

8/20/03-3385

North Carolina  
Department of Environment and Natural Resources

Division of Waste Management

Michael F. Easley, Governor  
William G. Ross Jr., Secretary  
Dexter R. Matthews, Director



August 20, 2003

Commander, Atlantic Division  
Naval Facilities Engineering Command  
1510 Gilbert Street (Building N-26)  
Norfolk, Virginia 23511-2699

Attention: Mr. Kirk Stevens, PE  
Navy Technical Representative  
Code EV23KS

RE: Comments on Operable Unit 10, Site 35 Draft Technical Evaluation  
Soil and Groundwater  
Camp Lejeune, NC6170022580  
Jacksonville, Onslow County, North Carolina

Dear Mr. Stevens:

The NC Superfund Section has received and reviewed the Draft Technology Evaluation for Operable Unit (OU) #10 Site 35 for the Camp Lejeune, MCB Superfund Site. The following comments are provided for your consideration.

#### General Comments

1. The Draft Technology Evaluation is sufficient for the purpose of a pilot study but is not as exhaustive as a Feasibility Study would be to evaluate potential technologies for use at the site. One obvious technology that could be very effective at site 35, alone or as a follow-up to chemical oxidation, is enhanced bioremediation using various reagents or substrates (oils, lactate, etc).
2. The recommendation in Section 7.2 to use a zero valent iron (ZVI) Permeable Reactive Barrier (PRB) down gradient of the TCE plume at the highway is not, in the States opinion, a good decision. ZVI would not fulfill the objectives outlined in this Technical Evaluation (TE) and could cause the naturally occurring carbon source to breakdown resulting in future contamination in Brinson Creek. The naturally occurring peat layer is located above the transport layer of the TCE contaminant plume in this area. In order to install the ZVI PRB we would need to excavate through this layer of peat which could cause a short circuit of the naturally occurring treatment process that is presently working very well at the site.

1646 Mail Service Center, Raleigh, North Carolina 27699-1646  
Phone: 919-733-4996 \ FAX: 919-715-3605 \ Internet: [www.enr.state.nc.us](http://www.enr.state.nc.us)

TCE and its degradation products are generally not detected in the surface waters of Brinson Creek which indicates that the naturally occurring carbon system, from the peat and organic content of the soil, is working very effectively. The State recommends that we complete central plume treatment with the chemical oxidation technologies and continue monitoring the plume and Brinson Creek. If it is determined that the natural attenuation process is failing and concentrations of COCs begin to show up in the creek then we could re-evaluate whether we need to construct a ZVI PRB in this area. The ChemOx treatment process should actually decrease the concentrations discharging to Brinson Creek and improve the situation considerably.

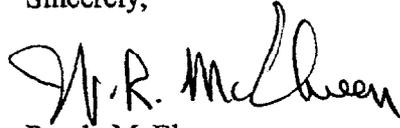
### Specific Comments

3. Gauging of monitoring wells in October 2003 as referenced in the last part of Section 2.2.3.1 is obviously not possible. Please make appropriate changes.
4. Figure 2-6 and 2-8 and Figures 3-1 and 3-2 as referenced in the last paragraph of Section 3.2 are obviously incorrect. They should probably be Figures 2-8 and 2-10 and 2-9, 2-11a, 2-11b, and 2-11c respectively. Please make appropriate corrections.
5. Section 5.2 discusses the use of the ZVI PRB downgradient of the TCE plume. As discussed above it is highly recommended that the naturally occurring carbon system located in and around the wetlands area not be disturb unless it becomes absolutely necessary.
6. Section 5.3 discusses Air Sparging and Biosparging. If Airsparging is used in this for treatment of the BTEX plume it is recommended that pulsed Air Sparging be used rather than standard Air Sparging. Pulsing the air into the aquifer minimizes short circuiting and causes less break-through and creates a hymispherical distribution of the air bubbles rather than a conical distribution within the treatment zone. Overall this creates a much better distrubution of air within the plume as I understand it. This more effectively treats the deeper desolved phase of the plume as well as the LNAPL. This can be confirmed by a quick search of the internet for "Pulsed Air Sparging." With this small plume it may also eliminate the need for a soil vapor extraction (SVE) system since less breakthrough and channeling of air will occur.
7. The second paragraph of Section 7.1 references Figure 7-1 that shows 2 lines of **proposed injection wells** along the median of the new route 17 highway. It is recommended that the delivery of the ChemOx reagent be thoroughly evaluated to determine the best locations both vertically and horizontally for the injection wells. I know that we would all agree that getting the reagent where it needs to be is by far the most important part of this type treatment process. Perhaps CH2MHILL could further evaluate our options for delivery of the reagent and give there recommendation for the most effective injection scenario considering our limitation with the roadway.

Mr. Kirk Stevens  
8-20-2003  
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If you have any questions or comments, please contact me, at (919) 733-2801, extension 341  
or email [randy.mcelveen@ncmail.net](mailto:randy.mcelveen@ncmail.net)

Sincerely,

A handwritten signature in black ink, appearing to read "Randy McElveen". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Randy McElveen  
Environmental Engineer  
NC Superfund Section

Cc: Dave Lown, NC Superfund Section  
Rick Raines, EMD/IR  
Gena Townsend, USEPA

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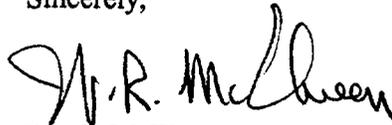
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Sincerely,

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Randy McElveen  
Environmental Engineer  
NC Superfund Section

Cc: Dave Lown, NC Superfund Section  
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