



10/28/03-03562
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, S.W.
ATLANTA, GEORGIA 30303

October 28, 2003

4WD-FFB

Mr. Kirk Stevens
Department of the Navy - Atlantic Division
Naval Facilities Engineering Command
Code 1823
Norfolk, Virginia 23511-6287

SUBJ: MCB Camp Lejeune
Draft Pilot Study Work Plan
Operable Unit No. 10, Site 35

Dear Mr. Stevens:

The Environmental Protection Agency (EPA) has completed its review of the above subject document. As discussed in our meeting on October 23, enclosed are EPA's comments.

If there are any questions, I can be reached at (404) 562-8538.

Sincerely,

A handwritten signature in black ink, appearing to read "Gena D. Townsend".

Gena D. Townsend
Senior Project Manager

Enclosure

cc: Randy McElveen, NCDEHNR
Rick Raines, MCB Camp Lejeune

**Environmental Protection Agency Comments on the
Draft Pilot Study Work Plan
Operable Unit No. 10, Site 35
Marine Corps Base, Camp Lejeune, North Carolina
Draft, September 2003**

GENERAL COMMENTS

Some of the comments are related to whether this pilot test is intended or hoped to be the final remedy at the site. Others address the lack of detail in this document and the necessity of this document in addition to a "Final" Pilot Study Work Plan.

- It was unclear whether other technologies would be pilot tested at this site. Please clarify this in the introduction.
- Please clarify if this pilot test is intended to be the final remedy prior to long term natural attenuation monitoring. The goals of the pilot test depend on whether the pilot is just a pilot or if it is a final remedy.
- It is unclear why this report was separated out from the Final Pilot Study Work Plan. As a conceptual design, it does not appear to serve any purpose, since the Technology Evaluation (TE) should or could have included all of this conceptual design information. In addition, it would have been a simple matter to delay this draft document until the vendor supplied the requisite design details for the technology implementation. The use of this Draft process seems to only delay implementation of the remedy selected in the TE. If this draft document serves some other purpose, that purpose should be described in the introduction section of the report.
- Section 3 of the report should include a discussion of natural oxidant demand, including why it can be important, and how it will be assessed. If one is not necessary then, that should be explained as well.

SPECIFIC COMMENTS

1. Page 2-1, Section 2.1, first paragraph. Please add a Figure showing the streets discussed in this report, or add them to an existing Figure. All streets should be labeled since other references are made to them.
2. Page 2-1, Section 2.1, second paragraph, next to last sentence. Please add "NCDOT" to the List of Acronyms.
3. Page 2-1, Section 2.1, fourth paragraph, third sentence. Please add "MSL" to the List of Acronyms.
4. Page 2-2, Section 2.2.1, first paragraph. Please add "USCS", "SM", "SP", "ML", and "MH" to the List of Acronyms.
5. Page 2-2, Section 2.2.2, first paragraph. The reference to Figure 2-7 should be moved to the next paragraph, since it depicts the Castle Hayne aquifer, not the surficial aquifer.

6. Page 2-2, Section 2.2.2, first paragraph, last sentence. Please add "LTM" to the List of Acronyms.
7. Page 2-3, Section 2.3.1. Please add "ESE", "DCE", "FFS", "CSA", "TPH", "MTBE", and "BTEX", "ROD", and "LNAPL" to the List of Acronyms.
8. Page 2-4, Section 2.3.1, sixth paragraph. If it is important enough to include a discussion of other plumes in the vicinity of the site, then Figures should be included to support the text description. If the discussion is not important, then it should be deleted.
9. Page 2-4, Section 2.3.1, eighth paragraph, last sentence before the bullets should read "...it was concluded that natural attenuation processes are degrading and retarding the chlorinated...". Only the first bullet documents degradation processes.
10. Page 2-4, Section 2.3.1, eighth paragraph, last sentence (following bullets). Please explain what is slowing and reducing the efficiency of natural attenuation.
11. Page 2-5, Section 2.3.2, second paragraph, first sentence. Please indicate what the 2L Standards are for TCE.
12. Page 2-5, Section 2.3.2, second paragraph, last sentence. Please add "DNAPL" to the List of Acronyms.
13. Page 2-5, Section 2.4.1, second sentence. Please add "ft" to the List of Acronyms.
14. Page 2-5, Section 2.4.3, first sentence. Please add "lbs." to the List of Acronyms.
15. Page 2-5, Section 2.4.3, third sentence. Please explain how the sorbed mass of 83 lbs. of TCE was determined, including any assumptions that were made.
16. Page 3-1, Section 3.1.1. Please summarize the rationale for selection of this technology from the TE. A summary of the conceptual design for this technology is presented, but no summary of the rationale for it's selection was included. It would also be helpful if a list of alternatives that were reviewed in the TE was included as well.
17. Page 3-1, Section 3.1.2, first sentence. What are low levels? What is a reasonable time frame? What is the point of compliance where these concentrations must be met? Also, pilot tests are typically performed to gather sufficient information to design a full scale system. If the effectiveness of the technology at the site is such that the full scale design is more costly than originally projected, then other alternatives may need to be re-evaluated. If the pilot is intended to be the final remedy, then that should be clarified in the objective statement, and contingencies identified (such as additional injections or other viable technologies) in the event the pilot does not achieve the remedial goals.
18. Page 3-1, Section 3.1.2, second paragraph. Please renumber the bullets 1. and 2.

19. Page 3-1, Section 3.1.2, second paragraph, bullet 3. Please state how much reduction in concentration is needed to meet the goal. If this can not be quantified, then there is no objective way to evaluate the success of the pilot test.
20. Page 3-1, Section 3.1.2, bullet 4. Please state a numerical value(s) that are to be used as a goal for determining success (i.e., how will the upgradient background level be determined? Some type of average?).
21. Page 3-2, Section 3.1.2, third paragraph. The goal of a pilot test is to determine the effectiveness of a design so that a full scale system can be installed. The “goals” bulleted here are appropriate for a full scale system, not a pilot test (unless this pilot is intended as the final remedy).
22. Page 3-2, Section 3.1.2, third paragraph, first bullet. It appears that this bullet should read “Reducing the mass and migration potential of the plume”, since the pilot is only targeting the hot spot and is not designed to reduce the size of the plume in the near term.
23. Page 3-2, Section 3.1.2, second bullet. This is not a goal for the pilot, but a design parameter and a prerequisite for conducting the pilot test.
24. Page 3-2, Section 3.1.2, third bullet. The pilot is not designed to directly protect the migration pathway to surface water. Again, if the pilot is going to be the final remedy, this might be an appropriate goal, even though the pilot is not designed to reach this goal (MNA will be used to reach this goal).
25. Page 3-2, Section 3.2.1, first paragraph. Please add “ISOTEC”, “Fe(II)”, and “Fe(III)” to the List of Acronyms.
26. Page 3-2, Section 3.2.1, first paragraph, last sentence. It appears this sentence should read “This ISOTEC reagent is specially formulated to achieve a larger radius of influence from each injection well by slowing down the reaction of injected reagents.” If this is incorrect, then please discuss how ISOTEC increases the mobility of the reagents in the aquifer.
27. Page 3-2, Section 3.2.1, second paragraph, second sentence should read “...is effective at treating adsorbed contaminants...”.
28. Page 3-2, Section 3.2.1, second paragraph, third sentence should read “...is less sensitive than standard Fenton’s reagent...”.
29. Page 3-2, Section 3.2.1, third paragraph. Please add “COC” to the List of Acronyms.
30. Page 3-2, Section 3.2.1, third paragraph, second sentence. Please elaborate on what is meant by “effectiveness of the injection” and how will it be measured.

demand is present, the rate of reaction seems irrelevant. In addition, since the pilot will include the injection of Fenton's reagent prior to injection of the permanganate, it is not clear what useful information is going to be gained by doing a permanganate only demand test. Also, since no demand test is planned for the Fenton's reagent, how will the vendor determine how much reagent to inject and how will it be determined? If the vendor is going to base the injection volume on "experience", then no demand test seems necessary. However, contingencies should be discussed here if the goal is not met by the pilot test.

47. Page 4-4, Section 4.3, second paragraph, third sentence. Please explain how VOCs are going to be purged.
48. Page 4-4, Section 4.3, second paragraph, fifth sentence. Please add "DI" to the List of Acronyms.
49. Page 4-5, Section 4.3.1, third bullet. Please add "USCG" to the List of Acronyms.
50. Page 4-7, Section 4.6, second paragraph, first sentence should read "...shall be responsible for having all equipment ..."
51. Page 4-8, Section 4.8, first paragraph. Please add "H₂O₂" to the List of Acronyms.
52. Page 4-8, Section 4.8, first paragraph, last sentence should read "...is repeated at each injection well throughout ...".
53. Page 4-8, Section 4.8, fourth paragraph, second sentence. What is the concentration of peroxide that will be used?
54. Page 4-8, Section 4.8, fourth paragraph. Please add "ROI" to the List of Acronyms.
55. Page 4-8, Section 4.8, fourth paragraph, last sentence. If the volume of reagents used will be determined by the injection flow rate and pressure, then what is the purpose of the demand test?
56. Page 5-1, Section 5.2 and 5.3. Please discuss the specific groundwater concentrations that are going to be used to determine success in terms of concentration reduction. Also, specific values with respect to allowable rebound concentrations should also be discussed.
57. Page 10-1. The report was missing Figures 10-1 and 10-2. Section 10 included a Figure 5-1 that appeared to be from another report.
58. Page 10-1, Section 10.2. Please add "P.E.", "NCDENR", and "P.G." to the List of Acronyms.