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THE MEMPHIS DEPOT
TENNESSEE

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 839

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
ENVIRONMENTAL FIELD OFFICE
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August 4, 2005

Mr. Micheal Dobbs
Defense Logistics Agency
Defense Distribution Center
2001 Mission Drive
New Cumberland, PA 17070-5000

RE: Early Implementation of Selected Remedy - Interim Remedial Action Completion Report
Defense Depot Memphis Tennessee
Memphis, Tennessee
Site #79-736

Dear Mr. Dobbs:

The Tennessee Department of Environment and Conservation (TDEC), Division of Remediation (DoR), Memphis Environmental Field Office (MEFO) received the Early Implementation of Selected Remedy - Interim Remedial Action Completion Report for the above-referenced site on July 7, 2005. TDEC-DoR has reviewed the Report and has the following comments.

General Comments:

1. DoR notes that this document lacks sufficient alternative recommendations for the task at hand. The only recommendation offered was to reduce injection spacing. What evidence leads to the conclusion that a simple reduction in injection point spacing is the primary means of achieving our long-term remedial goal? Multiple, reasoned recommendations are preferred in order to design and optimize the remedial system properly. In addition, the recommendations section should include a task item to better define and understand the aquifer geochemistry. Specifically, a map indicating site-specific redox conditions in the aquifer should be included as a component of evaluating the effectiveness of this treatment technology. A potential side benefit to this would be to aide in the understanding of the distribution of ZVI in the aquifer.
2. DoR notes that the EISR did not meet its goal of 90 percent reduction of TCE and PCA in Area 1. Further, aquifer conditions were only temporarily changed. It is primarily because these data/facts are critical to the success of the long-term remedial action, that DoR believes this data should be further evaluated in order to better design and implement the proposed remedial technologies. A further question remains whether ZVI is an appropriate technology for this site, given the

oxidizing condition of the aquifer. One would suspect that with the relatively high oxidation-reduction potential values found at Area 1 would significantly impact the longevity of zero-valent iron in PRB, and especially in the ZVI zones. The potential for significant reduction in expected lifetime efficacy of the ZVI and PRB should be addressed thoroughly in the Dunn Field Remedial Design.

Specific Comments:

1. Section 6 Observations: Bullet two; this statement should be changed to more accurately reflect the change in injection parameters as a possible solution to the low ZVI injection mass encountered at the beginning of the fieldwork.
2. Section 6 Observations: Bullet three; this statement should be revised to reflect that groundwater conditions were temporarily changed and have since returned to near baseline conditions.
3. Section 6 Observations: Bullet four; based on the geochemical observations and analytical results, primarily the short duration of reducing conditions (low ORP values) from Area 1, DoR suspects that the injected ZVI has either been completely consumed ahead of its expected lifetime or has had its effectiveness degraded by mineral and/or biological coatings on the ZVI. A review of literature indicates that some common competing reactions associated with ZVI are corrosion of the iron surfaces and accumulation of iron oxides on the reactive surfaces of the iron.
4. Section 6 Observations: Bullet nine; DoR is not convinced that a decrease in the spacing between ZVI injection points alone will increase the effectiveness of this treatment. Based on the baseline aerobic conditions of the aquifer, DoR suggests that a pre-treatment of the aquifer be considered with sodium lactate to create more reducing conditions in order increase the longevity and effectiveness of the planned permeable reactive barrier. Further, this augmentation of the aquifer condition may need to be maintained during the expected lifetime of the PRB.

Please do not hesitate to call me at (901) 368-7916 if you have any questions.

Sincerely,

Evan W. Spann
Project Manager
Division of Remediation

cc: Turpin Ballard
United States Environmental Protection Agency
61 Forsyth Street SW
Atlanta, GA 30303

DoR/MEFO - file
DoR/NCO – file

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