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RESTORATION ADVISORY BOARD MEETING MINUTES 23 FEBRUARY 2012 MCB CAMP  
LEJEUNE NC  
2/29/2012  
CH2M HILL



**Overview:** Mr. Bozzini reviewed the site background. Site 88 is the former dry cleaner where volatile organic compounds (VOCs) are present in soil and groundwater. A treatability study was conducted to help with evaluating potential remedial alternatives for the site. The study was conducted in three areas in 2 zones and the results were as follows:

- Zone 2, Area 1 consisted of in situ chemical oxidation (ISCO) to a depth of 50 feet and VOC reduction of 87% was achieved and the test was found to be effective. The RAB questioned and discussed how much substrate was injected and costs. The challenge with this technology is that contact is needed with the contamination to achieve reduction.
- Zone 2, Area 2 consisted of enhanced reductive dechlorination (ERD) to a depth of 100 feet and VOC reduction was not significant. The challenge with using this technology is that the dose needed is large based on the high concentrations and it was insufficient and an appropriate dose would be cost-prohibitive. Therefore, the test was found to not be effective.
- Zone 3 consisted of a downgradient biobarrier using ERD to a depth of 50 feet and trichloroethylene (PCE) reduction up to 97% was achieved and the test was found to be effective.

The treatability study results will be used to evaluate potential remedial alternatives to address the site contamination. The overall remedial action objectives for Site 88 are to:

- Restore groundwater quality to meet State and Federal drinking water standards
- Prevent human contact with soil in former soil mixing area
- Prevent human ingestion of water containing VOCs at concentrations above State and Federal drinking water standards
- Prevent exposure to VOCs in groundwater and vapor intrusion from VOCs in groundwater

Based on the size of the site, remedial alternatives are being evaluated in several zones (soil, source area groundwater, and 2 areas of downgradient groundwater). The alternatives evaluated for each zone are as follows.

- Zone 1 Soil: No Action; Land Use Controls (LUCs); Excavation
- Zone 1 Shallow Source Area Groundwater: No Action; Air Sparge with Soil Vapor Extraction (AS/SVE), Monitored Natural Attenuation (MNA), LUCs, and Vapor Intrusion Mitigation System (VIMS); ISCO, MNA, LUCs, and VIMS
- Zone 2 Deep High Concentration Groundwater: No Action; AS, MNA, LUCs, and VIMS; ISCO, MNA, LUCs, and VIMS
- Zone 3 Deep Low Concentration Groundwater: No Action; MNA and LUCs; Biobarrier and LUCs

The RAB discussed the biobarrier and how many points (approximately 12) and how long it will take to cleanup (a long time). Chris explained that there is uncertainty based on the high concentrations and low cleanup levels (going from levels of 100,000 to 0.7). A RAB member asked whether there is a single source. Chris responded that yes, the dry cleaner that used PCE followed by Varsol.

The Feasibility Study presenting the details is planned for submittal in spring 2012. This summer, the Team will identify the preferred alternative followed by a public meeting and Record of Decision.

#### **IV. Installation Restoration Program Site 86 Update**

**Objective:** The purpose of this agenda item was to provide a site overview, present treatability study approach and results, and provide path forward and schedule.

**Overview:** Mr. Bozzini presented a site overview. Site 86 is a 130 acre site located at Marine Corps Air Station (MCAS) New River where groundwater is impacted with low level VOCs, primarily trichloroethene (TCE) and degradation products. A treatability study is currently underway to evaluate potential remedial alternatives. The study was conducted in 2 zones, zone 1 in the Upper Castle Hayne Aquifer and zone 2 in the surficial aquifer.

In zone 1, ERD injections and extractions of lactate to promote biological breakdown of VOCs (provide food for natural bacteria) were conducted to achieve treatment over a large distribution area for a relatively low cost. The RAB questioned and discussed how much water is extracted and what is done with it. Chris responded that minimal water is extracted and reinjected with the lactate until the lactate reaches the wells. The RAB questioned whether the use of filters was evaluated. Chris indicated that carbon will remove VOCs. The RAB questioned how this area got contaminated and the best guess is degreasing/cleaning solutions transported by the drainage swale. The system has been running three to four months and preliminary results indicate 98% reduction in TCE and 69% removal in total VOCs.

In zone 2, slow release permanganate candles were installed to treat VOCs (180 feet long) using a new innovative technology that may be a long-term solution based on the time it lasts (months to years). The candles were installed three months ago and preliminary results indicate 81% reduction in VOCs.

Treatability study monitoring will be conducted again in May 2012 followed by a Feasibility Study this summer to evaluate potential remedial alternatives.

The RAB questioned and discussed the horizontal air sparge that was used and effective to treat a VOC plume in the distant field.

#### **V. RAB Business**

Ms. Rychak proposed the next RAB date for **Thursday, May 24, 2012** and requested topics for the next meeting. Topic suggestions may be presented to Ms. Rychak after the meeting. The RAB members complained about the cost of the certified RAB notification letter for this meeting. Ms. Rychak apologized for the mistake and indicated that the letter was not intended to be sent as certified.

The RAB questioned what colleges and universities we are working with and whether local colleges or universities could be contacted and involved in the process as an academic opportunity. The Base have recently worked with Colorado State, Washington State, Clarkson University, and with universities as part of the Range Environmental Vulnerability Assessment (REVA) program, and Environmental Security Technology Certification

Program (ESTCP) projects. Charity indicated that she will look into opportunities with local colleges.

Charity informed the RAB of the Base's Earth Day Fair on April 18th at Marston Pavilion for school students and requested volunteers for informative booths. Set-up begins at 0800 and runs through 1500. Charity will also send out information on Earth Week activities.