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

RAB Meeting: May 6, 2010

ATTENDEES:

Bob Lowder/MCB CamLej	Rich Mullins/RAB Member
Charity Rychak/MCB CamLej	Tess Sanders/RAB Member
Dave Cleland/NAVFAC Mid-Atlantic	Karen Sota/RAB Member
Bryan Beck/NAVFAC Mid-Atlantic	Amy Poe/RAB Member
Jose Parra/NAVFAC Mid-Atlantic	Chris Bozzini/CH2M HILL
Gena Townsend/EPA Region 4	Matt Louth/CH2M HILL
Randy McElveen/NCDENR	Kim Henderson/CH2M HILL
Laura Bader/RAB Co-Chair	

FROM: Kim Henderson/CH2M HILL

DATE: June 16, 2010

LOCATION

Coastal Carolina Community College, Business Technology Building, Room 102 in Jacksonville, North Carolina

MINUTES

I. Welcome and Introductions

Mr. Lowder began the meeting and introduced Charity Rychak, recently hired with MCB CamLej to support the Installation Restoration Program (IRP), and Jose Parra with NAVFAC Mid-Atlantic, an intern supporting the IRP.

II. Base Boundary Investigation Brief

Objective: The purpose of this agenda item was to provide the RAB with information regarding four areas of potential concern (AOPCs) from off-Base sources of contamination. This discussion was led by Mr. Lowder.

Overview: Mr. Lowder explained the objective of the Base boundary investigation to identify potential risks posed to the Base by current and historical land use practices at near-by off-Base properties. The approach included a commercial database search of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) Information Systems, NCDENR Division of Water Quality and underground storage tank (UST) Section, a windshield site tour, and groundwater sampling at AOPCs. Three AOPCs were identified:

- AOPC 9 is located near Chico's Tires on US Route 24 and a former leaking underground storage tank (LUST) site location and near dry cleaners. Methyl tert-butyl ether (MTBE) was detected above the current North Carolina Groundwater Quality Standards (NCGWQS) (20 µg/L). The site was closed previously based on the higher NCGWQS (200 µg/L). Mr. Mullins questioned how close Tarawa Terrace was to this AOPC and Bob indicated that it is relatively far from Tarawa Terrace and there is no immediate or anticipated impact.
- AOPC 10 is located at the intersection of Western and Lejeune Blvd near a former LUST site location and near dry cleaners. Volatile organic compounds (VOCs) and naphthalene were detected above the NCGWQS. Downgradient wells located just upgradient from the housing area were installed and were not impacted.
- AOPC 11 is located along Hwy 172 near Bear Creek Road near a former LUST site. VOCs, semivolatile organic compounds (SVOCs), and lead were detected above the NCGWQS.

Recommendations and the current status are to:

- Notify EPA and NCDENR of groundwater contamination at AOPCs 9, 10, and 11. – Completed
- Request to meet with both the EPA and NCDENR to discuss potential for off- Base sampling to determine contaminant source. – In progress
- Incorporate results from the Base Boundary Survey into GIS layers and maps for Base Master Planning purposes. – In progress
- Conduct periodic re-sampling of groundwater from the downgradient wells to evaluate potential migration of contaminants. - Scheduled

The Solid Waste Management Unit 350 (SWMU-350) area would have also been identified but was already being investigated as part of a Resource Conservation and Recovery Act (RCRA) Corrective Action, regulated by NCDENR. SWMU-350 is a former above ground storage tank (AST) facility which consisted of ASTs STT-61 through STT-66. The six ASTs (each with approximately 30,000 gallon capacity) at the facility held liquid propane until 1984. The piping system was then modified to store used oil. The ASTs have been taken out of service and removed, along with the associated piping. The chemicals of concern (COCs) are primarily petroleum-based benzene, toluene, ethylbenzene, and total xylenes (BTEX) and small amounts of chlorinated solvents (tetrachloroethene [PCA] and trichloroethene [TCE]) west of SWMU-350. As a result of investigative activities at SWMU-350, it has been determined that contamination discovered west of the site is unlikely related to former AST waste oil storage activities.

Actions have been taken to determine if the groundwater plume extends beneath TT II Elementary School (TT-84) to evaluate the vapor intrusion pathway. When benzene (10 parts per billion [ppb]) was first identified in groundwater south of SWMU-350 near the railroad in 2007, groundwater samples near TT-84 were collected at six locations encircling the Building. Only 1,1,2-trichloro-1,2,2-trifluoroethane was found in one sample near TT-84 but the concentration was below the NCGWQS and was determined not to be impacted by SWMU-350.

Recommendations and the current status are to:

- Add additional wells to further delineate the vertical and horizontal extent of contamination - Completed
- Notify NCDENR of potential groundwater contaminant source migrating onto MCB CamLej and recommend investigation - Completed
- Perform near-slab soil gas sampling at TT-84 to provide additional data to ensure that vapor intrusion is not an issue – Scheduled
- Notify school of sampling activities near TT-84 – Completed

III. Phase III Vapor Intrusion Evaluation Preliminary Sampling Results Brief

Objective: The purpose of this agenda item was to provide the variability of the vapor intrusion evaluation preliminary sampling results and the Base Industrial Hygiene indoor-air sampling results at Site 88. This discussion was led by Mr. Lowder.

Overview: Mr. Lowder explained that Site 88 is the former Base dry cleaning facility (former Building 25). Building 25 operated as a dry cleaning facility from the 1940's-2004 when cleaning operations ceased. Building 25 was demolished in 2004. The dry cleaning fluids were stored in five 750-gallon USTs that were removed in 1995. Groundwater analytical results identified wide-spread chlorinated solvent contamination (tetrachloroethylene [PCE], TCE, and cis-1,2-dichloroethene [DCE]), impacting the surficial aquifer and the upper portion of the Castle Hayne aquifer.

The objective of the vapor intrusion evaluation was to determine if complete or significant exposure pathways exist for vapor intrusion into buildings on MCB CamLej. The objective was accomplished by identifying buildings located within 100 feet of groundwater plumes. Groundwater, soil-gas, and/or indoor-air samples were collected in potentially affected buildings using a phased process. Mr. Lowder explained that indoor-air sampling is not conducted initially because a building survey is needed to identify and remove potential indoor sources (e.g., dry cleaning, cleaning chemicals) to confirm the source of vapor intrusion from groundwater VOC contamination. The Department of Defense (DoD) Vapor Intrusion Guidance Handbook (2009), ITRC Guidance (2007), and Draft EPA Vapor Intrusion Guidance (2002) were followed. Sampling was conducted at Buildings 3B and 43 as follows:

- **Phase I Sampling (6/2008):** Groundwater, soil gas, and indoor-air samples all exceeded vapor intrusion screening levels at both buildings for PCE. However, indoor-air samples were within the EPA target risk range (10^{-4} to 10^{-6}). The results prompted a Phase II sampling event at both buildings for soil gas and indoor-air.
- **Phase II Sampling (10/2008):** Soil gas and indoor-air samples exceeded vapor intrusion screening levels at both buildings for PCE. However, indoor-air samples were within the EPA target risk range (10^{-4} to 10^{-6}).

- **Phase III Variability Sampling (12/2009):** Preliminary sampling data (received 4/6/10) indicates that indoor-air exceeded EPA target risk range (10^{-4} to 10^{-6}) for PCE at Building 3B and PCE and 1,4-dichlorobenzene at Building 43.

- **Base Industrial Hygiene Sampling (4/2010):** Follow-on indoor air sampling was conducted by Base Industrial Hygiene personnel using Occupational Safety and Health Administration (OSHA)-recommended methods. Indoor-air concentrations were relatively consistent with those measured using EPA methods and were well below OSHA standards for the protection of worker health and safety. Due to potential concerns with underground utilities (possible vapor intrusion pathway) near Building HP-57, the Base also recommended that Base Industrial Hygiene perform OSHA indoor-air sampling within HP-57. Indoor-air concentrations were also well below OSHA standards for the protection of worker health and safety.

Follow-on actions include to continue remedial actions associated with Site 88 to eliminate the potential source of contamination promoting vapor intrusion issues and install Vapor Abatement System at buildings potentially affected by vapor intrusion (Buildings 3, 3B, 37, and 43). Mr. Lowder explained how the abatement systems function, similar to a radon venting system.

IV. Site 69 and UXO-02 Update

Objective: The purpose of this agenda item was to provide the RAB with a review of the Site 69 and UXO-02 background information, outline the field investigation activities, and review the project schedule. This discussion was led by CH2M HILL representative, Mr. Bozzini.

Overview: Mr. Bozzini presented an overview of the sites. Site 69 is the Former Rifle Range Chemical Dump, located on a 14-acre wooded site, 800 feet west of the New River. Active disposal of solvents, pesticides, polychlorinated biphenyls (PCBs), and waste occurred from 1950 through 1976 and there was reported disposal of mustard or nerve agent in 1953. Site 69 is located within Military Munitions response Program (MMRP) Site UXO-02. Site UXO-02 is the Unnamed Explosives Contaminated Range that covers a 127-acre wooded area. The types of munitions used are unknown and the area has been used for troop training activities.

In 2000, an Interim Record of Decision (ROD) was signed for land use controls (LUCs) and monitored natural attenuation (MNA) for VOCs in groundwater at Site 69. At Site 69, a supplemental investigation was conducted including Digital Geophysical Mapping (DGM) and environmental sampling. At Site 69, the US Army Edgewood Chemical Biological Center (ECBC) provided chemical agent safety support for air monitoring, analytical procedures, and emergency procedures.

At UXO-02, a preliminary assessment/site inspection (PA/SI) was conducted including DGM and environmental sampling to evaluate whether a release of munitions constituents or other hazardous substances occurred. At UXO-02, munitions and explosives of concern (MEC) avoidance was conducted to avoid anomalies. A Unexploded Ordnance (UXO) Technician supervised and directed MEC avoidance activities to clear work areas of MEC.

For intrusive activities, MEC avoidance included hand clearance and down-hole geophysical anomaly avoidance every foot to a depth of 15 feet.

Site preparation included vegetation clearance, installation of emergency exits within the Site 69 fence, and road improvements. Ms. Poe questioned how we knew we weren't going to hit anything when installing the fence. Mr. Louth explained that we only installed temporary fencing and gates in the existing fence for escape and safety measures. The previous fence was installed based on the geophysical survey and the fence was installed outside the boundary of waste disposal so nothing was expected in those areas. Mr. Lowder added that when we do conduct any intrusive activities a UXO Technician is present for avoidance.

The Site 69 DGM results identified two main disposal areas, similar to the 1992 investigation, and correspond with the aerial photo study. The results confirmed the fence is positioned correctly. The UXO-02 DGM results are pending.

The soil and groundwater sampling was completed at both Sites 69 and UXO-02. At Site 69, based on the potential for chemical agent exposure, appropriate personal protective equipment (PPE) was used and personnel decontamination was conducted for safety during sampling activities and the disposable PPE was screened prior to disposal. Onsite air monitoring for chemical agent was conducted using Miniature Chemical Agent Monitor (MINICAMS) and Depot Area Air Monitoring System (DAAMS) tube sampling for confirmation of any MINICAMS alarms. The Site 69 samples were collected in triplicate for phased testing to confirm that samples containing potential chemical agent would not be shipped off-site to the laboratory for analysis. No chemical agent or chemical agent degradation products were detected. Analytical data will be available in preparation for the next RAB meeting in August 2010 and the report of findings is planned for submittal in late 2010.

V. Brief of Installation Restoration Technologies used on Base

Objective: The purpose of this agenda item was to provide the RAB with a broad overview of innovative remediation technologies at Installation Restoration Program (IRP) sites. This discussion was led by CH2M HILL representative, Mr. Bozzini.

Overview: Mr. Bozzini presented an overview of innovative technologies at the IRP sites as follows.

Site 89 - Former DRMO and Base Motor Pool is where multiple dense non-aqueous phase liquid (DNAPL) plumes and a large seven acre dissolved chlorinated volatile organic compound (CVOC) plume. Four treatability studies were conducted based on the potential high costs of treatment; ferox (pneumatic injection of zero-valent iron [ZVI]), air sparging with horizontal well, enhanced reductive dechlorination (ERD) (injection of lactate/oil mixture), and a permeable reactive wall (mulch substrate).

ERD, air sparging, and the permeable reactive wall were effective in reducing contamination by over 90%. While air sparging and ERD reduced contaminant mass for a similar cost per volume treated, air sparging was determined to be the most practical technology for full scale implementation.

To address the DNAPL source area, soil mixing with ZVI was conducted and treated 30,000 cubic yards to a depth of 25 feet with a cost of $3 million. The project achieved 99.9% reduction and won the 2010 American Council of Engineering Companies, North Carolina Chapter, Engineering Excellence Awards Competition in the Environmental Category.

Site 88 – Former Dry Cleaner was used from the 1940's and ceased operations in 2004. A half mile PCE plume is present to 100 feet below ground surface. In-situ chemical oxidation (ISCO) and ERD pilot studies are being conducted using multiple oxidants and ERD substrates, with and without bioaugmentation. Field implementation will be conducted in spring/summer 2010 to target the highest concentrations and create a downgradient biobarrier. Environmental Security Technology Certification Program (ESTCP) is also conducting a study of ISCO with additives to improve distribution. Mr. Mullins asked if there were any immediate concerns about the river. Chris indicated that the plume is about ½ mile from the river and the objective is to treat the upgradient high concentration source areas and stop the plume from migrating towards the river.

Site 73 – Amphibious Vehicle Maintenance Facility is a chlorinated solvents plume where a horizontal air sparging pilot study was conducted and a Remedial Design (RD) –for air sparging and installation of a downgradient biobarrier is being conducted. The existing horizontal well from the prior study is being used to further reduce TCE concentrations.

The factors of success are the Base's experience with treatment technologies for VOC plumes and a proactive Partnering Team with a mission to:

- Work together with a commitment to continuous improvement
- Clean up contaminated sites using innovative, quality, and cost effective technologies
- Protect human health and the environment
- Implement fast-track investigation and clean-up to meet Base's mission needs
- Share lessons learned

The Base won the Fiscal Year 2009 Secretary of the Navy Award for Environmental Restoration, Installation and will receive the award in June 2010.

VI. North Carolina groundwater standards

Objective: The purpose of this agenda item was to provide the RAB with the background and changes to the North Carolina groundwater quality standards in January 2010. This discussion was led by NCDENR representative, Mr. McElveen.

Overview: Mr. McElveen explained that NCDENR performed their triennial review of groundwater standards (15A NCAC 2L.0200) in January 2010. Seven new contaminant standards were identified, 15 existing standards were lowered to make them more stringent, 12 standards were increased to make them less stringent, and no standards were removed. The revised standards are available on the NCDENR website: http://portal.ncdenr.org/web/wq/ps/csu/rules. The noteworthy changes were as follows:

- Lower standards for arsenic, 1,1-dichloroethane, 1,4-dioxane, MTBE, naphthalene, and toluene.
- Higher standards for acetone, TCE, and vinyl chloride.
- No change to the standard for PCE.
- New standards were calculated for benzoic acid, bis(chloroethyl)ether, dibromochloromethane, ethyl acetate, hexachlorobutadiene, 1,1,2,2-tetrachloroethane, and 1,2,4-trichlorobenzene.
- All standards were previously in parts per million (ppm) and are now in parts per billion (ppb) unless noted otherwise.

Mr. McElveen reviewed the sections of 15A NCAC 2L:

- 0102 - Definitions
- 0103 – Policy – to maintain groundwater as a source of drinking water and protect groundwater to the level of the standards
- 0104 - Restricted Designation (RS) - restricted uses of groundwater (for example, naturally occurring substances, such as arsenic, exist in the area above the standard or a RCRA Permit is within a compliance boundary)
- 0105 - History - note for groundwater standards that were repealed
- 0106 - Corrective Action - where groundwater has be degraded and the goal is to restore to the standard, terminate, or control discharge, includes the requirements for a Corrective Action Plan (CAP)
- 0107 – Compliance Boundary Requirements
- 0108 – Review Boundary Requirements
- 0109 - Director Delegates Authority
- 0110 – Monitoring Requirements
- 0111 – Reporting Requirements
- 0112 – Analytical Procedure Requirements
- 0113 – Variance Requirements
- 0114 – Public Notification Requirements
- 0115 – Risk Based Assessment and CAP for Petroleum USTs
- 0201 – Groundwater Classifications GA, GSA, GC
- 0202 – Groundwater Standards List
- 0300 – Assignment of Underground Water Classifications GSA, GA, River Basins, etc.

VII. RAB Business

Mr. Lowder proposed the next RAB date for **Thursday, August 12, 2010** and requested topics for the next meeting. The analytical results for Site 69 will be presented. Camp Devil Dog, SDZ, and Borrow Pit are other potential topics.