting and the RAB requested a site visit and February 2016 was proposed.

At the last meeting, the findings from the Community Involvement Plan update were presented and the RAB provided recommendations. One of the recommendations was to rotate locations of the RAB meetings for other interested parties to attend and to focus topics to those areas. The RAB voted to keep the next meeting at the Community College.

Another recommendation was for better advertising and the RAB website was added to the public notice for this RAB meeting and a meeting notification was posted on Facebook. Updates to the RAB and public website are being prepared and signs are being planned at environmental sites where remedies are in-place.

Ms. Todd will be teaching on-Base in October and requested to talk with students about all the environmental restoration activities that the Base is conducting.

Mr. Mattison indicated that this Saturday at Onslow Beach, the Smithsonian Institute will be conducting fossil identification.