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LETTER OF TRANSMITTAL AND SOUTH CAROLINA DEPARTMENT OF HEALTH AND
ENVIRONMENTAL CONTROL COMMENTS ON TECHNOLOGY DEMONSTRATION PLAN
FOR EMULSIFIED ZERO-VALENT IRON TREATMENT AT SITE 45 MCRD PARRIS ISLAND

SC

5/26/2006

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL



C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

May 26, 2006

Commanding Officer
Department of the Navy
SOUTHNAVFACENGCOM
ATTN: Mr. Art Sanford
2155 Eagle Drive
North Charleston, South Carolina 29406

RE: Technology Demonstration Plan for Emulsified Zero-Valent Iron Treatment of Chlorinated Solvent DNAPL Source Areas at Site 45
Marine Corp Recruit Depot
Parris Island
SC6 170 022 762

Dear Mr. Sanford:

The Corrective Action Engineering and the Hydrogeology Sections of the South Carolina Department of Health and Environmental Control (Department) have completed the review of the above referenced document, which was received on May 8, 2006. Based on this review, the Department has determined that the attached comments must be adequately addressed prior to receiving a final determination.

If you have any questions or concerns, please feel free to contact me at (803) 896-4285.

Sincerely,

Jerry Stamps, Engineer Associate
Corrective Action Engineering Section
Division of Waste Management

cc:

Tim Harrington, MCRD Parris Island
Don Hargrove, Hydrogeology
Priscilla Wendt, SCDNR
Amanda Flake, EQC Region 8, Beaufort

Lila Koroma-Llamas, EPA Region 4
Tom Dillon, NOAA
Mark Sladic, TtNUS

ENGINEERING COMMENTS
Prepared by Jerry Stamps
Marine Corps Recruit Depot (MCRD)
May 25, 2006

1. **General**

The Department has no objection to designating SWMU 45 as a demonstration site for the viability of the EZVI technology. However, all data collected during this demonstration must be compiled and summarized in a subsequent report to be submitted to the Department and the EPA.

2. **Section 2.4, Page 6, 6th bullet**

It is stated that the one of the main limitations of the EZVI technology is the potential for the mobilization of metals; however, metals analysis is not included in the performance monitoring. The Department recommends periodic metals analysis to evaluate the effect of the EZVI on the mobility of the metals.

3. **Section 3.5.6**

A permit must be obtained from the Department prior to the injection of the EZVI. Please contact Mr. Norm Dodson (803-898-3531) of the Bureau of Water to obtain the permit.

4. **Section 6.0, 3rd bullet and Section 6.1**

It is stated that groundwater contaminated with chlorinated solvents may be re-injected into the aquifer. The Department has concerns regarding this approach and prefers the disposal of contaminated groundwater via other means as appropriate. Additional discussion regarding this issue is warranted.

5. **Section 6.0**

Please clarify that the activities associated with this demonstration are subject to RCRA requirements, as appropriate.

6. **Table 8-1, List of Contacts**

Please replace Leon Fulmer as the SCDHEC representative with the following:

Jerry Stamps
(803) 896-4285
Fax: (803) 896-4002
stampsjm@dhec.sc.gov



2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

TO: Jerry Stamps, Engineering Associate
Corrective Action Section
Division of Waste Management
Bureau of Land and Waste Management

FROM: Donald C. Hargrove, Hydrogeologist *Donald C. Hargrove*
RCRA-Hazardous Waste Section I
Division of Hydrogeology
Bureau of Land and Waste Management

DATE: 18 May 2006

RE: Parris Island Marine Corps Recruit Depot (MCRD)
Parris Island, South Carolina
Beaufort County
SC6 170 022 767

DRAFT Technology Demonstration Plan For Emulsified Zero-Valent Nano-Scale Iron Treatment of Chlorinated Solvent DNAPL Source Areas
(March 2006)

The Division of Hydrogeology has reviewed the above referenced document. This work plan (dated 28 March 2006) was received by the Department on 8 May 2006, and by the Division of Hydrogeology on 11 May 2006. This work plan describes the history of SWMU-45; it discusses the results of previous environmental investigations/remedial actions, and the status of the groundwater treatment system that is currently installed but not operational at SWMU-45. This document presents the scope of work proposed, to demonstrate the effectiveness and applicability of injection of Emulsified Zero-Valent Nano-Scale Iron (EZVI) aimed at remediation of groundwater contaminated with chlorinated solvents at SWMU-45.

This document was reviewed with respect to R.61-71 of the South Carolina Well Standards, R.61-79 of the South Carolina Hazardous Waste Management Regulations (SCHWMR), and appropriate guidance documents.

Based on this review, the Division of Hydrogeology has the following comments:

1) Section 3.5.3, Installation of Monitoring Network,

A) 1st and 2nd Paragraphs: The text specifies, "The remainder of the annulus will be backfilled by tremie method to the ground surface with bentonite." This is not an acceptable method of well abandonment. The South Carolina Well Standards, R.61-71.H. 2.e, states, "...Abandonment shall be by forced injection of grout or pouring through a tremie pipe starting at the bottom of the well and proceeding to the surface in one continuous operation. The well shall be filled with either with neat cement, bentonite-cement, or 20% high solids sodium bentonite grout, from the bottom of the well to the land surface." The text should be revised to explicitly describe an acceptable method of well abandonment. This description should also include the composition of the grout.

B) 3rd Paragraph: The description of the flush-mount completion does not include the specifications for the concrete pad. The text should be revised to include this information.

2) Section 3.5.4, Baseline Sampling: In the description of the field parameters to be measured, turbidity has been omitted. The possible mobilization of metals has been discussed in the text, and analyses of metals have already been proposed. Measurement of the field parameters are normally necessary to show that the well is capable of yielding water samples that are representative of the aquifer. However, turbidity is of particular concern when metals analyses are to be performed. The text should be revised to state that turbidity will be measured, recorded, and reported, for well development and pre-sampling purging. This comment also applies to Table 3.2, Appendix B: Sections 2.3, 3.3, and 3.4, and Appendix B Table B-1.

3) Attachment 1, Sample Field Forms, Well Construction: The figure depicting typical monitoring well construction does not show the details concerning the concrete pad. R.61-71.H.3.b(5) of the South Carolina Well Standards states, "...A cement or aggregate reinforced concrete pad at the ground surface of appropriate durability and strength, considering the setting and location of each well, that extends six inches beyond the borehole diameter and six inches below ground surface is required. The pad shall be capable of preventing infiltration between the surface casing and the borehole to the subsurface." Please revise the field form to include the construction details of the concrete pad.

If you have any questions concerning these comments, please contact me at (803) 896-4033.