

M00263.AR.000077  
MCRD PARRIS ISLAND  
5090.3a

NOTICE OF INADEQUACY AND SOUTH CAROLINA DEPARTMENT OF HEALTH AND  
ENVIRONMENTAL CONTROL COMMENTS ON DRAFT ENGINEERING EVALUATION AND  
REMEDIAL WORK PLAN FOR INTERIM REMOVAL ACTION AT SITE 45 DRY CLEANERS  
FACILITY BUILDING 193 MCRD PARRIS ISLAND SC

7/25/1997

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

03.01.00.0029



2600 Bull Street  
Columbia, SC 29201-1708

**CERTIFIED**

July 25, 1997

Commanding General, MCRD  
ATTN.: I&L ERR (NREAO)  
P.O. Box 19001  
Parris Island, SC 29905-9001

*Comments and  
Response to  
SCDHEC comments  
Site 45 work  
plan*

RE: Notice of Technical Inadequacy  
Review of document titled:  
**Draft Engineering Evaluation and Remedial Workplan, Interim Removal Action,  
Site 45, Dry Cleaners Facility, Building 193, dated June, 1997**  
Marine Corps Recruit Depot (MCRD)  
Parris Island, South Carolina  
SC6 170 022 767

Dear Commanding General:

The Hazardous Waste Permitting Section and the Hydrogeology Section of the South Carolina Department of Health and Environmental Control (Department) have reviewed the above referenced document. The document has been reviewed with respect to the requirements of the South Carolina Hazardous Waste Management Regulations (SCHWMR), R.61-79, and appropriate guidance documents.

The Department has determined that the above referenced Work Plan is technically inadequate. This work plan should be revised to address comments from Susan Peterson and Don Hargrove (memo Hargrove to Peterson). The response to comments may be in the form of a totally revised Interim Removal Remedial Work Plan/Interim Measure Work Plan or revised pages to be inserted into your original submittal. If you choose to submit revised pages, please provide the following information:

Page number, and  
Date of revision on each page.  
(For example, 32 (R-8/25/97) would be page 32, revised 8/25/97).

The revised plan should be submitted to the Department within 30 days of receipt of this letter. Please submit three (3) copies of the revisions to the following:

South Carolina Department of Health and Environmental Control  
Bureau of Land and Waste Management  
Attention: Susan Peterson  
2600 Bull Street  
Columbia, South Carolina 29201

Please contact me at (803) 896-4182 or Don Hargrove at (803) 896-4033 if you have any questions.

Sincerely,



Susan C. Peterson, Environmental Engineer Associate  
Corrective Action Engineering Section  
Bureau of Land & Waste Management

Attachment: Comments from Susan Peterson

Attachment: Memo: Hargrove to Peterson, 7/22/97 (contains Memo: Devlin to Hargrove, 7/1/97)

cc: Don Hargrove, Hydrogeology  
Russell Berry, SCDHEC-Low Country EQC  
Allison Humphris, USEPA Region IV  
Art Sanford, Southern Division  
Karen Atchley, Bechtel Environmental Inc.  
Mark Speranza, Brown & Root Environmental  
Glenn Wagner, Brown & Root Environmental  
Jody Laprade, Galileo Quality Institute (via e-mail)



2600 Bull Street  
Columbia, SC 29201-1708

**Susan Peterson, Environmental Engineer Associate**  
**Corrective Action Engineering Section**  
Comments on document titled:

Draft Engineering Evaluation  
and  
Remedial Workplan  
Interim Removal Action  
Site 45  
Dry Cleaners Facility  
Building 193

Marine Corps Recruiting Depot  
SC6 170 022 767

1. Please modify the title of this work plan to include RCRA terminology. As accepted by the MCRD Tier I technical and Tier II teams, the State of South Carolina has authorization under the Hazardous & Solid Waste Amendment to implement correction action activities.

The Department is willing to recognize the following dually-titled document:

Engineering Evaluation  
and  
Interim Removal Remedial Work Plan/Interim Measure Work Plan

Site 45/SWMU 45  
Dry Cleaners Facility  
Building 193

Marine Corps Recruiting Depot  
Parris Island, South Carolina  
SC6 170 022 762

etc.

2. Please include the EPA I.D. No. on the title of the document.  
That number is SC6 170 022 762.

3. Section 1.0, INTRODUCTION, Page 1

2nd paragraph:

Issues: Suggested rewording and rearrangement of text.

The current wording raises doubt that a spill occurred. "It was reported that a spill occurred." The spill occurred, it was reported.

Reword the text to clarify events.

Suggested rewording:

A spill of tetrachloroethene (PCE) occurred on March 11, 1994 due to inadvertent overfilling the above ground storage tanks (ASTs) located adjacent to the north side of the dry cleaners facility.

4. Section 1.0, INTRODUCTION, Page 1

2nd paragraph:

Issue: Consistency of Site reference

It seems that you have chosen to use the term "dry cleaners facility" throughout the document. Please reread the document and correct the pages where you refer to it as "Parris Island Site" (p. 11, 15, etc). Much better since last time, though.

5. Section 1.2 SITE HISTORY, Page 4

2nd Paragraph

Issue: disposal

State whether PCE-contaminated soil was disposed of offsite at a South Carolina approved landfill. A paragraph you had in the previous version gave some of this information, however did not mention whether it was disposed of at an SC approved landfill.

These are my former comments (to the other version):

Explain what you mean by 'appropriately disposed of.'

Were the drums taken off base by an licensed contractor?

Were the drums taken to a landfill that accepts hazardous wastes, incinerated?

Are the drums still on site?

Please make this information clear in the text of this document.

6. Section 1.2 SITE HISTORY, Page 4

4th Paragraph

Issue: time frame of assessment

State when S&ME conducted a PCE-contamination assessment (June, 1994).

Suggested rewording: S&ME conducted a PCE-contamination assessment in June, 1994 to develop a conceptual remediation plan.

7. **FIGURES**

Titles of all Figures should include a reference to MCRD

Titles of all Figures should include CERCLA/RCRA terminology

Modifications to the Table of Contents is not necessary

Suggested title modifications:

**Figure 1.2, page 5**

Geological Section Transect Map

Site 45/SWMU 45

MCRD Dry Cleaners Facility

**Figure 1.3, page 6**

Generalized Geological Section of Site 45/SWMU 45 "MCRD Dry Cleaners Facility", A-A'

or

Generalized Geological Section

Site 45/SWMU 45

"MCRD Dry Cleaners Facility", A-A'

**Figure 1.4, page 7**

Generalized Geological Section of Site 45/SWMU 45 "Dry Cleaners", B-B'

**Figure 1.5, page 9**

Groundwater Analytical Results (ppb)

Site 45/SWMU 45

MCRD Dry Cleaners Facility

**Figure 1.6, page 10**

Groundwater VOC Isopleths (ppb)

Site 45/SWMU 45

MCRD Dry Cleaners Facility

**Attachment 3**

Issue: Title of drawing

Modify as per above suggestions

8. **Section 1.3.2 Groundwater Sample Results, Page 8**

3rd Paragraph

Issue: laboratory analysis

State whether the laboratory is a South Carolina Certified laboratory.

9. Section 3.2 HAZARDOUS WASTE, Page 22  
2nd Paragraph  
Issue: state regulations  
Specify that the wastes will be managed in accordance with South Carolina state regulations...
10. Section 1.4.1, Determination of Scope, page 11  
Paragraph 1  
You do not mention ecological risk as a possibility. Either way, state that in the text.
11. Section 1.6, Evaluation of Selected Remedial Alternatives, page 15  
Bullet 2  
The technology you describe in Section 1.6.2 is Air Sparging and Soil Vapor Extraction, not just Air Sparging, as is listed in the bullet. Please amend.
- Section 1.7.1 In-Well Vapor Stripping System, page 17, paragraph 2  
You may want to make a reference to Attachment 3.
- Section 3.2 Hazardous Waste, page 21, paragraph 1  
Delete the word "reportable" from the first sentence.
1. Section 3.3.1, Construction Debris, page 22  
Note whether the material will be disposed of at a South Carolina licensed landfill.
1. Section 3.3.2, Soils, page 22, paragraph 1  
Note the material of the liners, plastic etc.
10. Section 3.3.4, Personal Protective Equipment  
Explain what type of personal protective equipment (PPE) you are talking about.  
At what frequency/interval will the PPE be double bagged and disposed? At the end of the day/week/project?



2600 Bull Street  
Columbia, SC 29201-1708

**MEMORANDUM**

**TO:** Susan Peterson, Engineering Associate  
Hazardous Waste Permitting Section  
Division of Hazardous and Infectious Waste Management  
Bureau of Land and Waste Management

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

**DATE:** 22 July 1997

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

DRAFT Engineering Evaluation and Remedial Work Plan  
Interim Removal Action, Site 45, Dry cleaners Facility, Building 193  
(June 1997)

The Division of Hydrogeology has reviewed the DRAFT Engineering Evaluation and Remedial Work Plan Interim Removal Action, Site 45, Dry cleaners Facility, Building 193, dated 19 June 1997. This document was received on 25 June 1997. This work plan describes the history behind the chlorinated solvent spill at the Dry Cleaner's Facility (Site 45) at the MCRD, along with a summary of previous work performed to delineate contamination at the site. This work plan presents different technologies available for possible use as an Interim Corrective Measure to minimize further migration of contamination in the groundwater at the site, discusses the positive and negative attributes associated with each alternative, and proposes In-Well stripping as an interim measure.

This document was reviewed with respect to R.61-71 of the South Carolina Well Standards and Regulations (SCWSR), R.61-79 of the South Carolina Hazardous Waste Management Regulations (SCHWMR), and appropriate guidance documents. The following comments need to be addressed before this document can be approved:

- 1) Figure 1.2, Geological Section Transect Map: Line A-A' should be rerouted to form a straighter line that passes through the contaminated area and new cross-sections drafted. Suggested well clusters are: 193-1, 193-8, 193-7, 193-6, and 193-4. Please revise.

DD970729.DCH

- 2) **Figure 1.3, Generalized Geological Section of Site 193 "Dry Cleaners", A-A':**
  - a) This cross-section should be redrafted to represent the revised line (A-A') as it is revised according to comment 1 (above).
  - b) This figure should graphically show each well utilized in the completion of this cross-section. The screened interval for each well should also be shown. Please revise.
- 3) **Figure 1.4, Generalized Geological Section of Site 193 "Dry Cleaners", B-B':** This figure should be revised to respond to comment 2 (above), as it pertains to Line B-B'.
- 4) **Section 1.3.1, Soil Sampling Results:** This section states that Tetrachloroethylene (PCE) was found in the soils from 5-7 feet at a level of 1,100 ppb (in monitoring well 193-8MW-D). This work plan does not address this soil as a source. The text should be revised to include source removal as a goal along with the goal of cessation of migration.
- 5) **Section 1.4.3, Interim Removal Action Objectives:** This section states that the objectives are to :
  - a) "Minimize further migration of groundwater containing VOCs around the dry cleaning facility". Section 1.6 however, states that "The depth of a recovery well at the dry cleaner facility would be shallow. This could affect the system's radius of influence and the ability to remove the contaminants in one cycle through the circulation cell. More cycles of the groundwater may be necessary because of the limited depth of the wells." The proposed interim measure would not minimize the further migration of groundwater containing VOCs since the recovery wells are merely recirculating water within the surficial aquifer. It should not be assumed that water entering the recharge gallery will be immediately recirculated before the contamination migrates down gradient. The local hydrologic conditions indicate groundwater flow to the southeast. Three wells recirculating a total of six gpm will not alter this flow pattern (no water is being removed from the area).
  - b) "Reduce concentrations of the contaminants in groundwater in the area of concern". The level of reduction (target concentration) should be specified.
  - c) "Operate the remedial system until the equilibrium is reached". There is no description of this equilibrium any further than this statement. The equilibrium mentioned should be clearly defined in the text and the method of proving equilibria described.

The data necessary to effectively demonstrate when these three objectives have been met should be thoroughly discussed in the work plan. Please revise the text to prove the proposed system's effectiveness stoichiometrically. There should also be calculations for measuring the radius of influence. The radius of influence will no doubt be affected by the silty-clay layer

radius of influence. The radius of influence will no doubt be affected by the silty-clay layer that is present at Mean Sea Level (msl) in the area of Site 45 ["Technical Memorandum For Groundwater Evaluation and Air Sparging Pilot Study, Building 193, Parris Island, SC" Bechtel, 13 February 1997 (CCN000076)]. This silty-clay layer was not described in this work plan so it probably was not used in the groundwater modeling included therein.

- 6) Section 1.6.1, Pump and Treat: This section states that there is limited space for a recharge gallery. However, the proposed interim measure shows a recharge gallery associated with each recovery well to be used. If the low pumping rates (6 gpm total) proposed in this work plan are sufficient to minimize further contaminant migration, it could be feasible to design a pump and treat system that utilizes similar pumping rates that might be acceptable for a recharge gallery located nearby (to the southeast) or can be sent to the sewer treatment plant without undue burden on that system. The Tier I team should discuss this alternative further.
- 7) Section 1.6.3, In-Well Vapor Stripping: The fourth bullet in this text is vague. This bullet states that "The capture of emissions is from the well and a separate vapor extraction system is not required. This technology has a higher likelihood that the vapors are captured and discharge is controlled." Please revise the text to specify how The vapors are captured and discharge is controlled.
- 8) Section 1.7.2, Off-Gas Discharge: If the operating schedule of the system is altered to ensure compliance with respect to air emissions (and the existing air emissions permit), the effectiveness of the system on the groundwater and the ability to minimize further contaminant migration will be jeopardized. Please revise the text to show how the estimated emissions of 150 pounds per month were calculated and the protocol for assessing the ability of the system to maintain effectiveness as an interim measure should the operating schedule need alteration.
- 9) This work plan was forwarded to Rob Devlin with the Underground Injection Control Program for technical review. His comments are attached.

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

Attachment: Memo: Devlin to Hargrove, 7/1/97



## MEMORANDUM

JUL 1 1997

HYDROGEOLOGY

**TO:** Don Hargrove  
Hydrogeology Section  
Bureau of Land & Waste Management

**FROM:** Robert Devlin   
Underground Injection Control Program  
Bureau of Water

**RE:** Remedial Work Plan for Site 45 at the MCRD

**DATE:** July 1, 1997

The South Carolina Underground Injection Control Program (UICP) has reviewed the referenced submittal for technical content as it related to the UICP. It is the interpretation of the UICP that the infiltration gallery is an injection well. The UICP considers the protective well casing that extends above the ground surface to be the top of the well. The below ground infiltration gallery is also considered to be a part of the injection well. The sole purpose of the infiltration gallery is to recharge waste water from the extraction well.

- The South Carolina UIC Program requires that reinjected waste water should be treated to meet drinking water standards. The proposal does not contain any calculations to support that the system can meet drinking water standards.
- The South Carolina UIC Program requires 100% of the reinjected waste water be captured by the system. The proposal does not contain any calculations of computer models to support that the proposed system can meet the 100% capture of the waste water injection.