Marine Corps Base Camp Lejeune
Restoration Advisory Board Meeting Minutes

RAB Meeting: November 17, 2005

ATTENDEES:
Robert Lowder/MCB Camp Lejeune
Ken Cobb/MCB Camp Lejeune
Randy McElveen/NC DENR
Matt Louth/CH2M HILL
Donna Laudermilch/CH2M HILL
Ray Humphries /RAB Member
Chuck Kassube /RAB Member
Marvin Powers/RAB Member

FROM: Donna Laudermilch/CH2M HILL

DATE: November 22, 2005

LOCATION

Coastal Community College, Building BT, Room 107 in Jacksonville, North Carolina

MINUTES

6:00 PM

I. Welcome and Introductions

II. Site 88 Non-Time Critical Removal Action (NTCRA) Update

Objective: The purpose of this discussion was to provide an update on the status of the shallow soil mixing with zero valent iron (ZVI) injections at Site 88. Mr. Matt Louth from CH2M HILL presented this information.

Overview: This presentation focused on activities completed since the previous RAB meeting. The site background and prior activities were briefly summarized and photos of field activities were presented. As a review Site 88, Building 25 was utilized as a dry cleaning facility from the 1940s until 2004, when Building 25 was demolished to slab. Tetrachloroethene (PCE) is the primary contaminant, and DNAPL has historically been present. The source area is 10,000 ft^2 and 20 feet deep, with an estimated 2,100 gallons of PCE present. The NTCRA involved shallow soil mixing using augers equipped with nozzles to inject a ZVI and clay mixture into the soil during mixing. A mixture of 2% ZVI and 1% bentonite was injected, and 195 tons of cement was used to stabilize the top five feet of the treatment area in order to build a parking lot. The soil mixing was conducted in February 2005, stabilization occurred from May to July 2005, and the parking lot was installed August to September 2005.

Photos of the new parking lot and data from August 2005 and October 2005 sampling events were reviewed. The soil analytical results generally indicated excellent contaminant reduction was occurring across the site (i.e., greater than 99%). During the August 2005 and October 2005 sampling events, PCE was detected in soil at high concentrations (~4,000 mg/kg) in several samples corresponding with locations beneath the building floor drain. These locations are isolated and the areas will continue to degrade; further the bentonite will prevent the contamination from migrating. Contaminant trend charts indicate excellent contaminant reduction. Further, soil vapor testing conducted before and after the NTCRA has shown a dramatic reduction in PCE concentrations (up to 99% in some locations).

The schedule of remaining events is as follows:

- Install shallow wells (complete)
- Install intermediate well (complete)
- Conduct groundwater sampling – completed the week of 11/14/05
- Conduct slug test of two wells in treated area and two wells outside treated area to measure the permeability of the material in which the well is located – completed the week of 11/14/05
- Draft report in January 2006

General observations regarding the pilot study include:

- The remedial action appears to be working well
- Site-wide contaminant reduction is occurring
- The technology is very cost competitive – much of the project cost is associated with the prep work and parking lot construction.

III. Site 35 Pilot Study Update

Objective: The purpose of this discussion was to present an update on site activities associated with soil fracturing and permanganate injections. Mr. Matt Louth from CH2M HILL led this discussion.

Overview: This presentation focused on activities completed since the previous RAB meeting. The site background and previous injections were summarized and the timeline of remaining events was presented. As a review the pilot study objectives were (1) 80% contaminant mass removal from groundwater with a source area trichloroethene (TCE) reduction of 90% - 98% and a source area volatile organic compound (VOC) reduction of 72% - 84% and (2) minimization of contaminant rebound. Field activities associated with the pilot study have been completed; the final groundwater sampling event was conducted in July 2005, and the Pilot Study report will be issued in November 2005.

General observations regarding the pilot study include:

- Overall TCE reduction in the source area ranged from 80% to 98% and total VOC reduction in the source area ranged from 72% to 85%.
- The site has a high natural organic demand.
- Degradation is occurring across the site.
- Groundwater flow is slow (~10 feet per year).

- Modified Fenton's did not appear to work well due to delivery issues and the nature of the reaction (i.e., modified Fenton's was so reactive that it did not travel far enough from the injection location).
- Biodegradation appears to have been enhanced by modified Fenton's as significant contaminant reduction occurred over the six months following the injection and an increase in vinyl chloride concentration was observed in several wells (possible release of organic material).
- Pneumatic fracturing with permanganate injection produced a relatively large radius of influence (roughly 30 feet).
- Moderate contaminant removal was observed from the pneumatic fracturing with permanganate injection.
- Permanganate did not persist, as wells which turned purple during injection were not purple three months later.
- TCE reduction and total VOC reduction in the source area from pneumatic fracturing ranged from 56% to 79%.

IV. Site 86 Horizontal Well Pilot Study Update

Objective: The purpose of this discussion was to provide RAB members with an update on the horizontal well ozone injection. This information was presented by Mr. Matt Louth from CH2M HILL.

Overview: This presentation focused on activities completed since the previous RAB meeting. The site background and prior pilot study activities were summarized the timeline of remaining events was presented, and photographs of the site equipment were displayed. As a review, TCE is the primary contaminant of concern at the site, with the highest contaminant concentrations (900 µg/L) located 45 feet below ground surface (bgs). The plume has an elongated shape and underlies the flight line area with limited access. The pilot study began with air sparging for three to four months in order to evaluate volatilization. The second phase of the pilot study consisted of combined air and ozone sparging for six months in order to "polish" residual impacts with direct oxidation. The ozone was generated on-site using a 72 pound per day unit; and the maximum ozone concentration in the air stream is approximately 1%.

Monitoring wells screened in the area of highest contamination (40 to 45 feet bgs) have seen a TCE reduction of 99%, and monitoring wells screened from 50 to 55 feet bgs are showing a TCE reduction of 93%.

General observations about the pilot study include:

- Dramatic contaminant reduction is occurring, even with only air sparging.
- The site has a high natural organic demand.
- A very extensive zone of influence from the well has been observed (i.e., dense air bubbling observed in a retention pond and monitoring well located 300 feet in different directions from the well axis).

V. Site 89 Update

Objective: The purpose of this agenda item was to provide an overview of the Site 89 Remedial Investigation/Feasibility Study. This discussion was led by Mr. Matt Louth from CH2M HILL.

Overview: As a review the Remedial Investigation objectives were:

- Determine the hydrogeologic characteristics of the site (flow direction, velocity, etc.).
- Define in greater detail the horizontal and vertical extent and vertical variation of chlorinated VOCs and semi-volatile organic compounds (SVOCs) in groundwater.
- Evaluate whether contaminated subsurface soil is acting as a source of VOC contamination in the groundwater.
- Formulate a baseline risk assessment of possible threats to human health and the environment.

Figures showing the groundwater flow direction across the site, the location of existing and newly installed monitoring wells, and the extent of contamination were reviewed. The monitoring wells will be sampled in December 2005 in order to complete the RI portion of the Site. The next step is to complete the Feasibility Study (FS).

At the November Partnering Meeting, the Partnering Team developed the following remedial action objectives (RAOs) for the FS:

- Protect Edwards Creek and prohibit impacts to receptors through the reduction of mobility, toxicity, and volume of contaminants.
- Utilize a risk-based approach to develop clean-up goals for the site (figures depicting the treatment area based on a 10^{-4} cancer risk were reviewed).
- NC 2L standards will be met as an ARAR thru land use controls (LUC) and monitored natural attenuation (MNA).

The next step in the FS process is to develop alternatives for how to treat these areas. The schedule of upcoming events includes:

- Final Remedial Investigation/Human Health Risk Assessment report will be completed by March 31, 2006
- Draft Step 3A Ecological Risk Assessment report will be completed by May 31, 2006
- Draft Feasibility Study will be completed by December 31, 2005
- Draft Proposed Remedial Action Plan will be completed by September 30, 2006

VI. Overview of Base Integrated Contingency Plan

Objective: The purpose of this agenda item was to provide an overview of how the Base handles any spills, specifically those affecting the New River. This discussion was led by Mr. Ken Cobb.

Overview: There are several procedures/methods in place at the Base for responding to and preventing spills including a Spill Prevention Control, and Countermeasures (SPCC) plan, an Integrated Contingency Plan (ICP), and designated on scene commanders (OSC).

- An ICP – is a written plan containing details of emergency notification procedures and authorities, response planning, logistics, training, and available equipment. Aboard Camp Lejeune and MCAS New River, the ICP contains procedures for responding to and preventing chlorine releases, hazardous material, and POL spills.
- An SPCC Plan – is the sixth 'annex' of the ICP. It establishes procedures, methods, equipment, and other requirements to prevent the discharge of oil that may affect US navigable waters, adjoining shoreline, waters of the contiguous zone, or US natural resources.

Mr. Bob Lowder explained that the New River is not Camp Lejeune property, it is property of the State of North Carolina. However, if a spill were to occur in the New River as a result of Base activities, they would help with cleanup activities in any capacity necessary. Photos of countermeasures in place at the Base were reviewed including spill gates at retention ponds, berms in accumulation facilities, and booms in ditches.

Notification requirements for any spill on board the Base or the Air Station are broken down into 2 categories: (1) those related to immediate emergency response actions and (2) those related to regulatory notification (i.e., NCDENR, EPA, NCDEM). The regulations require that a Federal OSC (US Coast Guard or EPA at the Base and the Air Station) must be notified if:

- Human health or the environment are threatened by the incident, or
- The spill threatens to enter surface water, or
- The spill exceeds 25 gallons, or
- The spill is beyond the capability of the initial responders.

In general, there are enough resources and trained responders on board the Base and the Air Station capable of handling most spills. In addition, the Base has a Basic Ordering Agreement (BOA) in place with several local contractors who are trained in environmental response. Under the BOA contractors are pre-qualified and pre-approved and can thus commence response activities quickly.

VII. Update on Explosive Constituent Sampling at MCB Camp Lejeune

Objective: The purpose of this agenda item was to provide an update on the explosive constituent sampling at MCB Camp Lejeune. This discussion was led by Mr. Bob Lowder.

Overview: As discussed in the June 2005 RAB meeting, the Base has a military munitions response program (MMRP), which includes Closed, Transferred, and Transferring (CTT) range remediation sites. The MMRP is similar to the IR program, but instead of cleaning up solvents, it involves the clean up of explosives on closed ranges.

There are approximately 20 ranges on Base in the MMRP program, and most are fairly small. The Base is beginning an assessment of one range (Knox Trailer Park) because they want to put in public private venture (PPV) housing. Historical reports indicate a hand grenade range was located at the site in the 1940s or 1950s, so at the end of November,

sampling and a geophysical survey will completed. The site is in the PA/SI phase right now in order to determine if there is any contamination present.

VIII. RAB Charter Items

Objective: The purpose of this agenda item was to discuss several items in the RAB charter for consideration at future RAB meetings. This discussion was led by Mr. Bob Lowder.

Overview: According to the RAB charter, a new co-chair should be elected yearly, so the RAB members should consider people for nomination at the next RAB meeting.

Also in the RAB charter, RAB members are required to attend meetings regularly; however, four members have not shown up for the past 3 or 4 meetings. Bob will send them a letter asking them to verify whether they want to continue to be a part of the RAB and request they attend more meetings. Further, Bob will be placing applications in the newspaper for new RAB members.

IX. Next RAB Meeting

The Next RAB Meeting will be **February 16**, **2006** at **6:00 PM**. Bob Lowder will secure a location for the meeting and send the information to the RAB members. During this meeting, there will also be a public meeting to discuss the Sites 93 & 94 Proposed Remedial Action Plans, so CH2M HILL will put a public notification in the paper.