

Marine Corps Base Camp Lejeune (MCB Camp Lejeune) Restoration Advisory Board (RAB) Meeting Minutes

MEETING DATE: November 17, 2021

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

ATTENDEES:

Thomas Richard/MCB Camp Lejeune	Laura Bader/RAB Co-Chair
Laura Spung/MCB Camp Lejeune	Thomas Mattison/RAB Member
Charity Delaney/MCB Camp Lejeune	Brian Wheat/RAB Member
Travis Voorhees/MCB Camp Lejeune	Richard Mullins/RAB Member
Andy Litteral/MCB Camp Lejeune	Steven Thompson/RAB Member
Dave Cleland/Navy	Dan Brown/CH2M
Randy McElveen/NCDEQ	Dan Hockett/CH2M
Jennifer Tufts/EPA	Matt Louth/CH2M

FROM: Matt Louth/CH2M

DATE: November 29, 2021

I. Welcome and Introductions

Mr. Richard began the meeting.

II. Site 96 Proposed Plan Public Meeting

A public meeting was held for the Site 96 Proposed Plan and a presentation was reviewed by Mr. Brown. A court reporter recoded the meeting minutes will be provided separately. Questions received from the RAB members during the meeting were for informational purposes.

A RAB member expressed concern regarding the 100 year timeframe to meet cleanup levels. Explanation was provided to the RAB that included discussion of the North Carolina Groundwater Quality Standard for vinyl chloride which is the driver for the long timeframe, the NCDEQ Risk-Based Approach for remediation has been considered, and the EPA Maximum Contaminant Level is expected to be met in a reasonable timeframe of approximately 20 years.

III. Subgrade Biogeochemical Reactors (SBGRs)

Objective: The purpose of this agenda item was to describe the SBGR installation, operation, and effectiveness for treating volatile organic compounds (VOCs) at Camp Lejeune.

Overview: A presentation was reviewed by Mr. Hockett. Installation of SBGRs include excavation of a contaminant source area, or within a strategic location for recirculation of conditioned groundwater for plume treatment followed by backfill with a mixture of amendments to enhance biotic and abiotic degradation and gravel to promote drainage and structural integrity. Contaminated groundwater is then recirculated through the SBGR.

SBGRs have been installed at Site 82, consisting of 3 SBGRs with 5 extraction wells, and Site 93, consisting of 2 SBGRs with 4 extraction wells. Amendments used include hardwood mulch, gravel, wheat straw, iron pyrite, zero valent iron, and soybean oil. After distribution piping is placed on top of mulch/gravel backfill, the SBGRs are covered with 2-feet of sand.

Mr. Mattison asked about entering oxygen into the treatment. Dan said chlorinated VOCs are more complex where oxygen would be better for petroleum-related sites. The carbon source is effective for biotic processes to dechlorinate the VOCs.

The operation includes recirculating contaminated groundwater through the SBGRs at approximately 0.5 gallons per minute (gpm) to 10 gpm through pumps that are either solar powered or connected to the power grid. Groundwater samples are collected periodically from the extraction well(s) (influent), piezometer(s) (effluent), and downgradient monitoring wells to monitor the extent of the treatment zone.

At Site 82, there has been complete removal of chemicals of concern (COCs) within the SBGRs and approximately 100x reduction of parent COCs at 100-200 feet downgradient where the oxidation reduction potential (ORP) is less than -50 millivolts (mV) and the average dissolved oxygen (DO) is less than 1 milligrams per liter (mg/L). During the one year pilot study, 800,000 gallons to 2,400,000 gallons have been treated through the SBGRs.

At Site 93, emulsified vegetable oil was added to an existing SBGR to replenish carbon and revitalize conditions conducive for reductive dechlorination. However, vinyl chloride continued to be detected at concentrations exceeding the cleanup level. Greater than 460,000 gallons have been pumped through the SBGR since 2015 and downgradient extraction wells pull from the areas with the highest vinyl chloride impacts. Geochemical results indicated reducing conditions where the average ORP is less than 50 mV and the average DO is less than 1 mg/L. The SBGR study was expanded in 2020 to address the vinyl chloride impacts and greater than 20,000 gallons pumped through expanded bioreactor and cis-1,2-dichloroethene and vinyl chloride concentrations are being reduced in the SBGR.

In conclusion, COC concentrations have decreased one to two orders of magnitude up to several hundred feet downgradient of the SBGRs, parent compounds within the SBGRs completely degraded while influent concentrations remained relatively stable, and SBGRs provide an effective means of VOC mass removal.

IV. Site 82 Low-Level Radioactive Waste (LLRW) Management

Objective: The purpose of this agenda item was to present background, discuss discovery of General Radioactive Material (G-RAM) at Site 82, sorting of investigation-derived waste (IDW), segregation and packaging of soil characterized as LLRW, transport and disposal of LLRW, and the path forward.

Overview: A presentation was reviewed by Mr. Hockett. In October through November 2019, a test pit investigation was conducted at Site 82 to evaluate additional source areas. Some of the source area test pits were converted to SBGRs. During inspection of excavated material in November 2018, G-RAM was identified and the Base and Navy, including Navy Radiological Affairs Support Office (RASO) was contacted. The test-pitting and SBGR installation was continued until G-RAM was found in one of the test pits in December 2018. Work was then discontinued and plans were developed to manage the IDW with G-RAM.

The first task was to sort IDW and this included pre-scanning of areas, spreading IDW in 6-inch lifts, identifying G-RAM items and placing in 5-gallon metal pails (103 items stored in 5 pails), placing soil surrounding G-RAM in 55-gallon lined drums (114 drums), securing pails and drums, stockpiling and covering the remaining 185 cubic yards of soil IDW, and collecting soil samples to characterize IDW.

Based on laboratory results, concurrence from RASO, and consideration of waste acceptance criteria for disposal facilities, approximately 60 cubic yards of stockpiled soil IDW with greater than 2 picoCuries per gram (pCi/g) of radium-226 was classified as LLRW and packaged in 18 supersacks. The remaining 125 cubic yards of soil IDW contained less than 2 pCi/g of radium-226 (non-LLRW) and was disposed in standard landfill. LLRW including pails of G-RAM, drums, and supersacks of soil were removed in November 2020 and transported to a permitted LLRW processing facility.

The path forward for work at Site 82 is to conduct radiation avoidance monitoring during intrusive activities. A groundwater investigation is also planned in 2022 to evaluate for the presence of radionuclides.

V. RAB Business

Mr. Richard announced Ms. Delaney's departure from MCB Camp Lejeune at the end of the year. Mr. Mattison announced his retirement after 27 years in the wastewater business.

The next RAB meeting will be scheduled for February 2022 and an email with the projected date will be sent to the RAB members.