U.S. Army Soldier Systems Center RAB Meeting Minutes for April 20, 2006

Restoration Advisory Board (RAB) Meeting
Conference Center
U.S. Army Soldier Systems Center

April 20, 2006
FINAL Meeting Minutes

I. Attendance

RAB Members Present:

Robert Campbell	Massachusetts Department of Environmental Protection (MADEP)
Joel McCassie	Co-Chair, Environmental, Safety and Health Office (ESHO), U.S. Army Soldier System Center (SSC)
John McHugh	Restoration Officer, ESHO SSC
Dr. Kannan Vembu	Representative of Natick Board of Selectmen
Christine Williams	U.S. Environmental Protection Agency (EPA)
A. Richard Miller	Community Member
Marco Kaltofen	Co-Chair, Community Member
Elizabeth McCoy	Employee Member, SSC
Dr. Harlee Strauss	Community Member

RAB Members Absent:

Steven Lubic	Representative of Natick Board of Selectman
Dr. Charles Czeisler	Community Member, Lakewood Association
Sid Gantman	Community Member
James Straub	Massachusetts Department of Conservation and Recreation (DCR)
James Fitzgerald	Community Member

Others in Attendance:

Kathleen Thrun	Environmental Consultant, ICF Consulting
Erin Healy	Environmental Consultant, ICF Consulting
Steve Reichenbacher	Environmental Consultant, ICF Consulting
Rod Rustad	Environmental Consultant, MACTEC
Bruce Richard	SolarBee
Jill Miller	
Andrew Peace	Lakeville Road Resident
James Connolly	ESHO, SSC
Michelle Bonanca	ESHO, SSC
Anne Marie Desmarais	Environmental Insight
Doug Heely	Recorder, H&S Environmental
Darren Gainer	Environmental Consultant, ECC

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II. Handouts

Agenda
Meeting Minutes from January 19, 2006

III. Meeting Minutes

Mr. McCassie called the meeting to order at 7:05 pm and asked if there were any comments, changes or revisions to the January 19, 2006 RAB meeting minutes.

The minutes were accepted without amendment.

General Comments

Mr. Miller asked that meetings not conflict with other meetings, particularly Natick ConCom meetings involving the Lake.

Mr. Kaltofen suggested that blackout dates be proposed where meetings not be scheduled.

Mr. Miller and Mr. Kaltofen discussed trying to find a solution so that there are no meeting date conflicts.

Mechanical Control Devices in Lake Cochituate – Mr. Richard Miller

Mr. Miller discussed a presentation from SolarBee circulator systems and asked for input on this technology. Mr. Miller introduced Bruce Richards from SolarBee.

Rather than re-run the PowerPoint presentation that was seen by many of the attendees the previous night, Mr. Richards proposed to hand out the SolarBee literature, discuss it and take questions. SolarBee literature was passed out. Mr. Richards noted that he has background in oceanography. This mechanism can improve water quality in fresh and salt water. It is a circulator not an aerator. It can be used in rural areas with no electricity. It floats on top of water powered by a solar panel. Water is lifted from the center of the unit by an impeller and pushed out from center. Very low power usage uses about 100 watts of power. The unit was designed and is also used in wastewater applications, in which the circulator causes anaerobic blue green algae to convert to edible algal/bacteriological communities that help the food chain and that don't die at night causing dissolved oxygen (DO) problems. The system uses no chemicals and has comparable costs over the lifetime of the unit with chemical programs. Response to this product has been good. SolarBee is offering two machines for the Lake for testing. The company has no machines in Massachusetts but will be a free test with no hardware costs involved. There are some machines in use in New England. The company is looking to get into Massachusetts market.

Mr. Miller commented that DCR will accept the SolarBee approach. They want to install these in the Lake in August for a one year experiment. DCR will be monitoring the performance of the machines. On-line search "LC Milfoil" to get more information on SolarBee performance at other sites.

Mr. Campbell, from the Massachusetts Department of Environmental Protection questioned application for this site relative to milfoil. Milfoil is competing successfully at this lake. How will a circulator address the Milfoil?

Mr. Richards said that the machine was designed to eliminate blue green algae, originally in wastewater ponds. In a New York case study, they found that when the blue green algae went away, the milfoil did also. The mechanism for this was not known but upon further literature review, their experts theorized that nitrification was responsible for milfoil removal success. May not work on all invasive species, but does appear to work on milfoil because they are shallow rooted. The circulation helps the native plants thrive and compete better against invasive species. SolarBee works best on calm days when blue green algae is flourishing. SolarBee may also distribute carbon and keep milfoil from digesting it. Nitrification however is leading theory on how milfoil is dealt with. DO studies are mixed – some sites show improvement but not all.

Mr. Miller and Mr. Kaltofen discussed application - maybe it should not be used in South Pond where other sediment issues are present. Possible use on north area of south pond near well fields where milfoil is thick.

Dr. Strauss wonders if the circulator would move sediment and therefore move PCBs which are adsorbed on sediment. She expressed a concern over more PCBs available to fish. Mr. Kaltofen echoed that concern. Dr. Strauss suggested testing to see if sediment is moved using SolarBee.

Mr. Richards said the machine was designed to work in wastewater lagoons with lots of sediment. Machine does not pull water from bottom, only side. Too much sediment would damage machine, so that is avoided. The intake hose is height adjustable. A baffle on the bottom of the intake hose ensures that sediment is not drawn up from immediately beneath the unit.

Dr. Strauss asked if this was actually tested. Mr. Richards said over 900 installations prove that sediment movement is not a problem, based on experience.

Dr. Vembu asked about levels of nitrate. Mr. Richards was not aware of any data because the company is small, mostly engineers. Business has grown from word of mouth and previous success. He was not aware whether nitrate data was available, but he would check with their technical experts.

Mr. McHugh asked about DO and total suspended solids (TSS) data. TSS data is available (in lieu of sediment movement info). Mr. Richards offered to get this data.

Mr. Kaltofen also expressed concern over sediment movement, and stress on benthic organisms that are acclimatized to anoxic conditions.

Dr. Strauss said one possible benefit of increased oxidation of sediments might be reduction of PCBs through oxidative dechlorination.

Mr. Peace, a Lakeville Road resident asked if there were concerns over safety to water craft. Mr. Richards said the machines are well marked, look like buoys. Machines are moored and have low torque impeller. Concern over turtles, may need to use guard. Impellers do not harm fish. US Fish and Wildlife has reportedly been previously convinced.

Mr. Richards discussed the area of influence the machine may have. Up to 10 acre area of influence for milfoil, larger for blue/green algae (up to 40 acres).

Mr. Miller talked about case studies at Lake Tahoe, and at a holding tank site in San Francisco involving the mixing of alum. Both case studies suggested that movement of sediment was not an issue.

Mr. Kaltofen discussed dechlorination verses mixing and re-movement of sediment. Need to consider the Army's position on sediment. Weigh risk verses benefits.

Mr. McHugh talked about an area of elevated PCBs in sediment measuring about 150' by 300'. Asked about what kind of area of influence the machine would have on sediment. Is there a safe distance machines can be put away from contaminated sediments? Mr. Richards asserted again that applications in other lakes and places did not indicate that sediment is moved, but it could be looked at.

Dr. Strauss asked whether there was data on other sediment transport mechanisms. A discussion about what factors that may suspend sediments – fish movement, spring/fall water changes, etc ensued. Presently there is insufficient data on seasonal sediment movement. However, SolarBee will likely not be put near contaminated sediment areas.

Mr. Miller said the SolarBee needs to be demonstrated in "soft way" perhaps in a laboratory to measure possible sediment movement. Mr. Kaltofen stated that someone needs to be identified to do such testing. Mr. Miller stated that contamination problems are inhibiting implementing solutions for the milfoil. There are many activities at the lake (boating, swimming) that cause sediment movement. Mr. Miller thinks that leaving any contaminated sediment in a recreational lake is not acceptable.

Dr. Strauss asked if the Army would study the SolarBee as a means to clean up sediments.

Mr. McHugh stated that more data is needed before making a decision. .

Mr. Miller asked about aquatic uptake of contaminants, particularly from invasive species. Dr. Strauss said that PCBs are not taken up by aquatic plants.

Mr. Miller left to attend another meeting.

Remedial Optimization Study in the T-25 Area – ICF Consultants (Erin Healy and Steve Reichenbacher**)**

Handout

Ms. Healy presented first. The objective of the study was to evaluate the effectiveness of in-situ biological enhancement for groundwater cleanup of TCE and PCE.

ICF conducted a technology evaluation to determine whether in-situ remediation was feasible and which technologies might be effective. Factors evaluated included generally low contaminant concentrations, mechanisms for delivery of treatment to a soil environment (interbedded silt and sands, need residence time), location in Zone II, safety

ICF recommended Hydrogen Release Compound (HRC®) for enhanced bio treatment. HRC® is a food grade additive which produces lactic acid. It releases hydrogen which can be used for reductive dechlorination and provides food source to increase the population of naturally-occurring bacteria. The addition of bacteria is not planned. HRC® provides the required longer residence time. Any by products will be captured by the extraction well network.

Overview of reductive dechlorination – HRC® provides hydrogen to accelerate dechlorination.

Question from Dr. Vembu regarding other technologies considered?

ICF also considered permanganate and hydrogen peroxide.

Mr. Reichenbacher presented the implementation procedures of HRC. HRC® is a viscous fluid like molasses. The HRC® must be heated up to flow. Use Geoprobe to inject material about 50-80 feet below ground surface. Injection area will be upgradient of MW-96B. The injection area is inside the capture zone of 4 pumping wells, ranging up to 30 gpm.

Mr. Campbell asked if soil gas monitoring would be conducted above the water table – He expressed concern about vinyl chloride (VC) formation. ICF had not planned for monitoring because soil gas was not a concern at that depth.

Mr. Kaltofen also expressed concern about soil gas and nearby houses. ICF stated that this is a proposed plan still open to discussion and would be open to considering soil gas testing. Mr. Connolly said that the comments had been noted. The need for soil gas testing would be evaluated and soil gas testing would be incorporated either generally or in response to detections of certain conditions in groundwater.

RAB members also expressed concern about groundwater pathway and breakdown of chlorinated compounds to DCE and VC. RAB members asked about the need for better groundwater monitoring to check for breakdown compounds and to be sure of groundwater capture system to protect the Springvale well field. Mr. Reichenbacher described the proposed monitoring program and stressed that the test was to be conducted with the treatment system operating and with monitoring well MW-96B shut down to increase residence time in the treatment area. In the event that conditions were detected during monitoring that might pose a hazard, MW-96B could be restarted to accelerate capture of breakdown products.

Dr. Vembu questioned how much does the HRC® approach accelerate clean up? ICF responded that this is hard to say since modeling for this scenario had not been conducted in this area.

Mr. Connolly stated that this study was designed to provide an answer to this question. Mr. Connolly referred back to the Draft Feasibility Study for Buildings 22 and 36 which evaluated a pump and treat scenario similar to the system operating in the T-25 area as well as a scenario of pump and treatment in combination with in-situ reductive dechlorination. In this area, the time was projected to be approximately 11 years with in-situ treatment vs. more than 20 years with pumping alone. This study was conducted in an area with similar contaminant concentrations and somewhat lower hydraulic conductivity so that the time advantage may not be the same in the T-25 area. HRC® has the potential to shorten remedial time over pump and treat.

The project schedule is to complete injection, then perform 3 quarterly sampling events. The need for further monitoring will be determined following completion of the initial rounds of quarterly sampling.

Proposed Groundwater Remediation ESD – ECC and MACTEC (Darren Gainer and Rod Rustad)

Handouts

Mr. Gainer identified himself as the project Manager for ECC which is teamed with MACTEC for the groundwater treatment project. Mr. Gainer described a proposed effort to accelerate groundwater treatment in two areas of SSC in which groundwater plumes exist, but where treatment has not yet been implemented.

Mr. Gainer showed a graphic of current conditions in the T-25 area. He pointed out that there are currently two areas where VOCs are above MCLs, one area is currently outside of capture zone. This area will be addressed in future work but is not the subject of tonight's discussion.

Mr. Gainer showed a graphic of the Building 22 and 36 area which is one of two areas under current study. PCE concentrations have been detected near the Lake above MCLs. Higher concentrations of PCE exist beneath Building 36 in a silt "bowl". The proposed scope of work would consist of installation and operation of a pump-and-treat system similar to that described in the Draft Feasibility Study. The conceptual design is a network of four extraction wells pumping at a rate of four to seven gallons per minute (gpm). Mr. Gainer showed a graphic with the estimated capture zone of this network covering the extent of the plume. Preparatory work will consist of additional delineation with small-diameter wells, and the installation of one proposed extraction well and three monitoring wells for a pump test.

Mr. Gainer described the Buildings 63, 2 and 45 which is the second area under discussion. This area contains an older and more defined plume of VOCs, near the shore of the lake. The proposed scope of work will be similar to that described for Buildings 22 and 36. Some additional delineation is required along the southern and eastern boundaries to better define extent of contamination. The conceptual system design is likely to be 3 extraction wells pumping at a rate of three to five gpm each. Dr. Vembu questioned the basis of the conceptual design. Mr. Rustad said that the design is conceptual because hydraulic conductivity in the area is based on existing data from slug tests. Final design will be based on pumping test and modeling which is preferred.

Discussion about drilling methods – the proposed work at 63 is via direct push small-diameter wells for characterization and roto-sonic drilling for recovery wells to provide undisturbed samples and preserve to the maximum extent possible the hydraulic conductivity of the borings. .

Other discussion about timing and whether the advisory board will review the work plan. Mr. Connolly indicated that the final design may not be available before the summer. It would be provided to the RAB for comment, but as the RAB has historically not met during the summer, the RAB would have to discuss whether a meeting would be held for this purpose.

Rod Rustad explained the regulatory mechanism under which this effort is to be conducted. An Explanation of Significant Differences (ESD) is the EPA process for documenting deviations from an approved Record of Decision (ROD). The changes in this case involve the use of the T-25 treatment system in Building 94 at SSC for treatment of water from these two additional study areas. The difference is significant in that it treats groundwater from areas not discussed under the T-25 Groundwater ROD, but is minor since the contaminants and concentrations are similar to those already being treated.

The existing system was designed to treat about 140 gpm. The system currently treats approximately 70 gpm. The proposed additional flow will add approximately another 35 gpm, therefore the system will still be operating within its designed capacity even with the additional flow. System may also need augmentation to treat the contaminant 1,4 dioxane which has been observed in monitoring well MW-124B-2 near building 63. The likely technology selected for this would be

advanced oxidation processes. These technologies were evaluated during the T-25 Area FS, so they may still be implemented if required using an ESD.

Question from Mr. Kaltofen – treatment efficiencies of T-25 treatment system and design parameters. Whether this system can treat the waste stream, particularly vinyl chloride. Mr. Connolly confirmed after speaking with the system designer that the T-25 Treatment System was designed to treat vinyl chloride. The limiting factor which caused capacity of the system to be limited to 140 gpm was the size of the equalization tank in Building 94 rather then the efficiency or capacity of the treatment train. Mr. Gainer described that monitoring during system operation will continue, and if monitoring shows that treatment train capacity is being strained, the system will be upgraded if needed.

Motion to Adjourn at 9:07 pm. Motion was accepted and the meeting was adjourned.