

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

MEETING DATE: December 7, 2016

LOCATION: Coastal Carolina Community College, Business Technology Building, Room CA 101, Jacksonville, North Carolina

ATTENDEES:

Dave Cleland/NAVFAC Mid-Atlantic	Richard Mullins/RAB Member
Charity Delaney/MCB Camp Lejeune	Amanda Todd/RAB Member
Thomas Richard/MCB Camp Lejeune	Dale Weston/RAB Member
Annita Best/MCB Camp Lejeune PAO	Brian Wheat/RAB Member
Matt Barnes/MCIEAST	Michael Curtis/RAB Co-Chair
Lisa Donohue/MCRD Parris Island	Monica Fulkerson/CH2M
Jennifer Tufts/EPA	Kim Henderson/CH2M
Randy McElveen/NCDEQ	Matt Louth/CH2M
Laura Bader/RAB Member	

FROM: Kim Henderson/CH2M

DATE: January 12, 2017

I. Welcome and Introductions

Ms. Delaney began the meeting and reviewed the agenda. Several students of Ms. Todd attended the meeting.

II. Update on the Site 88 Tracer Study

Objective: The purpose of this agenda item is to provide an update on the progress of the Site 88 studies and the proposed actions going forward.

Overview: A presentation was reviewed by Ms. Fulkerson. Site 88 is the Former Dry Cleaning Facility where volatile organic compounds (VOCs), primarily tetrachloroethene (PCE), have been identified in groundwater. A draft Feasibility Study (FS) was prepared and evaluated several remedial alternatives, including in situ chemical oxidation with permanganate, enhanced reductive dechlorination, long-term monitoring, and land use controls. To provide a better understanding of the radius of influence, injection rates, and substrate quantities, prior to finalizing the FS, a permanganate tracer study was initiated in 2015. Additionally, a sewer ventilation pilot study was initiated in 2016 to assess whether the vapor intrusion pathway can be controlled and/or disconnected.

A RAB member asked about the dates of PCE use and the breakdown process of PCE. The underground storage tank (UST), initially used to store Varsol, was removed in 1995 and the building was removed around 2005. The breakdown process for PCE to trichloroethene (TCE) to cis-1,2-dichloroethene (DCE), to vinyl chloride and ethenes was explained.

For the permanganate tracer study, a 1,600-foot horizontal injection well was installed to a depth of 95 feet below ground surface (bgs) with a 500-foot screen to target the VOCs in groundwater, permanganate was injected, and an extraction/re-circulation system was installed to continuously recirculate permanganate and groundwater to enhance contact and treatment. Initial observations indicated chloride breakthrough. A geophysical mapping technique was also used to assess subsurface distribution. The mapping identified areas that have changed during injection/recirculation and the results indicate the potential for channelized flow near the injection zone, and vertical (~15-20 feet) and horizontal (~33 feet) migration was observed.

Post-recirculation performance monitoring was also conducted and analytical results indicated that PCE concentrations increasing upgradient of the injection well provided control and PCE concentrations were reduced up to 97%, and total VOCs were reduced up to 82%. The radius of influence for permanganate vertically was 20-25 feet and laterally was 25- 33 feet, injection rates achieved flows of 65 gallons per minute (gpm) with minimal backpressure, and recirculation was successful in optimizing fluid distribution.

A RAB member asked the costs spent to-date. The Navy will look into the costs to-date and respond at the next meeting. The remedy for the site will be costly based on the challenging conditions for the large and over 100 feet deep groundwater plume located in the developed area of the Base. The plume is slow moving and is currently approximately ¾ mile from the River at lower concentrations.

The sewer ventilation pilot study is being conducted upgradient of Site 88 where sewer utilities connect the Site 88 source area to Building HP57. TCE was periodically detected in indoor air and the source was investigated and determined to be an uncapped pipe, connected to the sewer, and discovered in wall space. The pipe was sealed by Base plumbing in December 2014 and follow-up sampling confirmed indoor air concentration reductions. The pilot study will assess whether ventilation of the sewer line can reduce VOC concentrations in the sewer line to below screening levels and reverse the flow of vapor to potential entry points inside Building HP57. In September 2016, a blower was staged and installation of ventilation conveyance piping, a blower, and sample ports was conducted followed by baseline sampling prior to system start-up.

Baseline sampling, startup, and post-startup performance monitoring was conducted in October 2016 in manholes, in the southwest HVAC room plumbing, and within the company office plumbing. The baseline samples confirmed the presence of PCE, TCE, and cis-1,2-DCE in the sewer line and within Building HP57 plumbing with the highest sewer line concentrations observed at the manhole closest to Site 88 source area. VOCs were not detected in indoor air above screening levels during baseline or after startup. Pressure cycling was also conducted in October 2016 in the southwest HVAC room with the plumbing uncapped to assess effectiveness of system under an extreme building depressurization even. Results to-date indicate that the test has been successful and TCE concentrations in indoor air remained low throughout the test. Quarterly follow-up sampling will be conducted for one year, through December 2017.

The RAB discussed how the vapors got into the pipe. The Base indicated that the sewer pipes are new and Base plumbing scoped the pipes and no major breaches were identified. Therefore, small cracks may be the cause. Other buildings in the area were checked for potential vapors and Building HP57 was the only building identified.

Based on the results of the studies, the FS will be updated in 2017.

III. Update on Site 96 Current Status and Path Forward

Objective: The purpose of this agenda item was to provide an update on the progress of the Remedial Investigation (RI) and the proposed Treatability Study (TS).

Overview: A presentation was reviewed by Mr. Louth. Site 96 is a former 300-gallon waste oil underground storage tank (UST) that was removed in 1997. The site was transferred from the UST program to the Resource Conservation and Recovery Act (RCRA) program and investigated as Solid Waste Management Unit (SWMU) 360 due to the presence of chlorinated VOCs in groundwater samples above the North Carolina Groundwater Quality Standards (NCGWQS) and then was transferred to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program as Site 96 in 2009.

Soil sampling, slug testing, monitoring well installation and groundwater sampling, and porewater and surface water sampling have been completed. The soil and groundwater results were reviewed. The nature and extent of contamination in soil is limited to the vicinity of the former UST where PCE and TCE is present in soil above the North Carolina Soil Screening Levels (NCSSLs). In surficial aquifer groundwater, PCE, TCE, and cis-1,2-DCE are present at the highest concentrations in the source area and the downgradient plume is large and diffuse, with low concentrations of PCE and very few detections of daughter products. Chlorinated VOCs were not detected in porewater and surface water in Cogdels Creek, indicating the surficial aquifer is not likely discharging VOCs at concentrations exceeding NCSWQS. The nature and extent of contamination in the UCH aquifer is based on isolated detections of PCE downgradient from the source area.

A RAB member asked how fast groundwater moves and the shallow groundwater migrates approximately one foot per month.

No unacceptable risks to human health were identified based on current industrial site use or to a future trespasser/visitor (adult or adolescent) or construction worker. Potential unacceptable risk to future residential receptors were identified from exposure to PCE, TCE, and cis-1,2-DCE in surficial aquifer groundwater if used as potable water supply. Additionally, potential unacceptable risk was identified to future industrial workers and hypothetical future residents from exposure to PCE and TCE in indoor air (vapor intrusion from surficial aquifer groundwater) within 100 feet of the groundwater plume if current building conditions change or if future buildings are constructed. There were no unacceptable risks identified to ecological receptors based on exposure to pore water or surface water.

Based on the results of the RI, the recommendations are to:

- Conduct a TS to evaluate the effectiveness of remedial technologies in reducing VOCs in the source area.
- Prepare a FS to identify remedial action objectives and evaluate remedial alternatives to address the remaining VOC contamination.
- Conduct site-wide groundwater sampling of the existing monitoring well network for VOCs to further evaluate seasonal variability, natural attenuation, and potential risks to human health and the environment.
- Conduct follow-up monitoring at Building 1828 in 2018 to monitor for a potential VI pathway to become significant.

The RI is planned to be finalized in Spring 2017. The proposed TS technologies are soil vapor extraction (SVE) and enhanced reductive dechlorination (ERD) injections to remove source mass from the vadose zone and reduce concentrations in the source area to below NCGWQS, respectively. The TS is planned in 2017.

A RAB member asked about previous ERD studies on-Base and the success. Several ERD studies have been successful, particularly when appropriate biological activity is present, and the success is based on site conditions.

IV. Five-Year Review Update: Review of Explanation of Significant Differences and Perfluorinated Compound Investigations

Objective: The purpose of this agenda item was to review the purpose of the Five-Year Review, provide a status update on two of the 2015 Five-Year Review recommendations for preparing an Explanation of Significant Differences (ESD) and conducting a perfluorinated compound (PFC) investigation, and review schedule.

Overview: A presentation was reviewed by Ms. Henderson. The purpose of the Five-Year Review is to evaluate implementation and performance of remedies in-place (at MCB Camp Lejeune, ranges from groundwater treatment systems to land use controls to prevent exposure to contaminants remaining in-place), evaluate potential for emerging contaminants, determine protection of human health and the environment, and provide recommendations for continued/future protectiveness.

The 2015 Five-Year Review for Camp Lejeune evaluated 26 remedies in-place and concluded that all ongoing remedial actions at MCB Camp Lejeune are protective of human health and the environment in the short-term. To remain protective in the long-term, recommendations were made to ensure continued protectiveness and including preparing an ESD to address the potential for vapor intrusion pathways at sites with volatile organic compounds (VOCs) in groundwater, to address the potential for explosive hazards at Military Munitions Response Program (MMRP) Site UXO-22 within Operable Unit (OU) 2, and to update the effluent levels for the Site 82 groundwater treatment plant to reflect current regulatory standards; and to investigate the potential for PFCs in groundwater at sites where firefighting training was conducted or aqueous film-forming foam (AFFF) was used.

ESD

The purpose of an ESD is to document significant changes to a remedy after the Record of Decision (ROD) has been signed. Significant changes generally involve a change to a component of a remedy that does not fundamentally alter the overall cleanup approach. ESDs are required under CERCLA and are prepared in accordance with EPA guidance. There are other types of post-ROD changes that are considered fundamental, in other words a change in the remedy, where there are additional documentation and public participation requirements and those are outlined in EPA guidance.

Examples of significant changes include changes in applicable or relevant and appropriate requirements (ARARs) or new ARARs, basically a change or new regulation, such as updating cleanup levels to match changed Federal or State standards, or new constituents of concern (COCs) identified and require cleanup levels; and changes in land use control (LUC) requirements, for example, emerging contaminant concerns or new potential pathways, such as vapor intrusion or explosive hazards.

The MCB Camp Lejeune ESD is currently being prepared and covers seven sites based on the Five-Year Review recommendations. We are also incorporating other post-ROD additions and/or changes based on long-term monitoring, for example, groundwater plumes have migrated over time so updating the existing LUC boundaries based on current extent of COCs in groundwater and additional COCs have been identified based on exceedances of North Carolina Groundwater Quality Standards (NCGWQS).

For vapor intrusion, at sites with VOC groundwater plumes, the LUCs will be updated to evaluate future buildings or modifications to existing buildings within 100 feet of the groundwater plume at Sites 6, 35, 36, 73, 78, and 82. Also, a Basewide vapor intrusion evaluation was conducted in the early 2000s and although no unacceptable risks were identified, a Vapor Intrusion Mitigation System (VIMS) was installed as a proactive measure at Building 902 at Site 78 based on the potential for a future risk.

For the groundwater COC updates, LUCs are being updated to reflect current extent of groundwater contamination at Sites 6, 78, and 82; additional groundwater COCs are being added for Sites 6, 36, 78, and 82; and groundwater treatment plant effluent levels for Site 82 are being updated to include the additional COCs and updated North Carolina Surface Water Quality Standards (NCSWQS).

Also, at Sites 6 and 82, former waste disposal areas, munitions have been identified and LUCs are being added to include fencing and warning signs, to require construction support for digging on-site, to

require safety awareness training for site workers, to evaluate land use changes and prohibit non-industrial use.

PFCs

PFCs are human made substances used to make carpets, clothing, furniture fabric, etc, and used in firefighting as a component of AFFF. PFCs are persistent in the environment and resistant to typical degradation processes and they are water-soluble and easily migrate from soil to groundwater and can migrate long distances in groundwater. EPA recently identified PFCs as an emerging contaminant and issued health advisories for perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) of 70 parts per trillion. This is an advisory and is non-enforceable as EPA is still studying health effects.

MCB Camp Lejeune, and other military facilities, use AFFF to extinguish fires and support firefighting training exercises. The 2015 Five-Year Review identified Site 54, a former firefighting training area. MCB Camp Lejeune has sampled their drinking water system for PFOS and PFOA and results were below standards and there are no public water supply wells exist within one mile of identified sites.

The objectives of the PFC investigation are to identify presence/absence of PFCs in the shallow groundwater at Site 54, compare results to lifetime health advisory limit, and if the presence is confirmed to install additional monitoring wells to further evaluate the extent.

Site 54 is the Former Crash Crew Fire Training Burn Pit where an unlined burn pit was previously used. All monitoring wells have been abandoned and the burn pits have been paved over. Because AFFF may have accumulated and infiltrated within the unpaved former burn pit and adjacent drainage swale, installation of four shallow monitoring wells are planned and groundwater sampling for PFC analysis.

The ESD will be finalized in Spring 2017 followed by LUC updates in Summer 2017. The PFC Investigation Work Plan is planned to be finalized in Spring 2017 followed by field investigations in Summer 2017 and a report in Winter 2017/2018.

A RAB member asked about the “drinking water levels of PFCs below standards” in the presentation and whether that indicated favorable results. It was clarified that PFCs did not exceed the EPA comparison criteria.

V. RAB Business

Ms. Delaney will be out on maternity leave for 12 weeks starting in January 2017 and Mr. Richard will chair the next meeting. Ms. Delaney indicated that as presented at the last meeting, the Base now does not plan to install informational signs at sites based on a poll of incoming marines and civilians who work near the sites who indicated no interest. Signs will continue to be installed at pilot study sites. The RAB notifications have been increased, including Facebook, and the increased advertising will continue for a year and will be revisited to evaluate the effectiveness based on RAB participation. The next RAB meeting is March 15, 2017.

Ms. Delaney indicated the last Co-Chair election was in 2012 and a re-election was held. The new Co-Chair elected was Ms. Bader.