

FINAL MEETING SUMMARY

CH2MHILL

**Marine Corps Base Camp Lejeune
Restoration Advisory Board Meeting Minutes:**

RAB Meeting: March 10, 2005

<p>ATTENDEES:</p> <p>Robert Lowder/MCB Camp Lejeune Ken Cobb/MCB Camp Lejeune Daniel Hood/NAVFAC Atlantic Gena Townsend/USEPA Region IV Randy McElveen/NC DENR Matt Louth/CH2M HILL Chris Bozzini/CH2M HILL Donna Laudermilch/CH2M HILL Ron Kenyon/Shaw Rich Bonelli/Baker Environmental</p>	<p>ATTENDEES:</p> <p>Laura Bader/RAB Co-Chair Fannie Coleman/RAB Member J. M. Ensminger/RAB Member Carrie Anne Hayward/RAB Member Chuck Kassube/RAB Member Thomas Matlison/RAB Member Marvin Powers/RAB Member Bert Bilodeau/New River Foundation Linda Bilodeau/New River Foundation Betty Sanders-Seavy/New River Foundation Norman Bryson/Onslow County Emergency Service</p>
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FROM: Donna Laudermilch/CH2M HILL
DATE: March 11, 2005

LOCATION

Coastal Community College, Building CE, Room 202 in Jacksonville, North Carolina

MINUTES

6:00 PM

- I. Introductions
- II. Site 88, Building 25 Pilot Study Update

Objective: The purpose of this discussion was to provide an update on the status of soil mixing activities and provide photographs of the progress at the site. Chris Bozzini presented this information.

Overview: In February 2005, CH2M HILL completed soil mixing using a zero valent iron (ZVI)/clay mixture to remediate a PCE plume. The soil mixing was completed using a 10-foot diameter auger attached to a crane. A 14-foot diameter vapor hood was attached to the auger to capture any vapors created during soil mixing; and the collected vapors were piped through an activated carbon unit for treatment. Photographs were provided detailing site preparation activities, excavation of the top soil, attachment of the vapor hood, the soil mixing process, and the status of the site after soil mixing was complete. The soil mixing contractor is currently demobilizing from the site; and the schedule of activities remaining is as follows:

- Allow the site to settle for 4 to 6 weeks;
- Stabilize the treatment area by amending with cement – end of April 2005
- Pave the treatment area for a parking lot (approximately 75 spaces) – May 2005
- Install additional monitoring wells – May 2005

- Conduct post-treatment multimedia sampling (June/July 2005)

III. Site 35 Pilot Study Update

Objective: The purpose of this discussion was to provide an update on the status of a potassium permanganate injection pilot study and provide photographs of the progress at the site. Chris Bozzini presented this information.

Overview: CH2M HILL has been conducting a two-phase pilot study at Site 35 to treat a TCE plume with a maximum concentration of 2,000 parts per billion (ppb). The pilot study objectives are: test the success of chemical oxidation on the “hot spot” area; 80% contaminant removal, and determine the best approach (Fenton’s reagent or permanganate injection). Injection of the Fenton’s reagent was performed in February 2004, and provided mixed results.

CH2M HILL conducted a tracer test, which indicated that subsurface conditions were limiting the success of the injection. In January 2005, potassium permanganate was injected in conjunction with pneumatic fracturing, using compressed gas to force open the formation. Pneumatic fracturing was conducted from 37 to 48 feet bgs. A total of approximately 6,800 pounds of potassium permanganate (19,400 gallons of solution) was injected. Samples collected during injection activities indicated good distribution of the permanganate (i.e., a radius of influence approximately 20 feet from injection points). Samples collected four weeks after injection activities are still purple indicating the permanganate is still present in the subsurface. The remaining schedule is as follows:

- Sample wells in April 2005
- Collect a second round of samples in August 2005
- CH2M HILL will issue a pilot study report after receiving and analyzing all data –anticipated to be October 2005.

IV. Update on Site Assessment and Remedial Activities at Sites 6 and 82 (Lot 203)

Objective: The purpose of this discussion was to present a summary of past site use, discuss the current remedial activities being performed at the site, and provide a path forward. Bob Lowder led this discussion.

Overview: Lot 203 was an unofficial waste disposal area from the 1940s to the late 1980s. DRMO currently occupies the site. During investigation activities, PCBs, cleaning solvents, used batteries, waste oils, debris, and pesticides were found. Further, it is known that significant trench and fill operations took place within the Lot 203 area and surrounding woods.

The site chronology is as follows:

- January 1989 – Seven 55-gallon drums were unearthed (one was marked DDT).
- March 1989 – The drums were removed, and the site underwent partial site closure.
- 1990 – DRMO was relocated to Camp Geiger.
- 1990-1993 – A number of investigations were conducted including a Remedial Investigation and Feasibility Study.
- 1994 – An aquatic study was performed on Wallace and Bearhead Creeks.
- June 1993 – Record of Decision signed.
- 1994 and 1995 - Time-critical Removal Actions were conducted to remove debris and contaminated soil.
- 1996 – A pump and treat system was put in place, which is still in operation.
- 1997 – Long-term monitoring was initiated and is currently conducted on a semi-annual basis.
- 2001 – DRMO was relocated to Lot 203, and land use controls were implemented including: aquifer use

prohibited, groundwater and soil intrusion prohibited, industrial land use only.

The pump and treat system currently averages 1.1 million gallons per day (MGD), 14 million gallons per year. Since 1996, 1.1 billion gallons of groundwater have been treated. 16,400 pounds of VOCs were removed in 2004, and a total of 168,000 pounds of VOCs have been removed since operation began in 1996. Overall, the pump and treat system has proven to be very effective for this site. LTM results indicate a 70 to 80 percent reduction in TCE concentration since the Remedial Investigation.

Present and future actions at Lot 203 include:

- Constantly reevaluating well network to ensure plume changes are addressed.
- Continue to research emerging technologies in an attempt to enhance cleanups and ensure efficiency.
- Conduct an ERD (enhanced reductive dechlorination) pilot study. ERH uses an injected carbon source to enhance the natural degradation process.
- Sample utility corridors along Piney Green Road and Holcomb Boulevard to ensure worker safety.

V. Update on Historic Dipping-Vat Sites

Objective: The purpose of this discussion was to provide RAB members with additional information on the background of the dipping vat sites, potential contamination at the sites, and the proposed path forward. This information was presented by Bob Lowder.

Overview: Three historic livestock dipping vats were discovered at the Base during archaeological investigations:

- Jaybird Road dipping vat
- Magnolia Road dipping vat
- Lyman Road dipping vat

Dipping vats are typically 4' x 5' x 25' concrete pits, sloped on one end. Dipping vats were typically used from around 1906 to 1961 in an attempt to eradicate the cattle fever tick. The typical solutions used chemicals including arsenic and other pesticides.

During investigation activities, arsenic, mercury, and pesticides were detected in soil samples collected from the Magnolia Road dipping vat; and arsenic, chromium, and mercury were detected in soil samples collected from the Jaybird Road dipping vat. No sampling has been performed at the Lyman Road dipping vat yet; however the site will be treated as a "potential concern" until sampling can be conducted. The three dipping vat sites are scheduled to be transferred into the MCB Camp Lejeune Installation Restoration Program for remediation.

VI. Site 86 Horizontal Well Pilot Study Update

Objective: The purpose of this discussion was to provide an update on the pilot study involving air sparging with ozone enhancement and to discuss the schedule of remaining site activities. Chris Bozzini presented this information.

Overview: The pilot study at Site 86 consists of installation of a horizontal well for air sparging with ozone addition to treat a TCE plume. Air sparging strips VOCs from groundwater, and then the ozone oxidizes the VOCs, leaving non-hazardous by-products in the groundwater. The horizontal well installation and air sparging field activities were summarized and photographs of the equipment and installation process were presented.

CH2M HILL installed the horizontal well in October 2004 according to the following specifications:

- Well Length – 950 feet
- Screen length – 350 feet
- Depth of screen – 60 feet ± one-quarter foot

- Polyurethane seals were installed at 200 feet along the entry and exit points
- Bentonite seals were installed at 40 feet along the entry and exit points

The compressor for the air sparging system was started in February 2005, and the first round of groundwater samples was collected March 1 and 2, 2005. The analytical results had not been received at the time of the RAB meeting; however water quality parameters collected in the field indicate the subsurface is trending towards oxidizing conditions (i.e., higher dissolved oxygen concentrations and a positive oxidation-reduction potential). The ozone equipment will be installed and started up in April 2005. Then, groundwater monitoring will be conducted on a quarterly basis in May, August, and November 2005.

VII. Additional Items of Discussion

Objective: The purpose of this agenda item was to allow RAB members the opportunity to voice any additional questions or concerns about the current agenda topics and discuss any items not included on the agenda.

Overview: Bob Lowder presented the RAB members with a copy of a letter from the Department of Defense regarding a proposed rule governing RABs. All RAB members were encouraged to review the proposed rule (attached to the letter), and provide any feedback to Bob before the March 29, 2005 deadline.

VIII. Next RAB Meeting

The Next RAB Meeting will be **June 16, 2005 at 6:00 PM**. Bob Lowder will secure a location for the meeting and send the information to the RAB members. None of the RAB members had any items to include in the agenda for June, so Bob will develop the agenda and distribute it to the RAB.