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MCRD PARRIS ISLAND
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LETTER OF TRANSMITTAL AND U S NAVY RESPONSES TO REGULATOR COMMENTS ON
MASTER WORK PLANS VOLUMES 1, 2 AND 3 AND DRAFT FINAL SITE SPECIFIC WORK
PLANS FOR SITE 1, SITE 2, SITE 3, SITE 15 AND SITE 41 MCRD PARRIS ISLAND SC

10/13/1997

BROWN AND ROOT ENVIRONMENTAL

03.01.00.0032



Brown & Root Environmental

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C-49-10-7-084
October 13, 1997
Project Number 7394

Commanding Officer
Department of the Navy
SOUTHNAVFACENGCOM
ATTN: Art Sanford (Code 1862)
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: Clean III Contract No. N62467-94-D-0888
Contract Task Order No. 020

Subject: Parris Island, Marine Corps Recruit Depot; South Carolina
Submittal of Response to Comments on the Master Work Plans and
the Site Specific Sampling Plans

Dear Mr. Sanford:

Brown and Root Environmental has provided response to comments for Volumes I, II and III of the Master Work Plans. Also enclosed are response to comments on the Draft Final Site Specific Work Plans for SWMUs 1/41, 2/15 and 3. Please review responses to determine if they are acceptable. Revisions to the responses can be discussed at the November Partnering Meeting.

If you have any questions or require additional information of the comments provided, please call me at 412-921-8916 or Jason Brown at 412-921-8401.

Very truly yours,

A handwritten signature in black ink that reads "Mark P. Speranza".

Mark P. Speranza, P.E.
Task Order Manager

MPS/dt

c: D. Evans-Ripley, SOUTHDIV
T. Harrington, MCRD Parris Island
A. Humphris, U.S. EPA
D. Hargrove, SCDHEC
S. Peterson, SCDHEC
K. Atchley, Bechtel Environmental, Inc.
D. Wroblewski, B&R Environmental
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File 7394

STATE OF SOUTH CAROLINA, HAZARDOUS WASTE SECTION
DIVISION OF HYDROGEOLOGY, BUREAU OF SOLID AND HAZARDOUS WASTE MANAGEMENT
RESPONSE TO U.S. EPA REGION 4 AND SCDHEC COMMENTS TO
DRAFT MASTER WORK PLAN, VOLUME I (MASTER PROJECT PLAN)
MCRD, PARRIS ISLAND, SOUTH CAROLINA

COMMENTS - Johnny Tapia, Environmental Engineering Associate

1. **Comment:** Section 1.2

Cost-efficient should be replaced by cost-effective. This whole section should be revised and reworded. As written, it is confusing and makes little sense.

Response: Cost-efficient will be changed to cost-effective. Text will be reviewed and revised to clarify meaning.

2. **Comment:** Section 1.2.1

“Overall Scope”, Section (3) should be taken out. The goal is not to deem a site or sites as No Further Action (NFA), it should be to characterize nature and extent of contamination and implement appropriate corrective measures.

Response: Agree in part. Although characterizing the site for nature and extent of contamination is the objective of the investigation, this is done to determine if there is an unacceptable risk to human health and the environment. Sufficient data collection is needed to support the conclusion of whether an unacceptable risk is present, thereby requiring or not requiring an action to address the unacceptable risk. The paragraph will be clarified so that it will not be misinterpreted that the goal is not to simply reach an NFA.

3. **Comment:** Section 1.3

The Navy's Installation Restoration (IR) Program history is not relevant for the preparation of a Work Plan to cleanup the Base. Consider removing this section.

Response: Agree in part. Although the Navy agrees that a description of the IR history does not directly support the execution of cleanup activities, the Navy feels that it is appropriate and useful to provide this information in the “generic” document to present the basis of the Navy cleanup program, therefore, the Navy proposes to keep this section in the Work Plan.

4. **Comment:** Page 1-9

Sites 6, 10, and 11 have not been described in the text. All sites should be described in the text no matter what program they are being investigated under or if some consensus was reached in previous years to stop or continue the investigation at those sites. A complete listing and description of the sites will help to have a full understanding of present and past conditions at the Base and possible relation among sites. In addition, there should be some order describing the sites.

Response: Agree. Section 1.5.2 and 1.5.3 will be combined and provide a description, problems identified, and actions taken to date for all sites identified.

5. **Comment:** Section 1.5.2

A figure with the location of all sites (SWMUs and AOCs) should be included in this section of the Work Plan.

Response: Agree. A figure showing site locations will be included.

6. **Comment:** Section 3.3

“Contingency Plan.” This paragraph should be reworded. As written, it is not understandable. It also should be added that all changes and deviations from the approved Work Plan, will be included in the Report of Field Activities.

Response: The paragraph will be reworded as follows: “Actual site conditions may necessitate minor deviations (i.e., slight adjustment of boring locations due to physical interferences) from approved work plans. Any problems encountered in the field will be brought to the immediate attention of the B&R Environmental TOM. The TOM, in consultation with the Navy, U.S. EPA and SCDHEC will determine an appropriate course of action so as to minimize impact to the schedule or budget. All deviations from approved work plans will be approved by the Navy, U.S. EPA and SCDHEC prior to enactment and will be recorded in the RI/RFI Report.”

COMMENTS - Donald Hargrove, Hydrogeologist

1. **Comment:** Section 1.1: Summary of Scoping Documents

This section needs to contain information concerning compliance with the Resource Conservation and Recovery Act (RCRA). Please revise this section to include RCRA along with CERCLA and NCP as a standard for compliance.

Response: The section will be revised to indicate that RCRA requirements will also be used as a standard for compliance.

2. **Comment:** Section 1.5.2: Site Descriptions

The appropriate Solid Waste Management Unit (SWMU) numbers must be included with all site specific descriptions and discussions. Please revise.

Response: Equivalent SWMU numbers will be added.

3. Section 1.5.3: Actions Taken

- a. **Comment:** The appropriate Solid Waste Management Unit (SWMU) numbers must be included with all site specific descriptions and discussions. Please revise.

Response: Equivalent SWMU numbers will be added.

- b. **Comment:** The IR Team made determinations separate from the RFA recommendations for each SWMU. Listed below are each of the SWMUs with the State's determinations. These determinations basically mirror the RFA recommendations, except where the IR team determined to perform confirmatory sampling on certain SWMUs.

SWMU 1 (Site 1) Incinerator Landfill. The State agrees with the IR Team recommendation for an RFI.

SWMU 2 (Site 2) Borrow Pit Landfill. The State agrees with the IR Team recommendation for an RFI.

SWMU 3 (Site 3) Causeway Landfill. The State agrees with the IR Team recommendation for an RFI.

SWMU 4 (Site 4) Dredge Spoils Area FTP. The State understands that this area is going to be evaluated under SWMU 13.

SWMU 5 (Site 5) Former Paint Shop Disposal Area. The State agrees with the IR Team recommendations for confirmation sampling.

SWMU 7 (Site 7) Page Field Fire Training Pit. The State agrees with the IR Team recommendation for confirmation sampling.

AOC A&B (Site 8) PCB Spill Areas. The State agrees with the IR Team recommendation for confirmation sampling.

SWMU 8 (Site 9) Paint Waste Storage Area. There is a typographical error in the second sentence "...soil were ed soil was removed and disposed." Please revise. The State agrees with the IR team determination to perform confirmatory sampling in conjunction with SWMU 16.

SWMU 10 (Site 12) Jericho Island Disposal Area. The State agrees with the IR Team recommendation for confirmation sampling.

SWMU 13 (Site 13) Inert Disposal, Dredge Spoils Area. The State agrees with the IR Team recommendation for confirmation sampling.

SWMU 14 (Site 14) Storm Sewer Outfalls. The State agrees with the IR Team recommendation for Phase II Sampling in conjunction with the SWMU 2 RFI due to the close proximity of these two SWMUs.

SWMU 15 (Site 15) Dirt Roads. The States agrees with the IR Team recommendation for Phase II Sampling.

SWMU 16 (Site 16) Pesticide Rinsate Disposal Area. The State agrees with the IR Team recommendation for an RFI.

SWMU 21 Weapons Power Plant Oil/Water Separator. The State agrees with the IR Team recommendation for confirmation sampling.

SWMU 27 Equipment Parade Deck SAA. The State agrees with the IR Team recommendation for Confirmation sampling.

SWMU 32 Laundry SAA. The State agrees with the IR team recommendation for confirmation sampling.

SWMU 35 DRMO Salvage Yard. The State agrees with the IR Team recommendation for confirmation sampling.

SWMU 39 Electrolyte Basin/Tank. The State agrees with the IR team recommendation for confirmation sampling.

SWMU 41 Former Incinerator. The State agrees with the IR Team recommendation for confirmation sampling in conjunction with the RFI at SWMU 1 due to the close proximity of these two SWMUs.

SWMU 45 This site needs to be assigned a SWMU number. The State agrees with the IR team recommendation for an RFI.

It is understood that the following SWMUs and sites fall under the authority of the State UST Program: AOC C (Site 10), SWMU 9, SWMU 17, SWMU 18, AOC D (Site 19), SWMU 28, SWMU 38, SWMU 43.

Response: No changes required except correcting the typo in the Site 9 description. Site 45 is not identified as a SWMU since it was not recorded as a SWMU in the RFA.

4. **Comment:** Section 2.1.1

The Beaufort Arch and the Ridgeland Trough (discussed in this section) should be shown in a figure with respect to Parris Island. Please revise.

Response: Agree. An appropriate figure will be included

5. **Comment:** Section 2.1.1

The type and order of the figures throughout the text need to be revised. The first figure should be a general map of South Carolina showing the location of Parris Island. The second figure should be a large scale map of the area. At that point the generalized lithological section, regional geological profile, and the groundwater data can be presented.

Response: Agree. Type and order of figures will be included/ordered as recommended.

6. **Comment:** Figure 2

Typographical error: "St. Helens Island" should be "St. Helena Island".

Response: Noted: Although this is a typo that is carried over from the reference the figure is extracted from, the figure will be revised.

7. **Comment:** Figure 2-3

Figure 2-3 needs to be revised to show the location of Paris Island and Doggie Island. Also, the location of line A-A' that is the reference line for the cross-section in figure 2-2 needs to be added.

Response: It is not the intent of Figure 2-2 to show a cross-section of Figure 2-3, therefore, the A-A' annotation on Figure 2-2 will be deleted.

8. Section 2.1.2.2 Oligocene

a. **Comment:** Typographical error: "agrillaceous" should be "argillaceous".

Response: Agree. The text will be revised.

b. **Comment:** Last sentence: Does the top of the Hawthorn Fm. range from 20' to 120' bls at Parris Island specifically or is this a regional observation? Please be more specific with respect to Parris Island.

Response: The Oligocene appear to be more closely associated with the Cooper Marl rather than the Hawthorn Formation. This is a regional feature, not specific to Parris Island and will be clarified in the text as such.

9. **Comment:** Section 2.1.2.3 Miocene

First Paragraph: When referring to counties, any Georgia counties need to be labeled as such: e.g., Chatham County, GA Please revise.

Response: Agree. "GA" will be added to Chatham County.

10. **Comment:** Section 2.1.2.4 Quaternary

First Paragraph: Typographical error: "Pamlico" should be "Pamplico".

Response: Agree. The typographical error will be corrected.

11. **Comment:** Section 2.1.3 Soils

This section should refer to Wando-Seabrook-Seewee, Coosaw-Williman-Ridge land, and Bohicket-Capers-Handsboro as "Units" or "Soil Units".

Response: Agree. "Units" will be added to the headings.

12. **Section 2.1.3.1 Wando-Seabrook-Seewee Unit**

a. **Comment:** First paragraph: Change "association" to "Unit" to match name as mentioned in comment 11.

Response: Agree. Changes will be incorporated.

b. Second paragraph

i. **Comment:** Fifth sentence: The term "map unit" should be defined or replaced with a better term for describing the map view boundaries of this unit.

Response: Agree. Changes will be incorporated.

ii. **Comment:** Sixth sentence: Change to "...about 60 percent of the area within this soils unit is woodland...".

Response: Agree. Changes will be incorporated.

iii. **Comment:** Rewrite the eighth sentence. "Droughtiness" is an odd word that should be defined or replaced with something more suitable.

Response: Agree. Changes will be incorporated. "droughtiness" will be changed to "dryness".

13. **Coosaw-Williman-Ridge land Unit**

a. **Comment:** First paragraph: replace "association" with "unit".

Response: Agree.

b. **Comment:** The term "map unit" needs to be revised as per comment 1-12.b.i.

Response: Agree.

- c. **Comment:** Second paragraph: typographical error: "Williman".
Response: Agree. Text will be modified.
- d. **Comment:** Page 2-12, top of page: there is a reference to Table 2-6 that is not in this document. Please revise.
Response: Tables 2-5 and 2-6 are incorrectly presented in the document and will be moved and renumbered appropriately.
14. **Section 2.1.3.3 Bohicket-Capers-Handsboro Unit**
- a. **Comment:** First paragraph: replace "association" with "unit".
Response: Agree. The text will be revised.
- b. **Comment:** Second paragraph: the term "map unit" needs to be revised as per comment 1-12.b.i.
Response: Agree. The text will be revised. "map unit" will be replaced with "soil unit" (typo).
- c. **Comment:** Next to last sentence: "...are in marsh grasses." should be changed to "are associated with marsh grasses."
Response: Agree. The text will be revised. "map unit" will be replaced with "soil unit" (typo).
15. **Comment:** Figure 2-4
Typographical error in title. "Unity" should be "Unit".
Response: Agree. The title will be revised.
16. **Table 2-1 Soil Properties:** This table is not referred to in the text.
- a. **Comment:** If this is the table being referred to on page 2-12 as Table 2-6 (as per comment 1-13d), the seasonal high water table is not shown. Please revise.
Response: The table is referenced in the last sentence of paragraph 2.1.3.
- b. **Comment:** The column describing sites affected should be revised to list the SWMUs affected.
Response: SWMU numbers will be listed in parenthesis next to their respective site number.

17. Section 2.2.2 Tertiary Limestone Aquifer

- a. **Comment:** First paragraph, last sentence: This sentence contains odd working. "...even though it is not everywhere the principal aquifer,..." should be revised.

Response: Agree. The text will be revised accordingly.

- b. **Comment:** Second paragraph, first sentence: This sentence is misleading. The Tertiary Limestone Aquifer occupies much more than a 60 mile radius from MCRD. The first paragraph in this section describes it as being much larger. Please revise.

Response: Agree. The text will be revised accordingly.

- c. **Comment:** Fourth paragraph, third sentence: Revise to "Two hydrogeologic zones within the Tertiary Limestone Aquifer lie beneath the MCRD Parris Island area."

Response: Agree. The text will be revised accordingly.

18. **Comment:** Figure 2-6

Typographical error in the title: "Terciary" should be "Tertiary". Please revise.

Response: Agree. The title will be revised.

19. Figure 2-7 Topography and Flood Hazard.

- a. **Comment:** This figure should be oriented North/South with the North arrow on the figure. Please revise.

Response: The figure will be reoriented to show north toward top of page.

- b. **Comment:** There is no reference for this figure. Please revise.

Response: The figure is referenced in paragraph 2.4.

20. Section 2.6 Installation Ecosystems.

- a. **Comment:** Second paragraph: This paragraph needs to be revised (updated). The regulatory agencies involved are: the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (U.S. EPA) Region 4, the South Carolina Department of Natural Resources (SCDNR), and the South Carolina Department of Health and Environmental Control (SCDHEC). The South Carolina Coastal Council has become part of SCDHEC and is now called the Office of Ocean and Coastal Resource Management. The South Carolina Water Resources Commission has been divided with one part going into SCDHEC and the other part going into SCDNR.

Response: Agree. The text will be revised.

b. **Comment:** Third paragraph: The last sentence is vague and needs to be rewritten to describe "a particular activity in question". Please revise to clarify.

Response: Agree. The text will be revised.

c. **Comment:** Fourth paragraph: Typographical error: "Jancus" should be "Juncus". Also, all Latin names for animals and plants should be either italicized or underlined. Please revise.

Response: Agree. The text will be revised.

d. **Comment:** Last paragraph, page 2-22: This paragraph needs to be updated with respect to threatened or endangered plant and animal species at the MCRD. For example, the American alligator (alligator mississippiensis) is no longer endangered or threatened. Please revise.

Reference: The Office of Wildlife and Freshwater Fisheries Biology and Mgt.
South Carolina Department of Natural Resources
1000 Assembly Street
Columbia, SC 29201

Response: Agree. The text will be revised.

21. **Comment:** Section 2.8 Water Usage

Figure 136 is referenced twice in the text (page 2-23 and 2-24) but not included in the document. Please include this figure in the revised document.

Response: The section will be revised.

22. References

a. **Comment:** The reference section needs to be revised. The following is a list of authors not properly referenced:

Hassen, 1985
Hayes, 1979
Glowacs, and others, 980
SCDHEC, 1982
Stuck, 1980.

Response: Agree. The reference section will be updated.

b. **Comment:** The following references are listed on the reference page but not used in the text:

McClelland Consultants, May, 1990
ABB Environmental Services, Inc., Aug. 1992
A.T. Keamey, Inc., Apr., 1990
Master Plan for MCRD, PI, Sept., 1992
U.S. EPA, Aug., 1988
U.S. EPA, Aug., 1989

Response: Agree. The reference section will be updated.

**U.S. EPA REGION 4
RESPONSE TO RPM COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME I
MCRD PARRIS ISLAND, SOUTH CAROLINA**

1. **Comment:** Page 1-4, Paragraph 1

Specific examples on when to use less stringent DQO procedures don't appear entirely appropriate. Key factor to consider is: what are the consequences of making an incorrect decision. In first instance, higher DQO data may still be needed to determine whether or not action is needed - even if the prescribed action is presumptive. Also, if little information is known about a site, and very high SQLs are used, result may be elimination of a site which still poses some risk. Thus, the potential decision errors in these instances (due to use of less stringent DQO procedures) may not be acceptable.

Response: Specific references will be omitted to eliminate any confusion/concern over the prospect of collecting data that will not support program objectives.

2. **Comment:** Page 1-8, Table 1-1

Need to discuss with you rationale for modifying RFA recommendations for some sites from RFI or CS to NFA (SWMUs 4,6,12, 38, and 42).

Response: Based on the site's characteristics or it's association with USTs, a determination was made not to further evaluate these sites under the Installation Restoration Program. These determinations are documented in a 18 July 1995 letter from SCDHEC to MCRD Parris Island.

3. **Comment:** Page 1-11

Include description of SWMU 45 (since interim action will presumable not address all concerns for this SWMU).

Response: Agree. An appropriate description will be included.

**U.S. EPA REGION 4
RESPONSE TO ESD COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME I
MCRD PARRIS ISLAND, SOUTH CAROLINA**

Master Work Plan

1. **Comment:** The Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, (EISOPQAM), May, 1996, should be used and referenced for all field sampling.

Response: Agreed. The EISOPQAM will be referenced.

2. **Comment:** Pages 1-3 through the end of Section 1 are missing. The missing pages include the facility history and site descriptions.

Response: If the U.S. EPA RPM wishes for the ESD to review this information, please provide missing pages for review/comment.

**U.S. EPA REGION 4
PREPARED BY KHAFRA ENGINEERING CONSULTANTS, INC.
RESPONSE TO COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME I
MCRD PARRIS ISLAND, SOUTH CAROLINA**

GENERAL COMMENTS

1. **Comment:** The Master Work Plan (MWP), Sections 1.4 and 1.5, provide facility background information and site investigation history. However, a site location map for Parris Island in relation to counties and highways and a map showing the individual sites listed in Table 1-1 are missing. Two more figures should be added to these sections showing the location of Parris Island in relation to highways and counties and the location of the individual sites at MCRD which are listed in Table 1-1.

Response: Two figures will be added; a regional map and a site location map.

2. **Comment:** The MWP, 1.5.2, Page 1-12, Paragraphs 3 and 4, describe the results of previous investigations at Sites 7 and 8. No further investigation was recommended for each of these sites. However, in Table 1-1, confirmatory sampling (CS) is the prescribed action for these sites. The rationale for confirmatory sampling or no further investigation should be discussed in the text.

Response: The rationale is provided in the text. Additional text can be added to clarify.

3. **Comment:** The MWP, Section 1.5.3, Page 1-11, Paragraph 7, indicates that in the aquatic animal study completed in August 1993 "certain contaminants were detected but no contaminants exceeded" USFDA action levels. However, since the certain detected contaminants are not specified, it is unclear if they are bioaccumulative. If they are, the contamination will have ecological impacts although the contaminants did not exceed USFDA action levels. The text should specify the contaminants detected in the aquatic animal samples as well as potential ecological impacts.

Response: Agree. The contaminants detected will be identified. The paragraph will be modified to indicate that human health and ecological impacts will be evaluated as part of the baseline risk assessment for the site, since the human health impact due to the contaminants detected has not been specifically identified and ecological impacts were not addressed as part of the 1993 aquatic animal study.

4. **Comment:** The MWP, Section 1.5.3, Page 1-11, Paragraph 7, indicates that no priority pollutants or heavy metals were greater than drinking water standards after surface water and sediment samples were analyzed. However, it is unclear why the results of the surface water and sediment samples were used to compare the drinking water standards. Drinking water standards are used to compare groundwater results (U.S. EPA, 1988). The text should explain why the surface water and sediment sample results were used to compare with drinking water standards.

Response: The SI reports that "...no priority pollutant organic compounds were identified in the sediment and water samples. In addition, no heavy metals were identified that exceeded allowable limits set forth in the U.S. EPA Interim Primary Drinking Water Standards or the U.S. EPA Ambient Saltwater Quality Criteria." The text will be modified accordingly. Presumably, these standards were used as a basis of comparison to determine if a problem may exist at this site.

5. **Comment:** The MWP, Section 1.5.3, Page 1-13, Paragraphs 3, 4, and 8, recommend Phase II Sampling at select sites. However, the definition of Phase II sampling and how it differs from confirmatory sampling are not presented. The difference between Phase II and confirmatory sampling should be presented.

Response: Phase II sampling is a RCRA programmatic term. These paragraphs simply acknowledge that the Team feels that additional effort is required at these sites. No changes are proposed.

6. **Comment:** The MWP, Section 1.5.3, Page 1-12, Paragraph 1, indicates that since no VOCs or toxic concentrations of heavy metals were in any soil samples, no further action for Site 4 (Dredge Spoils Area Fire Training Pit) was recommended. However, the text does not specify the toxic concentrations of heavy metals and standards which were used to compare these concentrations. The text should specify the toxic concentrations of heavy metals in the samples and the applicable standards which support the recommendation of no further action for the site.

Response: This issue has been overcome by events since the State concurred with a Parris Island NFA recommendation in a correspondence dated 23 August 1989. Since the Team is still concerned with the condition of groundwater beneath the dredge spoils due to the fire training operations, further evaluation of this site will be conducted via Site 13 (which site 4 is contained within) to address groundwater. The paragraph will be modified to reflect this decision.

7. **Comment:** The MWP, Section 2.2.1, Page 2-13, Paragraph 2, states that the hydraulic conductivity was calculated to be 0.8 ft/day, the hydraulic conductivity of clean fine Holocene sand was estimated as 13 ft/day, and Pleistocene sand was 0.1 to 1.0 ft/day. However, the text does not describe the character of all the sand units. Thus, the hydraulic conductivity values presented cannot be verified by reviewing the literature.

Response: This section describes the shallow aquifer. The first paragraph of the section describes the unconfined shallow aquifer as "generally of permeable, fine to medium, Pleistocene age sands.". The third paragraph compares the calculated hydraulic conductivity of the Pleistocene sands of Parris Island to be within the known range of similar Pleistocene sands of Hilton Head Island. No changes are proposed.

8. **Comment:** The MWP, Figures 2-1 through 2-7, are too small and illegible. Also, the legends are difficult to read, the text is unclear, and contour line and groundwater flow directions are missing. The figures should be revised accordingly.

Response: Clearer figures will be provided to the greatest extent possible.

9. **Comment:** The MWP, Figure 2-7, Page 2-19, presents a map of topography and flood hazards for MCRD Parris Island. However, the figure is confusing and unclear. The legend shows the same symbol for three different entities. It is not possible to find the 100-year flood plain or the contours lines because of the faintness of the lines. This figure should be revised to clearly show the 100-year flood plain, the areas of saltwater marsh, the areas of minimal flooding, and the contours lines.

Response: A clearer figure will be provided.

10. **Comment:** The MWP, Section 2.8, Page 2-23, Paragraph 4, discusses total gross water use. However, it is unclear if the total gross use is on an annual basis and if it applies only to Parris Island or

to all surrounding islands and communities. The text should indicate if the values are on an annual basis and where these values apply.

Response: The text will be clarified to specify what the usage applied to. The Navy also desires to evaluate the value of this section and would like to discuss deleting in its entirety, since groundwater is not used on Parris Island. The deep well (2,600 feet) near the MCX Service Station, has ceased to be used as a hot water source.

11. **Comment:** The MWP, Section 3.3, Page 3-2, states that all contingency plans will be approved through the Navy RPM before enacted. However, the plans should also be approved by the state and U.S. EPA before enacting as stated in the 40 CFR. The text should be revised and all contingency plans should be reviewed by the appropriate agencies.

Response: Agreed. The paragraph will be modified to ensure that any deviations from approved work plans shall be approved by the state and U.S. EPA.

SPECIFIC COMMENTS

Master Work Plan

1. **Comment:** MWP, Table 1-1, Page 1-8.

This table presents information on the IR sites at MCRD Parris Island. However, the table footnotes do not explain the significance of the text in bold. Also, some of the acronyms appearing on the table are not defined. The table should be revised accordingly.

Response: Section 1.5.1, third paragraph, last sentence explained the significance of bold text. Acronyms are provided at the beginning of Volume I. The acronyms in the table will be compared to the acronym list and the list will be updated accordingly.

2. **Comment:** MWP, Section 1.5.2, Page 1-12, Paragraph 5, Sentence 2.

The text discusses the removal and disposal of six inches of surface soil. However, the complete meaning of the sentence is unclear because of a typographical error. The typographical error should be corrected.

Response: Agreed. The typographical error will be corrected.

3. **Comment:** MWP, Section 2.1.1, Page 2-1, Paragraph 3, Sentences 1 and 2.

The text states that the most conspicuous and hydrogeologically important structural feature in the Low Country is the Beaufort Arch. However, the location of the "Low Country" or the Beaufort Arch is not presented in any figures. These features should be shown on an appropriate figure.

Response: Agreed. An appropriate figure will be provided.

4. **Comment:** MWP, Figure 2-5, Page 2-14.

This figure shows the groundwater flow directions at MCRD Paris Island. However, the figure title does not indicate which aquifer is shown. The aquifer that the groundwater flow directions apply to should be added to the figure title. A separate figure should be presented for each aquifer with its flow direction.

Response: This information is referenced in Section 2.2.1 (Shallow Aquifer). The title will be modified to identify it as the shallow GW flow map. The deep aquifer is presented in Figure 2-6.

5. **Comment:** MWP, Figure 2-6, Page 2-15.

This figure shows the potentiometric surface of the Tertiary Limestone Aquifer at MCRD Paris Island. However, the estimated groundwater flow direction is not presented. The figure should be modified to show the direction of groundwater flow. In addition, the typographical error for Tertiary should also be corrected.

Response: A GW flow arrow can be placed on the figure to show estimated flow direction. The typographical error will be corrected.

6. **Comment:** MWP, Section 2.2.2.1, Page 2-16, Paragraph 5, Sentence 2.

The text states that thick low permeability formations are present in the Ridgeland Trough. However, the location of this trough is not depicted on any figures. The trough location should be shown on a figure.

Response: Agreed. The feature will be identified on an appropriate figure.

7. **Comment:** MWP, Section 3.3, Page 3-2, Paragraph 3, Sentence 1.

This sentence is incomplete. The sentence should be edited, and the text should be revised accordingly.

Response: Agreed. The text will be clarified accordingly.

References

United States Environmental Protection Agency, 1991, Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites, Office of Emergency and Remedial Response, Washington D.C., U.S. EPA/540/P-91/001.

United States Environmental Protection Agency, 1988, Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, Office of Emergency and Remedial Response, Washington, DC, U.S. EPA/540/6-89/004.

United States Environmental Protection Agency, 1994, Soil Screening Guidance, Office of Emergency and Remedial Response, Hazardous Site Control Division, Washington, DC, U.S. EPA/540/R-94/101, PB95-963529.

United States Environmental Protection Agency, 1991, Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region 4, Environmental Services Division, Athens, GA.

United States Environmental Protection Agency, 1994, Supplemental Guidance to RAGS: Region 4 Bulletin. Development of Health Based Preliminary Remediation Goals, Remedial Goal Options, and Remediation Levels. U.S. EPA Region 4, Waste Management Division, Atlanta, GA.

**RESPONSE TO B&R ENVIRONMENTAL COMMENTS TO THE DRAFT MASTER WORK PLAN,
VOLUME I
MCRD PARRIS ISLAND, SOUTH CAROLINA**

GENERAL COMMENTS:

1. **Comment:** Editorial comments are marked on document.
Response: Editorial comments will be incorporated.

2. **Comment:** The document should have a regional map showing the relative location of Parris Island within the State of South Carolina. This figure should be presented as Figure 1-1. This document should have a detailed Site Map of Parris Island presented as Figure 1-2.
Response: A regional map and a Site map will be included new figures.

3. **Comment:** B&R Environmental is in the process of reviewing documents associated with local habitats and will revise Section 2.6, Installation Ecosystems, and provide it when completed.
Response: The revisions have been received and will be incorporated into the Work Plan.

SPECIFIC COMMENTS

1. **Comment:** Page iii

Brown & Root Environmental is referred to as B&R Environmental throughout the document not BRE.
Response: Agree. The acronym will be corrected throughout Volume I as necessary.

2. **Comment:** Page v

Insert "RFI" into list as "RCRA Facility Investigation or Inspection." Be consistent throughout text regarding the use of investigation verses inspection as this changes from paragraph to paragraph.
Response: Agreed. An acronym list will be added to list and Volume I will be reviewed for consistency and corrected as necessary.

3. **Comment:** Page 1-5, Section 1.4, First Paragraph

The term "American Indian" is not politically correct. Consider using the term "Native American." Remove the archeological phrase ceramic and the parentheses around "Late." The chronological table should begin with, "1562 - French establish Charleforte as this is the first significant historical event."
Response: Agreed. All three comments will be incorporated.

4. **Comment:** Page 1-6, Section 1.5

Last sentence - change to: "MCRD investigated the six potential areas of concern that were identified during the PA and an additional three potential areas of concern that were identified during the SI." MCRD has identified one additional potential area of concern since the completion of the SI.

Response: Agreed.

5. **Comment:** Page 1-7, Section 1.5.2, "Site 2", second sentence

Need to explain the significance of dirt roads associated with this site. Were these roads sprayed with oils or sludge for dust control?

Response: The concern associated with the dirt roads is to potential for PCB contaminated oils to have been sprayed on them. The text will be modified accordingly.

6. **Comment:** Page 1-10, Top of the page

Define yard wastes.

Response: Yard waste is comprised of grass clippings, leaves, tree trimmings, etc. The text will be modified accordingly.

7. **Comment:** Page 1-10, Site 16

Elaborate on aquifer *capacity*.

Response: Agreed. The Navy will ask the State to provide clarification. The text will be modified accordingly.

8. **Comment:** Page 1-11

Recommend combining Section 1.5.3 with Section 1.5.2 such that the reader does not have to keep flipping pages back and forth. The combined sections could be set up as follows:

Site Description: Dry cleaning facility...

Problem: PCE was historically released...

Action: Installed three monitoring wells during the SI...

Results: SI recommended an RI/FS...

Response: Agreed. The sections will be combined and will present Site description, Problem, Action, and Results.

9. **Comment:** Page 1-14, RFA Site 39

Statement that a Preliminary Assessment is recommended, it seems from the previous section that the PA (RFA) was already conducted and a Site Investigation (SI), or RFI, is appropriate. Revise sentence to read SI, or RFI, rather than PA if this is correct.

Response: A PA was essentially completed in the form of the RFA. According to Table 1-1, CS is recommended. The text will be changed accordingly to reflect CS being recommended for this site.

10. **Comment:** Page 2-6, Section 2.1.2.3

Third sentence reads, "This thin limestone is hydrogeologically important for several reasons." Need to identify what these reasons are.

Response: This paragraph continues to identify why this unit is important: Wells that are open to this unit have a high sulfide content; is locally discontinuous; is frequently eroded in coastal Beaufort County; and when present serves as a confining unit to the overlying Pleistocene deposits, as well as to the underlying Tertiary Limestone Aquifer. No changes proposed.

11. **Comment:** Page 2-7, Section 2.1.2.4, third paragraph

Is there a reference for the origins of the ironstone features? Comment - the soil staining is probably due to oxidation as a result of a fluctuation in water table elevation. However, it could also be due to other factors such as changes in soil mineralogy or a long capillary fringe zone.

Response: The paragraph continues to describe that these ironstone features are probably due to seasonal fluctuations in the near-surface water table. No changes proposed.

12. **Comment:** Page 2-13, first paragraph

Revise "ground water" to "groundwater" throughout document.

Response: Agreed. Changes will be made throughout the document.

13. **Comment:** Page 2-13, second paragraph, first sentence

Need to provide a reference for this value.

Response: Agreed. This was reported in the IAS. The reference will be added.

14. **Comment:** Page 2-16, Section 2.2.2 (Tertiary Limestone Aquifer), second paragraph

It is stated that the aquifer supplies surrounding areas with usable water. The source of water for the depot should also be discussed here.

Response: Agreed. The Depot is served by the Beaufort, Jasper, Colleton County water District.

15. **Comment:** Page 2-19 and 2-20, Figure 2-7

Consider a larger version of this figure for the final work plan. This version is very hard to read.

Response: A clearer figure will be provided.

16. **Comment:** Page 2-23 and 2-24, Section 2.8 (Water Usage)

There are references to Figure 136. The number appears to be incorrect.

Response: Agreed. The paragraph will be corrected.

17. **Comment:** Page R-1

The following references are missing: Hayes, 1979; Hassen, 1985; Glowacz and others, 1980; SCDHEC, 1980; SCDHEC. 1982; Stuck, 1980.

Response: The missing references will be added to the reference list.

STATE OF SOUTH CAROLINA, HAZARDOUS WASTE SECTION
DIVISION OF HYDROGEOLOGY, BUREAU OF SOLID AND HAZARDOUS WASTE MANAGEMENT
RESPONSE TO COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME II
MARINE CORPS RECRUIT DEPOT (MCRD)
PARRIS ISLAND, SOUTH CAROLINA

COMMENTS - Johnny Tapia, Environmental Engineering Associate

1. **Comment:** Section 1.0 and Section 2.1.1

Instead of "Project-Specific FSP Addendum" should be instead "Site-Specific FSP Addendum". Project is too broad and could be considered as the whole Base, but Site will appropriately make reference to every Solid Waste Management Unit (SWMU) or Area of Concern (AOC) specifically being worked on.

Response: Agree. The text will be revised .

2. **Comment:** Section 2.2.2

The text states that on test pit excavations, the removed soils should be "replaced". The text should be explicit as if the soils will be "replaced" or "put back in place." This section should be revised.

Response: Agree. The text will be revised .

3. **Comment:** Section 2.11, "Waste Handling"

The text of this section states the following: "Based on the activities and types of contaminants present, none of the residues are expected to represent a significant risk to Human Health or the Environment if properly managed." The only way to determine if a contaminant poses a "significant risk" to Human Health or the Environment is by performing a Baseline Risk Assessment. This section seems to be making a judgment based solely on preliminary information. All waste should be first characterized as hazardous or non-hazardous and disposed accordingly. If the waste is determined to be hazardous, it can not be stored on-site for more than 90 days.

Response: Agree. The sentence will be deleted.

4. **Comment:** Section 2.11.1 "Solid Investigation-Derived Waste"

This section states that if the IDW is determined to be non-hazardous, then may be "spread on the ground at the site." This Department does not agree with the concept of spreading IDW on the ground. Even if it has determined to be non-hazardous it might still contain some low concentrations of contaminants; reason why it will be more appropriate to use the phrase "put back in place" than "spread on the ground." This section should be revised.

Response: Agree. The section will be revised.

5. **Comment:** Section 3.0 “General Sampling Operations”

The introductory paragraph should be revised to explain that the analysis of samples will be performed by a South Carolina certified laboratory.

Response: Disagree. This section pertains to field sampling activities, outlining methods/requirements for collecting samples of the various media, but does not discuss laboratory protocol. Analytical requirements are outlined in the MQAP. Section 2.3 of the MQAP specifies that labs must comply with state certification requirements. No change is proposed.

6. **Comment:** Master Quality Assurance Plan

Page ii, Section 1.1 of the Table of Contents has a typographical error.

Response: The typographical error will be corrected.

7. **Comment:** Preface

Page ii, last paragraph, there is a typographical error on the word “addendum”.

Response: The typographical error will be corrected.

8. **Comment:** Section 2.1 and Figure 2.1

This section and figure list all the people involved in the project, including SCDHEC’s personnel. These sections should be left blank or later revised to include the people assigned to the MCRD when determined.

Response: Agree. The text and table will be updated to reflect current assignments.

COMMENTS - Donald Hargrove, Hydrogeologist

1. **Comment:** Section 2.1 General Field Operations: Second paragraph, next to last sentence; This sentence should read “Groundwater flow is generally towards...”. Please revise.

Response: Agree. The text will be revised.

2. **Figure 2-1 Typical Geological Cross-Section**

a. **Comment:** Revise to include well identifications.

Response: This information is redundant. Figure 2-1 and the second paragraph of section 2.1 will be deleted and replaced with a reference to Volume I MWP, Section 2.0 for geological information.

b. **Comment:** Typographical error: “St. Helens Island” should be St. Helena Island”.

Response: See previous response.

c. **Comment:** Revise to include reference: Dames and Moore, 1986.

Response: See previous response.

3. **Comment:** Section 2.2.2 Test Pit Operations

Last sentence; Typographical error: "...pit log i(Single Sample Log Sheets)s...".

Response: The typographical error will be corrected.

4. **Comment:** Section 2.2.3 Direct-Push-Drilling

Direct push data is not acceptable for "No Further Action" (NFA) decisions. Direct push data can only be used for site characterization. Please revise to acknowledge.

Response: Agree. The text will be revised to indicate that DPT is a useful screening tool to help focus follow-up sampling activities.

5. **Comment:** Section 2.2.4 Rotasonic Drilling

Third paragraph, tenth sentence: "facilities" should be "facilitates".

Response: The typographical error will be corrected.

6. **Comment:** Section 2.3 Monitoring Well Construction and Installation

Please specify that the plug used at the base of the monitoring well casing will be made of a material compatible with the well screen (PVC, Teflon, etc...) and not wood.

Response: Agree. A statement will be added specifying that wood shall not be used as a plug material.

7. **Comment:** Figure 2-3 Typical At-Grade Monitoring Well

This figure should be revised to show the locking flush cover, and the minimum depth to the top of the cement/bentonite slurry (less than 2 feet but greater than the frost line).

Response: Agree. The figure will be revised. The minimum depth to the top of the slurry also applies to Figure 2-2

8. **Comment:** Section 2.10 Decontamination

The last sentence should be revised to state that "Decon efforts will comply with U.S. EPA Region 4 SOPs."

Response: Agree. The text will be revised.

9. **Comment:** Appendix A Monitoring Well Sheet

This sheet should be revised to include the depth of seal/top of bentonite, as well as the duration of hydration.

Response: Agreed. The well sheet will be revised accordingly.

10. **Appendix B: B&R Environmental SOP GH-1.7 Groundwater Monitoring Point Inst.**

- a. **Comment:** Section 4.0 Responsibilities: Please revise to specify that the driller must be certified by the State of South Carolina. This section should also state that in addition to obtaining required permits, the driller will notify the regulatory agencies of upcoming activity (seventy-two hour notice).

Response: Agree. Paragraph 4.0 will be annotated that a State certified driller shall be used.

b. *Section 5.2.2 Riser Pipe and Screen Materials*

- i. **Comment:** This section should be revised to address the issue of borehole size as it relates to casing diameters to ensure that the minimum annular space requirements are met. Section E.5.1 of the Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (SOP/QAM), 1991, by U.S. Environmental Protection Agency Region 4 covers this topic.

Response: Agree. Paragraph 5.2.2 will be annotated to address annular space requirements are met.

- ii. **Comment:** This section also states the glued PVC may release organic contamination into the well. The possibility for release of organic contamination into the groundwater prohibits the use of glued casing as per R.61-71.11.C.1 of the South Carolina Well Standards and Regulations. Please revise to exclude all use of glued casing.

Response: The text will be annotated that glue is prohibited.

- iii. **Comment:** Refer to Section E.5.3 of the U.S. EPA Region 4 SOP/QAM for guidance on filter pack and well screen design. A more detailed description of the design criteria is necessary to ensure a standard methodology for all future projects that will be referring to this Master Work Plan.

Response: The text will be annotated to address screen/sand pack design.

c. *Section 5.3.1 Monitoring Wells in Unconsolidated Sediments*

- i. **Comment:** Please revise this section so that the proper hydration time of bentonite is addressed. The current text implies that as soon as the bentonite pellets are installed, the grout can be mixed and tremied into the annulus. Section E.3.4 of the U.S. EPA Region 4 SOP/QAM suggests that "...bentonite pellets be tremied into the

annulus and tamped to a minimum of 2 feet above the filter pack. The bentonite shall be allowed to hydrate a minimum of eight hours or the manufacturer's recommended hydration time, whichever is longer. At this point, the grout can be pumped by the tremie method into the annular space around the casing."

Response: Agree. The text will be revised.

- ii. **Comment:** Refer to Section E.3.5 of the U.S. EPA Region 4 SOP/QAM for guidance concerning installation of grout. The grout should be pumped by tremie method into the annulus of the well to ensure that grout completely fills the annular space. Please revise the text to exclude pouring grout into the annulus.

Response: Agree. The text will be revised.

11. **Comment:** Appendix B B&R Environmental SOP GH-3.4, Ground Penetrating Radar Surveys

Pages 1-3 are missing from this section due to a photocopying error. Please replace.

Response: The complete SOP will be provided.

12. **Master Quality Assurance Plan**

- a. **Comment:** Section 2.1 Program management and Project Organization: This section lists Ken Johnson as the SCDHEC Project Manager. Since Ken's position is still open to date, it is suggested that this be left open until the final MQAP is produced. At that point the position could be filled.

Response: Agree. The text and figure will be revised accordingly.

- b. **Comment:** Figure 2-1 should be updated to list D. Hargrove as the Hydrogeologist for SCDHEC and keep K. Johnson's slot open as per comment 12a above.

Response: Agree. The text and figure will be revised accordingly.

- c. **Comment:** Section 2.3 Laboratory Options: Any labs performing analyses must not only comply with State certification requirements, but must also be State certified. Please revise.

Response: Agree. The text will be revised accordingly.

- d. **Comment:** Section 5.4 Fixed-Base Laboratories: See comment 12c above.

Response: Agree. The text will be revised accordingly.

**U.S. EPA REGION 4
RESPONSE TO RPM COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME II
MCRD, PARRIS ISLAND, SOUTH CAROLINA**

1. **Comment:** Page 2-26, Section 2.7.2

Greater explanation of what is meant by “the aquifer response to pumping” is needed, particularly given the large range of proposed pumping test duration (e.g., what criteria would be used to determine that a r hour pumping test was sufficient?).

Response: Agree. Criteria will be added to determine when pumping has continued for a sufficient period of time.

2. **Comment:** Page 2-27, Section 2.7.3

Specific capacity test may not provide accurate measure of specific capacity if well development is still occurring during the test, though it may provide good indication of when well development is complete.

Response: Noted. This paragraph explains that the test involves measuring drawdown when the water level stabilizes after pumping a well at a constant rate, which can be done for the purpose of developing or purging a well in addition to conducting the pumping test. No changes proposed.

3. **Comment:** Page 2-28, Section 2.8

Regarding soil gas surveys, possibly consider collection of “long-term” samples (e.g. install absorptive material at sampling point, and retrieve for lab analysis after an extended period of time).

Response: Agree. A paragraph discussing passive sorbent soil gas samplers will be added.

4. **Comment:** Page 3-3, Section 3.1.3

For risk assessment purposes, surface soil samples should be collected either from the top 12” or from the most contaminated portion of that interval.

Response: Agree: The text will be revised to specify this criteria.

5. **Comment:** Page 3-3, Section 3.1.4

Maybe I missed something here, will all of these samples (collected a 5’ intervals to water table) be sent to a lab for analysis? If not, what general procedures will be used to determine which need to be analyzed by a laboratory & which are used for other purposes?

Response: This paragraph discusses typical subsurface soil sampling. The specific intervals and number of samples to be analyzed will be specified in the Site Specific SAP. A sentence will be added stating that specific number and intervals will be specified in the site Specific SAP.

6. **Comment:** Page 2-1, Section 2.1

U.S. EPA RPM has OVERALL RESPONSIBILITY??! What happened to DOD/Navy as lead agency?

Response: Agree. The text will be revised to indicate that U.S. EPA and State have “regulatory authority” rather than “overall responsibility”.

7. **Comment:** Pages 5-4 through 5-13, Table 5-1

Many analytical options exist for each chemical class/group. Information, data which would provide means of distinguishing differences/(similarities) in the relative quality of these analyses (e.g. MDL, level of QA/QC) would facilitate future, site-specific decisions regarding which method(s) would be acceptable for decision-making purposes. Recommend providing such information in this table.

Response: Table 5-1 is meant to provide a summary of analytical methods which could potentially be considered for use for MCRD Parris Island investigations. Given the large number of methods included on Table 5-1 and the number of associated compounds/analytes which could be analyzed, a comparison of MDLs, QC requirements, etc. for all of the methods is beyond the scope of the Master QAPP. Analytical requirements will be determined based on regulatory requirements and data quality objectives on a site-specific basis. Specifics such as reporting limits and QC requirements will be provided in site-specific documents.

Note that Table 5-1 will also be revised based on the responses to comment 5 from the U.S. EPA Region 4 - Science and Ecology Support Division.

8. **Comment:** Page 5-14, Paragraph 1

Why CRQL for organics and CRDL for inorganics? How can a quantitation limit (e.g. PQL) be an expression of a detection limit (e.g. MDL, IDL)?

Response: The terms Contract Required Quantitation Limit (CRQL) and Contract Required Detection Limit (CRDL) were established by the U.S. EPA Contract Laboratory Program (CLP) for organic and inorganic analyses, respectively.

A practical quantitation limit (PQL) is based on the method detection limit (MDL, for organics) or instrument detection limit (IDL, for inorganics) by adjusting the MDL to a higher level to ensure that the precision and accuracy requirements of the method can be attained. The text regarding PQLs will be clarified.

9. **Page 5-14, Paragraph 2**

Questions on how the decision to use low-concentration methodologies, or other more stringent DQO methods, will be made:

- a. **Comment:** Will each site investigation/sampling event have the flexibility to use different analytical methods/DQO levels to analyze different samples collected (e.g. depending on location of sampling point relative to contaminant source)?

Response: Site specific parameters will be defined based on site specific conditions. If different methods or a phased approach is warranted to answer the site specific questions the project team is looking to answer, the Site SAPs will provide what is required.

- b. **Comment:** Will investigation have flexibility to add additional sampling rounds if discovery is made after the initial round that a higher DQO level is needed (e.g. to eliminate a site, or better define the magnitude of remediation efforts & selection of appropriate technology)?

Response: Site specific parameters will be defined based on site specific conditions. If different methods or a phased approach is warranted to answer the site specific questions the project team is looking to answer, the Site SAPs will provide what is required.

10. **Comment:** Pages 5-15 through 5-21, Table 5-3

Clarify: do these MDLs apply to all non-CLP methods, just SW-846 methods, or what? What about low-, medium-, high-SOW CRQLs for CLP?

Response: As noted in the second paragraph of page 5-14, Table 5-3 was meant to provide a comparison of CRQLs/CRDLs and MDLs as an example only. The parameters listed were for CLP parameters only. The CRQLs/CRDLs were taken from the multi-media/multi-concentration CLP SOW and represented standard CLP limits, not making any special adjustments for low- or medium-concentration samples. The MDLs represented typical laboratory MDLs. However, specific MDLs would vary based on the laboratory. Therefore, this table is considered to be of little value to the document and will be deleted from the Master QAPP.

11. **Comment:** Pages 6-1 through 6-3, Section 6.0

Clarify whether any of these QC checks vary with analytical method. With what frequency are surrogate spikes and blank spikes analyzed?

Response: Based on the wide variety of analytical methods which may potentially be used, the text in this section provides information regarding QC sample requirements that are generally applicable to all methods. The text will be clarified to specify that all QC checks will be performed based on the requirements of the specific analytical methods. Regarding surrogate spike frequency, the text currently states that surrogates are spiked into each sample, standard, and method blank for all organic chromatographic analyses. The frequency generally required for blank spike analysis (1 per 20 samples) will be added to the text.

12. **Comment:** Page 8-2, Section 8.4

Will the electronic data be submitted in a format which is compatible with U.S. EPA Region 4's?

Response: Pat Hooper of B&R Environmental spoke with Richard Hammond of U.S. EPA Region 4 concerning this issue on October 9, 1997 and all data sharing issues were resolved. Please refer to Mr. Hammond's U.S. EPA internal memo regarding this issue.

U. S. EPA REGION 4
RESPONSE TO ESD COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME II
MARINE CORPS RECRUIT DEPOT (MCRD)
PARRIS ISLAND, SOUTH CAROLINA

Master Field Sampling Plan

1. **Comment:** Section 2.2.3, p. 2-5.

The Navy contractor should be made aware that DPD (specifically the Hydropunch) was not successful at NAVBASE Charleston due to the lithology.

Response: Noted. DPT has been successfully used at the Dry Cleaners at Parris Island.

2. **Comment:** Section 2.10.1, p. 2-29

PVC and other plastic materials must not be subjected to hot water or solvents. If "certified clean" materials are used, a fixed percentage must be subjected to equipment rinse blanks.

Response: Noted. Only new clean well casing and screens will be installed. The text will be revised accordingly.

3. **Comment:** Section 3.1.1, p. 3-1

Bailers may not be used for purging unless they consistently provide purge water of 10 NTU or less.

Response: The Navy intends on primarily using low flow pumps for purging, but would not exclude the possibility of bailers if acceptable results could be achieved. No changes recommended.

4. **Comment:** Section 3.1.1, p. 3-2

The intake of the purge pump must be placed at the top of the water column.

Response: Agree. The text will be revised accordingly.

Master Quality Assurance Plan

5. **Comment:** Section 3.3, p. 3-4

Blanks are also needed of the potable water used in any well installation, grout, mud and sand blanks are also required. The rinse water used for equipment decontamination must also be blanked. Preservative blanks are also needed.

Response: Equipment rinsate blanks are currently discussed in Section 3.3.4. The field blanks discussed in Section 3.3.2 will be re-titled as source water blanks. These are blanks of the

potable water used for decontamination and steam cleaning as well as potable water used for well installation. The text will be revised to clarify this.

The contractor will provide certified-clean well construction materials. False positive detections have not been a historical problem. QA/QC blanks for grout, sand, and bentonite will be collected and held for analysis pending the analytical results of the field investigation. If it is suspected that inorganic contaminants have been introduced by well installation materials, the samples will be sent to the laboratory for analysis. For inorganics, holding times will not be exceeded because the holding time for inorganic analysis is considerably longer than the 3-week turn-around time anticipated for analytical results. For organics, material blank analysis is not anticipated because monitoring well purging and development activities should dissipate minor organic contamination if present. Discussion of the collection of these blanks will be added to the text.

Additionally, it is recommended that preservative QA/QC blanks not be taken. Trip blanks, field blanks, and rinsate blanks will all be collected. Each of the types of blanks contain the same preservatives as those used in environmental samples, and, therefore, provide a check of contamination of the preservatives. Historically, such blanks have very rarely shown positive detection of contaminants.

Standard Operating Procedures

6. **Comment:** SA-1.1, Section 5.5

Turbidity should also be routinely monitored. The sample should not be collected until purge water has reached 10 NTU or less and other parameters have stabilized.

Response: Agree in part. Turbidity should be monitored. The Navy believes that if the aquifer being sampled is turbid (i.e., the turbidity remains greater than 10 NTU after extended purging), that the turbid sample is representative of the aquifer and should be used. Filtered samples may be employed, if needed

7. **Comment:** SA-7.1, Section 5.1

Soap must also be used to clean drilling equipment.

Response: B&R Environmental standard procedure is to use high pressure steam which is considered appropriate.

8. **Comment:** SA-7.1, Section 5.2

Use of the EISOPQAM field decontamination procedures should be considered. These methods are effective, take much less time, are safer, and less expensive.

Response: Agree. The EISOPQAM will be considered.

9. **Comment:** SA-7.1, Section 5.2.2

Region 4 has several restrictions on the use of pumps for sampling. If the Navy contractor is intending to use pumps for sampling, specific procedures developed in accordance with the EISOPQAM must be proposed.

Response: The SOPQAM criteria will be used.

10. **Comment:** SA-7.1, Section 5.5.3

Unlined mud pits are not permitted.

Response: Mud will not be used.

General Comments

11. **Comment:** The submitted documents contain no discussion of temporary wells. U.S. EPA Region 4 recommends the mapping of shallow contaminant plumes using temporary monitoring wells, sampling with peristaltic pump/vacuum jug, analysis in a mobile laboratory and real-time field mapping of results. This is a tested and proven method which is extremely cost-effective and time-saving. The methods are described in the EISOPQAM and I am available for questions.

Response: A discussion of temporary wells will be added to the MFSP.

**U.S. EPA REGION 4 - PREPARED BY KHAFRA ENGINEERING CONSULTANTS, INC.
RESPONSE TO COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME II
MCRD PARRIS ISLAND, SOUTH CAROLINA**

GENERAL COMMENTS

1. **Comment:** The Master Field Sampling Plan (MFSP), Section 2.0, Page 2-1, discusses the sampling for the investigation. According to the MWP, Parris Island has wetland concerns; however, this section does not address ecological sampling based on wetland concerns. The text should address the ecological investigation sampling issue in this section.

Response: Ecological samples will be collected, as appropriate, as part of the site-specific SAPs. No additional discussion will be included in this section.

2. **Comment:** The MFSP, Section 2.0, Page 2-1, provides information on the soil and groundwater investigation. However, the text does not discuss how the background sample or control samples will be located. The text should be revised to provide information on the locations of background and control samples.

Response: If background/control samples are appropriate, a discussion of how background/control samples will be collected will be included in the site-specific SAPs. No additional discussion will be included in this section.

3. **Comment:** The MFSP, Section 2.1, Page 2-1, Paragraph 2, Sentence 3, discusses a clay layer that is expected to be found between the surficial aquifer and the underlying confined aquifer at MCRD Parris Island. However, Figure 2-1 does not show the location of this clay layer. It is not clear whether the Hawthorne formation is the referenced clay layer. The text should be modified to clarify the corresponding formation name for the clay layer. In addition, the location of the cross section should be presented in another figure.

Response: This information is redundant (previously discussed in Vol. I), therefore this paragraph and Fig 2-1 will be deleted.

4. **Comment:** The MFSP, Section 2.2.1, Page 2-4, Paragraph 0, Sentence 3, states that head space analysis for soils will be performed after the sample container has been warmed for 15 minutes. However, a rationale for warming samples and a description of the heating procedure are not presented in the Master Work Plan. The procedures to be used for heating samples for headspace analysis should be presented.

Response: The specifics of conducting headspace analysis will be removed from the text. Analysis will be conducted per SOPs.

5. **Comment:** The MFSP, Section 2.3, presents monitoring well construction and installation requirements. However, venting or sparging wells are not discussed. It is probable that at some point in the future, venting or air sparging will be applicable to one of the sites. Thus, typical details for venting and sparging wells should be discussed, and figures similar to Figure 2-2 should be presented.

Response: A discussion of venting and sparging wells will be added.

6. **Comment:** The MFSP, Section 2.3, gives a description of monitoring well installations. The text states that a cement/bentonite grout will be used to back fill the open hole. However, U.S. EPA ESD recommends that monitoring wells used for long-time use be grouted with pure bentonite to prevent deterioration of the grout. The MFSP should be revised based on recommendations from the U.S. EPA Environmental Service Division (ESD).

Response: The Navy feels that the sealing of wells, as described in the MWP and SOPs is appropriate. The ESD provided comments, independent of Khafra, and this issue was not commented on. No changes will be made.

7. **Comment:** The MFSP, Section 2.11.1, Page 2-30, Paragraph 2, Sentence 2, states that one composite sample of solid Investigation Derived Waste (IDW) from each site will be collected and analyzed to determine if the IDW is hazardous or non-hazardous. The use of one composite sample for IDW for an entire site is unusual and may not be representative. This is especially true for sites where over 10 drums of solid IDW are generated. Grouping of IDW should be based on the estimated degree of contamination of the waste based on visual or other field observations and/or historical information. The text should be modified to indicate that IDW will be composited based upon the expected degree of contamination of the solids (by location, by background, etc.). Data from environmental samples may be used to help determine appropriate compositing provided the 90-day storage rule can still be met.

Response: IDW will be separated and contained, according to the amount of contamination expected, in order to minimize the amount of waste that will require disposal as hazardous waste. Only one composite sample from each area is needed. A site is expected to comprise multiple areas that are segregated. The text will be clarified.

8. **Comment:** The MFSP, Section 3.0, identifies several landfills, storm sewer outfalls, and PCB spill areas in the site descriptions that were discussed in the MWP. However, the MFSP does not present a discussion in the General Sampling Operation on landfill, sewer, or PCB sampling. Because of the number of landfills and specialized sampling patterns employed during sewer and PCB sampling, the text should describe how the site will be investigated and sampled.

Response: Site-specific sampling will be presented in the appropriate site-specific SAPs. No additional discussion will be included in this section.

9. **Comment:** The MFSP, Section 3.1.1, Page 3-1, Paragraph 4, states that in the event that recovery of a well is slow, samples will be collected within 24 hours of purging or as soon as possible after the water level has recovered to approximately 80% of its static level. However, as water reenters the well it may cascade down the well screen and strip volatile contaminants. The U.S. EPA SOPQAM recommends that, if possible, monitoring wells should not be pumped dry. If the wells are pumped dry, water that has been trapped in the sandpack may be sampled. The technique for collecting water samples should be revised accordingly.

Response: The Navy recognizes that wells should not be pumped dry and will use care in minimizing the effect of pumping wells dry in the field. The text will be revised accordingly.

10. **Comment:** The MFSP, Section 3.1.1, Page 3-2, Paragraph 0, Sentence 3, states that it is ideal to purge wells until the turbidity is below 5 NTU. However, U.S. EPA ESD does not require measurement of turbidity in order to determine if a well is stabilized for sampling. The U.S. EPA SOPQAM only requires that water parameters (temperature, pH, and specific conductance) be

stabilized before sampling. Turbidity does not determine if a well has stabilized. Thus, the text should be corrected.

Response: The Navy will attempt to purge until turbidity is <10 NTU, consistent with ESD comments. If the aquifer can not be purged to <10 NTU, this condition will not preclude collecting a sample. The text will be revised to reflect 10 rather than 5 NTU.

11. **Comment:** The MFSP, Section 3.1.2, Page 3-2, Paragraph 5, discusses collection of surface water samples by dipping the sample bottles just below the surface. However, surface water samples should be collected at the 0.6 depth level (measured from the surface) for shallow waters and stream widths of less than 20 feet. Thus, the method described is not applicable in most cases. In addition, the timing at which preservatives will be added to sample bottles for analysis of volatile constituents should be described in more detail. The text should indicate that sampling will start at the least contaminated area and proceed to the most contaminated area (normally from downstream to upstream). Finally, the procedures for sampling in deeper waters (lakes, ponds, etc.) should be described, or the appropriate SOP should be referenced.

Response: Specific sampling procedures are described in the referenced SOP. The specifics will be deleted from this section.

12. **Comment:** The MFSP, Appendix B, SOP SA-1.2, Section 5.2.2, Page 6 of 25, discusses the general procedures for locating surface water sampling points. However, the text discusses collection points, but not spacing. The U.S. EPA Region 4 SOPQAM indicates that along a stream or river, three sampling stations between any two points of a major river change should be chosen (U.S. EPA, 1991). A major change includes a point where a tributary enters, a point where wastewater is discharged, or any point where there is a major change in the characteristics of the river (major bends or rapids, etc.). The text should be modified to include these U.S. EPA SOPQAM requirements.

Response: Specific sampling locations will be described in the site-specific SAPs.

13. **Comment:** The MFSP, Appendix B, SOP SA-1.3, Section 5.2, provides a description of soil sampling procedures. However, there is no discussion regarding the method in which soil sample locations will be chosen. The U.S. EPA Region 4 SOPQAM lists three methods of soil sampling: random, biased, and grid-based (U.S. EPA, 1991). The general methods to decide which type of sampling will be done at sites at Paris Island are not described. These methods should be mentioned in Section 2 of the MFSP and in the general guidelines of the SOP.

Response: Soil sample locations will be identified in site-specific SAPs.

14. **Comment:** The MFSP, Appendix B, SOP SA-2.2, Section 5.2, Page 3 of 4, describes several types of air sampling devices. However, no diagrams are presented showing typical sampling instruments or sampling containers. This information would be useful as air sampling is a relatively uncommon requirement at waste sites during investigations. Methods for determining wind direction and speed should also be included as this is critical in air sampling.

Response: The Navy agrees that air sampling as part of an IR investigation is very unlikely. This SOP was included for completeness. The Navy sees no value in adding a diagram(s) since it is unknown what instrument, if any will ever be used. Any specific requirements concerning air sampling, if implemented, will be included in the site-specific SAPs. No changes to this SOP are recommended

15. **Comment:** The MFSP, Page R-1, lists the references that were used to develop this document. However, the text does not list the U.S. EPA SOPQAM or U.S. EPA RF/FS Guidance as references. These references should also be listed for the development of the MFSP and SOP.

Response: The references will be added.

16. **Comment:** The Master Quality Assurance Plan (MQAP), Section 3.3.1, Page 3-4, Paragraph 5, states that field duplicates are either two samples collected independently at a sampling location or a single sample homogenized and split into two portions. According to the U.S. EPA SOPQAM, the definition for duplicates is two or more samples collected simultaneously into separate containers from the same source under identical conditions (U.S. EPA, 1991). The definition for a split sample is a sample that has been positioned into two or more containers from a single sample container or sample mixing container (U.S. EPA, 1991). Thus, there is a difference between duplicate and split samples, but the text in this section does not make this distinction clear. Thus, the duplicate and the split samples should be addressed separately in the text.

Response: The text will be revised accordingly to describe splits and duplicates.

SPECIFIC COMMENTS

Master Field Sampling Plan

1. **Comment:** MFSP, Section 2.3, Page 2-9, Paragraph 0, Sentence 1.

This sentence states that the top of the screened intervals for monitoring wells should be positioned approximately 2 feet above the stabilized water level. However, information presented in the Master Work Plan indicates that the groundwater level can fluctuate over 6 feet over the year. When placing the top of the screen, seasonal variation should be considered. Thus, the MFSP should address this issue.

Response: The text here and in the Master Work Plan will be clarified accordingly.

2. **Comment:** MFSP, Appendix A, Groundwater Level Measurement Sheet.

A blank form showing the data to be collected for groundwater level measurements is presented in Appendix A. However, there is no column or row to indicate the amount of free product found in a well. A section for notes, or another method to record product level, should be presented on this sheet or in Appendix A.

Response: A separate column is not intended to be provided. If free product is discovered, it can be annotated in the remarks entry.

3. **Comment:** MFSP, Appendix B, SOP SA-1.2, Section 5.3.5, Page 10 of 25, Paragraph 2, Bullet 6.

The text describes collection of samples in 40 ml septum bottles for volatile organic analysis. However, the timing for addition of preservatives is not presented. Sample water must either be added to a bottle already containing the preservative or the preservative added after sample collection. The time at which preservatives are added should be specified in the SOP.

Response: Sample preservation requirements are described in the MQAP, section 4.2. No change to the text of this SOP will be made.

4. **Comment:** MFSP, Appendix B, SOP SA-7.1, Section 5.2.1, Page 3 of 8.

This section describes the decontamination procedures for bailers and bailing lines. However, the material of construction of the bailer or lines is not mentioned. The Region 4 U.S. EPA SOPQAM requires different decontamination procedures for different materials of construction of the sampling equipment. The text should state the material of construction of the bailer and then use the appropriate U.S. EPA decontamination method for that material. In most cases, the U.S. EPA methods require wrapping of the equipment in aluminum foil at the end of the decontamination (especially if the equipment is stored or transported). The use of aluminum foil should be added to the cleaning procedures as outlined in the U.S. EPA SOPQAM.

Response: The MFSP requires that decon effort shall comply with Region 4 SOPs. This will be revised to specify the SOPQAM.

5. **Comment:** MFSP, Appendix B, SOP GH-1.3, Figure 1, Page 22 of 29.

This figure shows the standard size of core barrels and casing. However, no acronym list is provided for the abbreviations listed in the table. These abbreviations should be listed.

Response: It is expected that the certified well drillers that would reference this table will be familiar with this nomenclature, therefore it is considered unnecessary to define the acronyms. No changes proposed.

Master Quality Assurance Plan

1. **Comment:** MQAP, Section 3.3.2, Page 3-5, Paragraph 1.

The text addresses field blanks sampling for the investigation. However, the importance for collection of the field blanks is not addressed here. According to U.S. EPA SOPQAM, the field blanks should be collected in dusty environments and/or from areas where volatile organic contamination is present in the atmosphere and originating from a source other than the source being sampled (U.S. EPA, 1991). The text should address such importance for the collection of the field blanks in this section.

Response: The blanks currently described in the text as field blanks will be re-titled as source water blanks. These blanks are similar in concept to U.S. EPA Region IV organic/analyte free water blanks except that source water blanks will be collected for each source of water used in decontamination, steam cleaning, and well installation, not from a field organic/analyte free water generating system.

A description of and the requirements for field blanks, as defined by U.S. EPA Region IV, will also be added to the MCRD Parris Island project planning documents. (Note to Mark/Jason: This will also affect the FSP.)

2. **Comment:** The MQAP, Section 4, Table 4-1, Page 4-3.

The table presents preservation requirements; however, there are no column headings. The headings should be provided for each column.

Response: Table headings will be added.

References

United States Environmental Protection Agency, 1991, Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites, Office of Emergency and Remedial Response, Washington DC, EPA/540/P-91/001.

United States Environmental Protection Agency, 1988, Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA, Office of Emergency and Remedial Response, Washington, DC, EPA/540/6-89/004.

United States Environmental Protection Agency, 1994, Soil Screening Guidance, Office of Emergency and Remedial Response, Hazardous Site Control Division, Washington, DC, EPA/540/R-94/101, PB95-963529.

United States Environmental Protection Agency, 1991, Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region 4, Environmental Services Division, Athens, GA.

United States Environmental Protection Agency, 1994, Supplemental Guidance to RAGS: Region 4 Bulletin. Development of Health Based Preliminary Remediation Goals, Remedial Goal Options, and Remediation Levels. U.S. EPA Region 4, Waste Management Division, Atlanta, GA.

U.S. EPA REGION 4 - SCIENCE AND ECOLOGY SUPPORT DIVISION
RESPONSE TO COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME II
MCRD PARRIS ISLAND, SOUTH CAROLINA

Master QA Plan

1. **Comment:** Section 3.2.1

The formula for precision, expressed as %RPD, should appear as follows:

$$\%RPD = [(OR-DR) / ((OR+DR) / 2)] * 100$$

Response: The formula will be corrected.

2. **Comment:** Section 3.2.2

In this section, the term surrogate spike appears to be associated with a frequency of one per twenty samples of a like matrix. However, as detailed in '6.3, surrogate compounds are added to every sample in certain organic methods. The term should be stricken from this paragraph.

Response: The text will be clarified to indicate that surrogate spike analysis is performed for each sample analyzed using organic chromatographic analytical procedures.

3. **Comment:** Section 3.2.2, line 13

Reference should be made to the approved method specified for the particular project, rather than specifying the CLP Statement of Work as the resource for guidance in establishing recovery limits, since other methods (i.e. SW-846) contain different quality control limits.

Response: Agreed. Text will be revised accordingly.

4. **Comment:** Table 4-2

Because of the toxicity of mercury, the use of HgCl₂ as a preservative has been discontinued in all new methods (please refer to the applicable CLP SOW or Table 4-1, Chapter 4, p. 4-6 of SW-846, January, 1995, Rev. 3).

Response: Agreed. Text regarding use of HgCl₂ as a preservative will be deleted.

5. **Comment:** Section 5.4.1

The selection of analytical methodologies should be based on their applicability for the analytes and matrices of interest at the site, and their current acceptance by U.S. EPA. The latter requirement is to ensure that currently accepted quality control requirements, incorporated in the various methods, are included. The National Functional Guidelines, referenced in the paragraph cited, is a set of documents establishing data validation criteria under U.S. EPA's Contract Laboratory Program (CLP), but is not a resource for establishing the applicability or quality of analytical methods as the document implies.

Response: Agreed. Reference to the National Functional Guidelines will be removed from Section 5.4.1.

6. **Comment:** Table 5-1

Many of the methods listed in Table 5-2 are equivalent in terms of the analytes contained therein and their sensitivity to those analytes. The wastewater (600 series) methods do not include procedures for preparing soil or sediment matrices. In addition, there are other methods included in the list which are equivalent to each of these methods, and inclusive of both matrices. Similarly, the 200-series methods do not include as many options as the SW-846 methods for preparing solid matrices (e.g. microwave digestion). In addition, the quality assurance program and method-specific QC procedure requirements of SW-846 and the CLP are not present in the wastewater methods. Therefore, the majority of 200 and 600 methods may not need to be included in this table. The table should include, however, references to sample preparation procedures applicable to the matrices found on-site.

Response: References to 600- and 200-series methods will be removed from the table. References to sample preparation procedures will be added.

- a. **Comment:** Method 8260 encompasses the target analytes and sensitivity of method 8240, and can be used for routine analyses as well as low level. In addition, method 8240 is a packed GC column method, whereas method 8260 is a capillary GC column method, with tighter QC criteria. Since nearly all laboratories use the capillary technique, these QC criteria should be specified. Therefore, method 8240 can be eliminated from the table. Methods 8080, 8140, and 8150 are packed GC column methods. The equivalent capillary GC column methods are 8081, 8141, and 8151 respectively, and should be substituted in the table.

Response: Method 8240 will be removed from the table. Methods 8080, 8140, and 8150 will be replaced by Methods 8081, 8141, and 8151.

- a. **Comment:** Nearly all SW-846 analytical methods listed for solid matrices can also be applied to aqueous matrices. Exceptions include the cold vapor methods for mercury, and the cyanide methods.

Response: Agreed. Table will be revised accordingly.

- b. **Comment:** The graphite furnace procedures for metals, useful for obtaining low detection limits and for eliminating most interferences, can be complemented by the trace ICP methods (ILM04.0 or 6010A, Rev. 2). The two techniques should be considered equivalent if a trace ICP is used.

Response: Agreed. Trace ICP will most likely be used unless a laboratory does not have trace ICP capabilities, or unless only one or two specific GFAA metals are of interest for a site.

- c. **Comment:** It should be required that the most recent revision of any of these methods must be used. As such, it should be noted that the inorganic CLP SOW has been

revised and is currently ILM04.0. Update III of the SW-846 methods is currently out for comment, and should become final later this year.

Response: The table will be updated to reference the most current analytical methods/SOWs.

- d. **Comment:** In addition to a method for asbestos in solid media (p. 5-6), it may be advisable to also specify a method for air, which could be the polarized-light microscopic method, EPA600/M4-82, or ASTM D4240, a phase contrast microscopic method.

Response: It is believed that the references provided in the comment are not applicable for the analysis of asbestos in air samples. However, a method for asbestos in air, Transmission Electron Microscopy (TEM) EPA Level 2, will be added to the table.

- e. **Comment:** It should be noted that method 6010, listed on p. 5-7 for tin and silver, is an ICP method, not a flame method.

Response: Agreed. Method 6010 is an ICP method. Since tin and silver, as well as boron, are already covered by the ICP Screen, these three individual analytes will be deleted from the table.

- f. **Comment:** The methods remaining in Table 5-1, after the modifications recommended above (please refer to edited copy of Table 5-2, attached), are equally acceptable for achieving project DQOs. The SW-846 methods have the advantage of flexibility by including more choices for sample preparation. The CLP methods have the advantage of a prescribed data deliverable format. The CLP deliverables can be used to present SW-846 data, if modified to include appropriate QC limits. Therefore, it is recommended that SW-846 methods only be specified, with a modified CLP format deliverable.

Response: Although the remaining CLP and SW-846 methods are very similar, CLP methods will not be removed from the table in case their use is necessary to meet regulatory requirements. See the response to comment 12 regarding data package deliverables.

7. **Comment:** Section 5.5

This section should include the requirement that MDLs and IDLs must be instrument and/or matrix-specific, and should include a reference to the method of calculation (e.g. 40-CFR, Part 136, Appendix B).

Response: Text will be revised as requested.

8. **Comment:** Section 6

This section on internal QC checks should include discussion on interference check samples and serial dilutions for ICP analyses. In the discussion of interference check samples, it should be stressed that data must be provided for all of the elements in Interference Check Solution A, especially arsenic, barium, cadmium, lead, and selenium, which are most affected by high levels of calcium, iron, and aluminum. In addition, if SW-846 methods are specified, the QA plan

should require that duplicate injections and analytical spikes be done for graphite furnace methods.

Response: Information regarding interference check samples and serial dilutions for ICP analyses and duplicate injections and analytical spikes for GFAA analyses will be added to the text.

9. **Comment:** Sections 6.2 and 6.3

The reference to CLP SOW should be to the appropriate approved method.

Response: Agreed. Text will be revised

10. **Comment:** Section 6.4

No frequency is specified for the analysis of blank spike samples. It is recommended that one blank spike or laboratory control sample be analyzed per set of up to twenty samples. This type of sample should not be confused with the independent check or performance evaluation sample.

Response: A frequency of one blank spike or laboratory control sample per 20 samples, as applicable, will be added to the text. References to check samples will be removed from the text.

11. **Comment:** Section 6.5

No frequency is specified for method blanks. It is recommended that a method blank be prepared each day samples are prepared, or for each set of up to twenty samples prepared by a method.

Response: Section 6.5 currently states that method blanks are prepared and analyzed in accordance with the analytical method employed. However, the minimum requirement of one method blank per preparation blank and/or one per twenty samples will be added to the text.

12. **Comment:** Section 8

Data reduction and validation are greatly enhanced by complete summary information presented in a uniform format. This is the advantage of the CLP forms. As mentioned in paragraph 6, above, if SW-846 methods are specified, a modified CLP deliverable should be required.

Response: A discussion of the use of CLP-type deliverables for non-CLP data will be added to the text. However, as discussed in the second paragraph of Section 8.2, the level of data quality required will be determined by the project goals and intended use of data. Some data for certain sites may not require data validation. In turn, CLP-type data packages may not be required for all data. Therefore, deliverable requirements will be specified in project-specific planning documents.

13. **Comment:** Section 9

It is recommended that the use of performance evaluation (PE) samples be incorporated into the discussion of performance and system audits. Data from PE samples can be used to pre-qualify laboratories, and can serve as a routine check on laboratory performance.

Response: Laboratories are required to analyze performance evaluation (PE) samples as part of the Navy's laboratory evaluation process. A reference to these PE samples will be added to the text.

14. **Comment:** Section 12

A reference is made to U.S. EPA Region V. This should be changed to Region 4.

Response: The reference will be changed accordingly.

**BROWN & ROOT ENVIRONMENTAL
RESPONSE TO COMMENTS TO THE DRAFT MASTER WORK PLAN, VOLUME II
MCRD PARRIS ISLAND, SOUTH CAROLINA**

GENERAL COMMENTS

1. **Comment:** Appendix B: SOPs have been revised. See attached SOPs for revised SOPs and additional SOPs pertaining to field work. Text referring to SOPs will need to be updated accordingly.

Response: The most recent SOPs will be included and associated text will be revised accordingly.

SPECIFIC COMMENTS

Field Sampling Plan

1. **Comment:** Page 2-6, Section 2.2.4

May want to discuss in separate paragraphs the typical drilling method (hollow-stem augers, cable-tool, and rotary drilling) mentioned in the first sentence.

Response: Agreed. Will provide a brief description of these other drilling methods.

2. **Comment:** Page 2-11, Section 2.3, last paragraph, last sentence

States development of wells shall be conducted by Southern Division Well Installation Standards. These standards need to be identified or an SOP referenced or use the paragraph inserted.

Response: The reference to the Southern Division Standard will be replaced with the attached description.

3. **Comment:** Page 2-28, Section 2.9

Reference to 1927 NAD and 1929 NGVD are made. It should be noted that 1982 datum information will be used.

Response: The reference to 1927 NAD and 1929 NGVD will be replaced with 1982 datum.

4. **Comment:** Page 2-32, Figure 2-4

This figure is referenced on Page 2-30 and should, therefore, appear as Page 2-31.

Response: Agreed. The page numbers will be revised accordingly.

5. **Comment:** Appendix A

Field forms have been revised and are attached. Field forms for Well Development and Pump Testing, also attached, should be added.

Response: Agreed. Revised and additional forms will be included.

**RESPONSE TO U.S. EPA REGION 4 and SCDHEC COMMENTS TO THE
DRAFT MASTER WORK PLAN, VOLUME III (DECISION DOCUMENT)
MCRD PARRIS ISLAND, SOUTH CAROLINA**

U.S. EPA Region 4 Comments

General Comment:

1. **Comment:** Comparable RCRA language should be added to all sections.

Response: As per the South Carolina Department of Health and Environmental Controls (SCDHEC) comments dated July 11, 1997, RCRA language and requirements will be incorporated into Volume III of the Master Work Plan.

Specific Comments:

2. **Comment:** Page 2-1, Paragraph 2: It may be helpful to compile and present a preliminary list of actual or potential ARARs in the Master Work Plan.

Response: A preliminary listing of Federal and state ARARs will be presented in Chapter 2. Because potential chemicals of concern have not yet been identified, values of chemical-specific ARARs will not be specified at this time.

3. **Comment:** Page 2-3, Figure 2-1: If a non-time critical removal is conducted, an EE/CA must also be prepared, approved and made available to the public for review and comment before the Action Memo can be signed.

Response: Figure 2-1 will be updated. The fourth block of the Removal Program flow diagram will be revised to indicate "See Figure 3-4 for the time critical removal action process and Figure 3-5 for non-time critical removal action procedure".

4. **Comment:** Page 2-7, Section 2.1.5: The ecological risk assessment process should be initiated at the discovery component of the CERCLA process. Steps 1 through 5, as listed in Section 2.1.5.2, should be completed prior to initiation of the RI field effort. Step 6 (Site Field Investigation) should occur during the RI field effort.

Response: It is agreed that this is an appropriate schedule for the ecological risk assessment; however, this schedule may not be possible at some sites due to lack of chemical data before the RI/RFI has been performed. For those sites where sufficient data exist, steps 1 through 5 will be completed prior to initiation of the RI/RFI field effort. For those sites where limited data is available, steps 1 through 5 will be completed once sufficient information is collected from field activities.

In the Draft Final Decision Document, this comment is addressed in Section 2.2.4.1.

5. **Comment:** Page 2-11, Section 2.1.8: The ROD Declaration is not signed by the U.S. EPA Regional Administrator. Rather, U.S. EPA submits a letter of ROD concurrence to the appropriate DOD representative. In U.S. EPA Region 4 this authority has been delegated to the Associate Waste Division Director.

Response: The first bullet item which describes the Declaration will be revised to read, " Once U.S. EPA agrees with the Declaration a letter of ROD concurrence is submitted by U.S. EPA to the appropriate DOD representative which in U.S. EPA Region 4 is the Associate Waste Division Director.

In the Draft Final Decision Document, this comment is addressed in Section 2.2.7.

- 6A. **Comment:** Page 2-13, Section 2.1.10: NFA criteria: A. Criteria "c.": In addition to documentation by the BRA that the release poses no unacceptable risk, all ARARs must also be met in order to support an NFA decision. The text should be revised accordingly.

Response: The text will be revised to read: " ... (BRA) being conducted as part of the RI/RFI, it is shown that the release poses no unacceptable risk and all ARARs have been met and they support an NFA decision."

In the Draft Final Decision Document, this comment is addressed in Section 2.2.9.

- 6B. **Comment:** Page 2-13, Section 2.1.10B: Criteria "d.": The only way "d." would be applicable is if threshold criteria are met, making the site eligible for NFA under "c.". If the threshold criteria cannot be met, then remedial action would be required per the NCP. What is possible at this stage is a determination of technical impracticability leading to limited action, though not a NFA. This criteria should therefore be deleted.

Response: Item "d" will be deleted and second paragraph of 2.2.9 revised to reflect changes in "c" and the removal of "d".

7. **Comment:** Page 2-14, Section 2.1.11: Include a discussion of Preliminary Close Out Reports (PCOR) in this section. A PCOR must be completed for each RA (first and subsequent RAs), up until completion of the final RA. PCORs must be accomplished to take credit for construction and RA completion. Upon completion of the final RA, or documentation of all RAs as operational and functional, the Facility (not site) may be deleted from NPL.

Response: This paragraph will be revised to identify the difference between a PCOR for individual sites and the COR for the Facility. The paragraph will read:

"A Facility may be deleted from the NPL when all final ROD requirements are attained (i.e. the remedial objectives have been met). No site may be deleted from the NPL without an approved Close Out Report (COR). A Preliminary Close Out Report (PCOR) must be completed for every site in which a Remedial Action (RA) is taken. A separate PCOR is required for each RA completed. The PCOR provides...

Upon completion of the final RA, or documentation that all RAs are operational and functional, the Facility deletion process ...".

In the Draft Final Decision Document, this comment is addressed in Section 2.2.10.

8. **Comment:** Page 3-3, Figure 3-1: It would be helpful to include all documents used to support decisions at the appropriate points on this figure.

Response: Documents (e.g., Preliminary Assessment Report) used to support decisions will be illustrated in a table with the text of the document.

9. **Comment:** Pages 3-5 through 3-7, Section 3.1: The PA/RFA report concluding that no further action is required provides sufficient documentation of the NFA decision. An additional NFRAP decision document is not needed.

Response: The paragraph will be revised to incorporate this change.

- 10A. **Comment:** Page 3-6, Section 3.2: A. The goal of SI/CS should be biased, definitive (level III or higher), sampling and analysis at suspected source areas to confirm presence and absence of contaminants above agreed upon screening levels (RBC and/or Background). Sampling strategy should be inclusive of all exposure pathways, as this is a worst case, "walk-away" characterization of the site.

Response: The following sentences will be added to the first paragraph of section 3.2. "Sampling strategy should include all exposure pathways and be biased toward suspected source areas. Level III or higher analysis should be conducted.

- 10B. **Comment:** Page 3-6, Section 3.2: B. First Bullet - Define positive detects as above PQL, estimated values, and where actual analytic results are above the respective QAPP-established QL (e.g. based on RBC or other agreed-upon screening criteria).

Response: This definition of positive detection will be added to the first bullet exactly as stated above.

- 11A. **Comment:** Page 3-6, Section 3.2, Second Bullet: A. For screening purposes, U.S. EPA Region 4 prefers to screen contaminant levels against RBCs, and for essential nutrients, prior to performing the background comparison. This approach provides the risk managers with additional information regarding the potential risks posed by site contaminants. In general, the screening process described in Human Health Risk Assessment Bulletin No. 1 (Data Collection and Evaluation)¹ should be used to select COPCs.

Response: It is agreed that the screening process could be conducted in the order and manner suggested by U.S. EPA Region 4 Guidance. The text of Section 3.2 will be revised accordingly

- 11B. **Comment:** Page 3-6, Section 3.2: B. Since the site is an island and has only been occupied by the Marines, all pesticides present on the island are due to MCRD activities (which include mosquito and termite control). If residues are high enough to be a risk concern, then the risk concern needs to be documented in the risk assessment and addressed as a risk management issue. Thus preliminary screening of pesticides/herbicides via comparison with background is not appropriate.

Response: It is agreed that MCRD activity is responsible for pesticides found on Parris Island and that comparison to background may not be appropriate for screening COPC. However, background levels for pesticides will be used to develop and support risk management decisions. This will be reflected in the text accordingly.

- 11C. **Comment:** Page 3-6, Section 3.2: C. It may be helpful to prepare a background document which provides an agreed-upon background database and documents how this data will be used for decision making (i.e. risk management) purposes. For example, will background values be base-wide or site-specific? How might background values for surface water (wetlands & rivers) be determined and

utilized? When and how will organic background concentrations, such as pesticides and PAHs associated with pavement or surface water runoff be determined and utilized?

Response: Site-specific background data will be reviewed on a case-by-case basis to decide the proper approach for application of background data to the risk management process. The text will be edited to reflect this approach.

- 12A. **Comment:** Page 3-6, Section 3.2, Second Bullet: A. For screening purposes, U.S. EPA Region 4 prefers to use values reflective of an HQ of 0.1. The text should be revised accordingly.

Response: It is agreed that screening should be against RBC values at a 0.1 risk level. This bullet will be revised to use an HQ of 0.1.

- 12B. **Comment:** Page 3-6, Section 3.2: B. Region 4 has not accepted the Region 3 BTAG screening values (actually, many of these values appear overly conservative). Any proposed use of these values should be evaluated on a case-by-case basis. Regarding soil screening values, U.S. EPA Region 4 is currently considering use of soil criteria proposed under the Dutch Soil Cleanup (Interim) Act, as developed by Richardson, G.M. (1987).² In general, the magnitude, frequency and pattern of exceedances of these values should be considered using a best professional judgment approach.

Response: The paragraph following the last bullet will be revised to show that U.S. EPA Region 4 has not accepted the Region 3 BTAG screening values and their use will be evaluated on a case-by-case basis. The Dutch Soil Cleanup values will be mentioned, as will the use of judgment in evaluating the frequency and pattern with which such values are exceeded.

- 13A. **Comment:** Page 3-7, Section 3.2: A. For naturally occurring inorganic, the on-site maximum detected concentration should be compared to two times the average site-specific background concentration.

Response: It is agreed that twice the average background concentration should be used for screening. The text will be revised.

- 13B. **Comment:** Page 3-7, Section 3.2: B. The issue of groundwater protection must also be addressed in this section. If groundwater contaminant concentrations exceed the MCL, then soil concentrations should also be compared with the appropriate screening values (i.e. Region 3 RBCs for soil to water transfer, or values based on the most recent U.S. EPA soil screening guidance). If soil concentrations exceed these RBCs, additional investigation (RI) should be conducted to determine impact of soils/source on groundwater.

Response: It is agreed that groundwater protection could be addressed by comparing soil concentrations to soil to groundwater transfer RBCs and text will be revised to indicate this. However, the question of whether groundwater is actually usable (and therefore requiring protection) should be considered.

- 13C. **Comment:** Page 3-7, Section 3.2: C. If the data supports an NFA decision (i.e. no positive detects, or no hits above screening levels or background), this decision will be documented in the final and approved SI/CS report for the site. A NFRAP Decision Document is not required. Also if the data supports the need for further investigation (i.e. RI/RFI), then the RI/RFI report should be prepared in lieu of the SI/CS Report (i.e. parties should be flexible in determining the type of final report needed, depending on what the site data supports).

Response: The text of Section 3.2 will be revised to indicate that NFRAP Decision Document is not required and an NFRAP decision should be documented in the final and approved SI/CS report. Additionally, the text of this section will be changed to indicate that an RI/RFI report will be prepared in lieu of a SI/SC report if data support the need for further investigation.

14. **Comment:** Page 3.8, Section 3.3.1: Add protection of groundwater as an objective and to the list of criteria.

Response: The following will be added to the Criteria: "Are there sufficient data collected to evaluate the protection of groundwater?"

- 15A. **Comment:** Page 3-11, Figure 3-2: A. Default exposure inputs could also be determined at the time exposure pathways (e.g. receptors, exposure routes) are identified.

Response: It is true that exposure input parameters (default or site-specific) could be determined as pathways are identified. However, most of the anticipated parameters are included in Appendix A. These could be adjusted as site-specific information become available. No change to this figure based on this comment will be made.

- 15B. **Comment:** Page 3-11, Figure 3-2: B. Following the calculation of HI and ICR values, COCs should also be identified, and RGOs for these COCs should be calculated. This information should be presented in table form, as described in the U.S. EPA Region 4 Human Health Risk Assessment Bulletin No. 4 (Risk Characterization) and Bulletin No. 5 (Development of Risk-Based Remedial Options).¹

Response: It is agreed that COCs and RGOs should be mentioned in the figure as they will be required in the report. Figure and text will be revised.

- 16A. **Comment:** Page 3-15, Figure 3-3: A. The decision point "Are Assessment Endpoints Exceeded" should be rewritten to read "Is there potential for unacceptable risks to ecological receptors?", since the assessment endpoints are not fully developed until Step 3: Problem Formulation.

Response: This change will be incorporated into the text of Figure 3-3.

- 16B. **Comment:** Page 3-15, Figure 3-3: B. Ideally, Steps 1-5 of the Ecological Risk Assessment process should be completed, and documented in the SAP to the maximum extent possible. The goal is to minimize the need for additional field activities following completion of SAP field activities.

Response: As mentioned in the response to Comment 4, the text will describe this schedule and add that some circumstances will prevent adherence to it. It is assumed that no changes to Figure 3-3 are needed to address this comment.

17. **Comment:** Page 3-17, 3.3.2.2, page 3-17: As noted previously, U.S. EPA Region 4 has not yet approved any soil screening values.

Response: The revised text will note that U.S. EPA Region 4 has not approved any soil screening values, but that it is considering the Dutch Soil Cleanup levels. The Dutch values will be added to Appendix B, and the text will include the appropriate cautions regarding their use.

18. **Comment:** Page 3-18, Section 3.3.3: Decision point should be further clarified. Expand the text to state that the RI must adequately define the extent of contamination and characterize risk to human health and the environment in order to serve as the basis for a remedial decision.
- Response:** This section will be expanded to better define the requirements of the RI/RFI.
19. **Comment:** Page 3-18, Section 3.3.4: As discussed in Section 300.430(d) of the NCP, the Baseline Risk Assessment (BRA) is actually a component of the RI. It would thus be more appropriate to co-submit the BRA with the remainder of the RI, since the RI cannot be approved until the BRA is received and approved.
- Response:** It is agreed that the BRA should be co-submitted with the remainder of the RI/RFI. The text of Section 3.3 will be changed accordingly.
- 20A. **Comment:** Page 3-19, Section 3.3.3.2: A. Revise the decision point to read: "After final risk characterization, are there any unacceptable ecological risks associated with the site?". There is always some level of risk. The question is whether that risk is acceptable or unacceptable.
- Response:** Agreed. This change will be made.
- 20B. **Comment:** Page 3-19, Section 3.3.4.2: B. Criteria No. 2 - Conclusions concerning demonstrative environmental impacts using population/community studies are insensitive in determining impacts in CERCLA investigations, except in instances of gross impacts (e.g. alteration of benthic communities due to dissolved oxygen depletion from improperly functioning sewage treatment plants), due to problems in determining appropriate comparison locations and estimating natural population/community variations. In general, the time and resources needed to effectively conduct such a study should be weighed against the potential value, or information gained.
- Response:** It is realized that population/community studies may be insensitive for determining impacts that are not obvious. However, the documentation of gross impacts is important and may not require a large effort. In addition, even a small community study can provide potentially useful information on receptor presence and abundance that may not be available elsewhere. A brief discussion of these issues will be added to Appendix B.
21. **Comment:** Pages 3-20 through 3-21, Section 3.4: U.S. EPA Region 4 suggests that RGOs be presented as the last component of the BRA. From the RGOs, the risk manager chooses Remediation Levels (RLs) for the COCs. The RLs are then addressed in the FS. The presentation of all information pertinent to the selection of RLs in a single document should streamline, and facilitate consistency throughout, the remedial decision-making process.
- Response:** It is agreed that the RGOs should be presented as part of the BRA and this could be noted in the FS/CMS and RA/CMI sections. This is discussed in Appendix A. No revision to text is anticipated based on this comment.
22. **Comment:** Pages 3-26 through 3-33, Sections 3.8 & 3.9: Add that all removal actions taken will also be consistent with any final remedial action for the site.

Response: Text will be revised in both of these sections to take into consideration the final remedial objectives/action.

23. **Comment:** Page 3-27, Figure 3-4: Revise to include public comment requirements for time critical removal actions per Section 300.415(m) of the NCP.

Response: Figure 3-4 will be revised to include a public comment period.

24. **Comment:** Page 3-31, Figure 3-5: Revise to include public comment requirements for non-time critical removal actions per Section 300.415(m) of the NCP. Also, clarify why a determination as to whether "sufficient data exists" would be made both before and after finalization of the EE/CA and signature of the Action Memo.

Response: Figure 3-5 will be revised to include a 30-day public comment period in a new block before the "Sign Action Memo" block. In reference to the two diamonds questioning if sufficient data exists, the first questions data used to write the EE/CA and the second questions implementation of the EE/CA. The EE/CA may require additional field evaluation to better define the limits of the action.

Specific Comments on Appendices

Appendix A

25. **Comment:** Page A-1, Section 1.2.2: The groundwater class of the surficial and Tertiary Limestone Aquifer at Paris Island per U.S. EPA's Ground-water classification system (1986) must be determined prior to making a decision to eliminate any groundwater pathways from consideration in the risk assessment. The Master Work Plan should either present the proposed groundwater class, along with appropriate supporting data, or include plans for collecting any additional data needed to determine the class of these groundwaters. The statement that "the surficial aquifer, which is likely contaminated with products from Depot activities, is isolated from the deeper aquifer" must also be supported with appropriate data.

Response: Groundwater will be added as an exposure pathway and the equations and input parameters for groundwater pathways will be added to Appendix A. However, as concluded from the results of the Initial Assessment Study Report, groundwater is of poor quality and may be unusable as a drinking water source. Because, documentation of the groundwater classification is not available, sampling will be conducted for classification purposes and a technical memorandum will document the results of this characterization. If it is determined that the groundwater is unusable as a drinking water source, the groundwater exposure pathway will be removed from the human health risk assessment.

- 26A. **Comment:** Page A-3, Figure A-1: A. This figure should be revised to reflect all preceding comments, as applicable.

Response: The figure will be revised to reflect changes in the process as a result of the U.S. EPA comments and follow-up decisions.

- 26B. **Comment:** Page A-3, Figure A-1: B. In Step 2, expand data evaluation to include evaluation of data quality. Also, how do "screening criteria" differ from the residential RBCs?

Response: The first bullet of step 2 will be revised to read Data Evaluation and Evaluation of Data Quality. "Screening criteria" is a generic term and includes RBCs, ARARs, etc., not just residential RBCs. Screening Criteria will be moved to the third bullet to replace Residential RBCs.

- 26C. **Comment:** Page A-3, Figure A-1: C. All reports, documents, NFA recommendations, etc. should also be sent to State for concurrence.

Response: It is agreed that the State should be added to the decision-making process and the table will be revised to indicate this.

27. **Comment:** Page A-4, Section 2.0: In general, the screening process should follow the procedures described in the U.S. EPA Region 4 guidance (see previous comment). For instance, contaminant levels should be screened against RBCs prior to screening against background. Also, Section 2.2 should define/quantify the risk-based screening criteria (i.e. cancer risk of 10^{-6} , or HI of 0.1).

Response: It is agreed that the screening process should be reorganized according to U.S. EPA Region 4 Guidance and that the screening level should be defined. Changes to the text will be made to incorporate this comment.

28. **Comment:** Page A-4, Section 2.1, Paragraph 1: The text states that outliers may be eliminated from the site assessment based on visual inspection of the data set. However, it is not clear how many background samples are planned to be taken. There are statistical tests to check for outliers (approximately 15-20 samples are needed). The text should address the number of samples in the data set.

Response: The number of background samples will be relatively small and, therefore, samples will not be eliminated based on visual inspection of the data set. The statement concerning outliers will be removed.

29. **Comment:** Page A-6, Section 3.0: See previous comment on RGOs.

Response: As stated previously, RGOs will be included in the BRA process and so documented.

- 30A. **Comment:** Pages A-7 through A-8, Section 3.1.2: A. See previous comments regarding U.S. EPA Region 4 screening procedures.

Response: The order and nature of the screening process will be revised per U.S. EPA Region 4 Guidance.

- 30B. **Comment:** Pages A-7 through A-8, Section 3.1.2: B. The text should be revised to state that TICs will be included in the initial list of COPCs. The elimination of TICs as COPCs should follow the same procedures used for other chemicals.

Response: It is agreed that the TICs (tentatively identified compounds) can be treated as other detected chemicals in the COPC selection process. However, TICs will be identified as such during the COPC selection process. The text will be reworded accordingly.

30C. **Comment:** Pages A-7 through A-8, Section 3.1.2: C. If no RBC exists for a chemical, it should also be retained as a COPC.

Response: It is agreed that chemicals with no RBCs can be retained as COPCs if it has not been appropriately eliminated on some other basis. Text will be added to address this comment.

30D. **Comment:** Pages A-7 through A-8, Section 3.1.2: D. U.S. EPA Region 4 does not include frequency of detection (e.g. <5%) as a criteria for COPC screening. The second paragraph of Section 3.1.2.1 should therefore be deleted.

Response: Since U.S. EPA Region 4 does not accept frequency screening, this paragraph will be eliminated.

31. **Comment:** Page A-10, Paragraph 1: Use of the OPPTS lead concentrations of 2,000 to 5,000 mg/kg as screening criteria for children in a residential setting is inappropriate. This sentence should be deleted.

Response: The OPPTS screening levels for lead will not be used and references to them eliminated.

32A. **Comment:** Page A-10, Section 3.2: A. Per RAGS, COPC toxicity profiles should include a short description of all known effects, including the critical effect, and the concentration below which adverse effects in humans are not expected.

Response: It is agreed that COPC toxicity profiles should contain the components suggested to the extent they are available. The text now reflects this.

32B. **Comment:** Page A-10, Section 3.2: B. Refer to U.S. EPA Region 4 guidance for the preferred presentation format for toxicity data.

Response: The text will be revised to reflect the format for toxicity data presentation recommended by U.S. EPA Region 4.

32C. **Comment:** Page A-10, Section 3.2: C. The decision to use toxicity values not contained in IRIS or HEAST should also be made in consultation with U.S. EPA Region 4's Office of Technical Services (OTS).

Response: It is agreed that toxicity values not found in IRIS or HEAST will be confirmed with U.S. EPA Region 4 and the second to last sentence of the last paragraph of this section will be revised.

33. **Comment:** Page A-11, Section 3.2.1: The final sentence on this page should be revised to indicate that the TEFs will be used to convert concentrations of each dioxin and furan congener, and each cPAH, to toxic equivalents (TEQs) of TCDD, and BaP, respectively. Please refer to Human Health Risk Assessment Bulletin No. 2¹ for further explanation.

Response: It is agreed that the toxicity equivalent factors will be used to convert concentrations to the appropriate toxic equivalents. The text will be appropriately revised.

34. **Comment:** Page A-13, Section 3.3, final bullet: Revise the text to read "Quantify exposure in terms of mass of substance in contact with the body per unit body weight (mg/kg-day)."

Response: This change will be made.

35. **Comment:** Page A-13, Section 3.3.3: The text discusses the conceptual site model and potential receptors. However, military personnel have not been included in the list of receptors. In particular, the military recruit and drill instructor are very likely to be exposed to surface soils and surface water, due to the nature of the training. Although the exposure may not be of a long duration, it could be quite intense. The text should be revised to add these receptors to the conceptual site model.

Response: Initially, military personnel were considered to be non-permanent residents, but their inclusion as a separate receptor is probably appropriate on some sites. Text will be added to include contact by military personnel as an exposure scenario. Other sections of the document, including tables with equations and exposure assumptions, have been appropriately revised.

36. **Comment:** Page A-17, Fifth Bullet: This statement regarding the potable nature of the surficial and deeper aquifer, must either be supported with adequate data or deleted.

Response: This statement has been revised in accordance with the response to comment 25.

37. **Comment:** Page A-17, final paragraph: Unless more conservative exposure assumptions were used for part-time workers, it is acceptable to delete this pathway, since the full-time worker would provide a similar, more protective exposure scenario.

Response: The part-time worker will be eliminated as suggested since the only difference is in the number of days per year exposed compared to the full-time worker.

38. **Comment:** Page A-19, Section 3.3.4.1: In order for groundwater to be eliminated as a medium of concern, for purposes of the human health risk assessment, the following issues must be adequately resolved (i.e. supported with sufficient data):

- Per U.S. EPA's Ground-Water Classification System, is the groundwater beneath Parris Island considered potable (i.e. whether or not the groundwater is currently used as source of drinking water is not the issue).
- Does adequate data exist to support the statement that the deeper aquifer is isolated from the surficial aquifer beneath Parris Island, such that leaching of contaminants from the shallow to the deeper aquifer is not possible.

Response: During RI/RFI field activities, data will be collected to determine if groundwater is a unusable drinking source. This determination will be determined per the U.S. EPA's Groundwater Classification System. This is now reflected in the text.

39. **Comment:** Page A-21, Section 3.3.4.3: U.S. EPA Region 4 considers exposure to sediments for only those periods of time when they are not covered with surface water.

Response: As U.S. EPA Region 4 considers sediment only in the dry state, exposure periods/conditions will have to be decided on a site-by-site basis. The text will be revised to indicate only exposed sediments will be considered.

40. **Comment:** Page A-22, Section 3.3.4.4: The text states that the soil to air pathway will only be evaluated when a chemical has been identified as a COPC as a result of the comparison of maximum concentration to the soil to air RBC. However, if a COPC was selected because of any pathway comparison, the COPC should be evaluated for all potential pathways to arrive at the total risk from exposure to the media. The text should be revised accordingly.

Response: It is appropriate to include the soil to air pathway for COPCs selected on the basis of other pathways. The text will be revised accordingly.

- 41A. **Comment:** Page A-23, Section 3.3.5.1: A. Regarding the presentation of CTE, the preamble to the Superfund regulation states that RME estimates will provide the basis for the development of protective exposure levels for future use. Therefore, U.S. EPA Region 4 considers RME as the high end values on which the remedial decision will be based. The CTE is information to provide perspective for the risk manager and compliance with Agency guidance. As such, risk values other than those representing the RME should be placed, and discussed, in the Uncertainty sub-section of the Risk Characterization Section.

Response: As discussed at the July 9-10, 1997 Tier I Partnering Team meeting, CTE values will be used for risk management decisions. However, the values will not be calculated until such a need arises. The text of Section 3.3.5.1 will be revised accordingly.

- 41B. **Comment:** Page A-23, Section 3.3.5.1: B. In general, the exposure concentration must be defined as the lessor of the 95% UCL and the maximum detected value. Please revise the text accordingly.

Response: It is agreed that the exposure concentration should consistently note that the maximum detected value will be used if less than the 95% UCL. Text will be revised to reflect this comment.

42. **Comment:** Page A-25, Section 3.4: As commented previously, the Risk Characterization section should also present COCs and RGOs, in accordance with U.S. EPA Region 4 guidance.

Response: It is agreed that the COC and RGO discussion should be included in the risk characterization section and text will be added.

43. **Comment:** Page A-26, Section 3.4.2: When calculating the total HI, all HQs should be considered and summed initially, regardless of target organ. Target organs may be considered in subsequent evaluation and discussion of the initial resultant HI.

Response: The suggested discussion of target organ analysis will be used (to be done only after initial analysis without consideration of target organs).

44. **Comment:** Page A-29, Section 3.4.4: In order to help focus the Uncertainty Analysis, it is helpful to state clearly the source of each uncertainty, and then indicate whether this uncertainty may result in over- or underestimation of risk.

Response: Some sources of uncertainty may not be known until the risk assessment is complete. A general statement will be added to indicate that uncertainties will be clearly defined along with their effects on the risk determination.

45. **Comment:** Attachment A.3, Table 1: The table shows exposure frequency for trespassers as 12 days/year, based on professional judgment. This value seems low. Given the mild climate, a value of 36-52 days/year (1 day/week) may be more reasonable. The exposure frequency value in the table should be modified accordingly.

Response: It is agreed that trespassing only 12 days a year is low. A value of 45 days a year is frequently used and seems appropriate for this scenario. This value will be changed in Table 1 as well as in Tables 2, 3, 6, and 7.

46. **Comment:** Attachment A.3, Table 6: The table presents a dermal exposure formula from RAGS. However, the appropriate formula is the newer one from the Dermal Exposure Assessment: Principals and Applications (U.S. EPA, 1992).³ This table, and the other dermal exposure to water tables should be replaced with ones with the equations from the referenced dermal guidance.

Response: The cited dermal exposure to water formula appears to differ only for organics. It will be used instead of the older formula where appropriate, as now reflected in the text.

Appendix B

GENERAL COMMENTS

47. **Comment:** Appendix B, General Comment: Contaminants addressed in the Risk Assessment are referred to as "Chemicals of Potential Concern (COPC)". Contaminants which pose unacceptable risks and for which remedial goals are developed are "Chemicals of Concern (COC)".

Response: A global search will be conducted and text revised as appropriate.

SPECIFIC COMMENTS:

48. **Comment:** Page B-1, Section 2.0: A. What are "ecological transscreening levels"?

Response: This is an error. The sentence will be shortened and the word deleted.

48. **Comment:** Page B-1, Section 2.0: B. The AWQC are set to protect 95% of native aquatic populations 95% of the time. (Process Document, U.S. EPA, 1994)⁴

Response: The frequency with which protection is afforded can not be inferred from the technique used to develop AWQC (Erickson and Stephan, 1988 - EPA/600/3-88/018).

- 49A. **Comment:** Pages B-2 through B-3, Figure B-1: A. Step 1 does not consider decision criteria if a contaminant is determined to be present and there is no U.S. EPA Region 4 screening value available. Please revise to include.

Response: Step 1 will be rephrased to read "...U.S. EPA Region 4 screening values or similarly protective concentrations."

- 49B. **Comment:** Pages B-2 through B-3, Figure B-1: B. Steps 2-5 and Step 8 should be reevaluated for consistency with the conclusions presented in the Scientific Management Decision Point (SMDP) sections of the appropriate chapters in the Process Document (U.S. EPA, 1994).

Response: These steps were intended to reflect SMDPs in the Process Document. No further modifications to the figure (beyond response to comment 49.A.) appear to be needed.

50. **Comment:** Page B-4, First Paragraph: U.S. EPA Region 4's Screening Values are largely based on sediment guidelines from the State of Florida (MacDonald Environmental Sciences, Ltd. Approach to the Assessment of Sediment Quality in Florida Coastal Waters. Florida Department of Environmental Protection, November 1994), as well as Long et al., 1995, and Long and Morgan, 1991.

Response: This information will be added to the text.

51. **Comment:** Page B-4, Third Paragraph: The evaluation of the pattern of exceedances would consider the spacing of "hits", whether they form a gradient identifying a potential source, or are in a scattered pattern making the identification of a pathway difficult.

Response: This consideration will be added to the text.

52. **Comment:** Page B-6, Section 3.2, Second Paragraph: U.S. EPA Region 4 recommends data from observed effects, rather than the equilibrium partitioning approach, be used to derive screening values and preliminary effects benchmarks.

Response: The text will be revised to include this recommendation. If only values based on the equilibrium partitioning approach are available, they will not be used for screening.

53. **Comment:** Page B-7, Paragraph 2: U.S. EPA Region 4 does not recommend the scaling (e.g. using the interspecies application factor) to derive toxicity reference values (TRVs). If it is desired to use this approach, unscaled, as well as scaled, TRVs should be used for comparison.

Response: The text will be revised to specify that unscaled TRVs will be used, and that scaled values may be added for comparison.

54. **Comment:** Page B-8, Paragraph 2: U.S. EPA Region 4 would recommend the application of the safety factor of 10 to derive a NOAEL from LOAEL, but not the other safety factors (e.g., size of the database and nature of the study, mouse to shrew application, and scaling).

Response: U.S. EPA Region 4 recommendations will be included in the revised document; the option to include other factors will be retained for comparison to the recommended approach.

55. **Comment:** Page B-9, Section 3.3, Second Paragraph: Attempts to obtain bioaccumulation factors for contaminants from published articles should be made prior to assuming values.

Response: This will be added to the text.

56A. **Comment:** Pages B-11 through B-12, Section 3.4: A. The HQ for predatory receptors for bioaccumulative contaminants should address all sources of ingestion, including 1) incidental sediment/soil ingestion, 2) water ingestion, 3) contaminants in prey, and 4) dermal exposure, if appropriate.

Response: Section 3.4 will be changed to make it more clear that dose estimates include these routes, if applicable.

56B. **Comment:** Pages B-11 through B-12, Section 3.4: B. HQ values should be summed only if the contaminants have a common target organ or mode of toxicity. If the preliminary assessment results in an HQ of one or greater, field activities (e.g., tissue residue analysis, toxicity testing) should be conducted to reduce the uncertainties in the assumptions used in the preliminary assessment. Changing the assumptions does not reduce uncertainty.

Response: The text will be revised to add these conditions under which HQ values should be summed. The discussion of uncertainty will include the use of field data to reduce uncertainty.

57. **Comment:** Pages B-13 (Section 4.0), B-16 (Section 5.0, Endpoint 3.), and B-17 (Second Paragraph): "Field measurements of population/community structure" are of little use in CERCLA investigations due to problems in obtaining reference locations and a lack of understanding of natural variation in site population/communities. At best these measures are a one-way test, they can detect significant impacts but may not provide the information to determine acceptable levels of risk to ecological receptors.

Response: It is believed that field measurements of population/community structure are of value in CERCLA investigations. One could say that laboratory toxicity testing is of little use because its application to a variety of native populations under field conditions is uncertain. Although population and community measurements may not be as sensitive as toxicity testing for establishing dose-response relationships, they provide data on the types of organisms present at a site and their abundance. These data may be necessary for an adequate interpretation of risk based on chemical concentrations or toxicity testing. Therefore, an efficient design for ecological field study would include community characterization in addition to sampling for tissue concentrations and/or toxicity testing.

58. **Comment:** Page B-13, Section 4.1: Assessment endpoints are generally groupings of species which have a common pathway of exposure to contamination either as a feeding group (avian piscivores exposed to contaminants in fish) or due to a common habitat (terrestrial invertebrates). Assessment endpoints should not indicate the percentage of a population to be protected. An assessment endpoint such as "maintain fitness of wildlife populations" is too broad to be useful. Sensitive endpoints such as reproduction and growth are favored over mortality.

Response: The text will incorporate the concept of groupings of species which have a common pathway of exposure, but it is questionable to define such groupings as assessment endpoints. It is assumed that protection of populations in these groupings is an appropriate assessment endpoint. It has been found that reproduction and growth are sometimes less sensitive than other toxicity testing endpoints that can reduce the fitness of a population.

59. **Comment:** Pages B-14 through B-15, Section 4.2: AWQC is, at a minimum, equivalent to the State Water Quality Standards and an ARAR. Defaulting to ER-Ms would not be considered a replacement for site-specific (toxicity testing) information.

Response: The statements will be added to the text that an AWQC is an ARAR and that U.S. EPA Region 4 does not consider defaulting to ER-Ms as replacement for site-specific information.

60. **Comment:** Page B-15, Second Paragraph: The concept of “allowing limited mortality if the population is unlikely to be affected” is more complicated than readily apparent. Factors such as reproductive rates and natural variances (contaminant related mortality combined with naturally low population could lead the elimination of the population) must also be considered.

Response: Agreed. The concept was offered as an example of an issue that may concern, and be discussed by, the partners, not as one that should be accepted at face value.

61. **Comment:** Page B-17, Section 5.0, First Paragraph: The ER-L is based on direct toxicity. U.S. EPA Region 4 is using the toxicity screening value as a practical substitute for a food chain-based screening value.

Response: The comment is accepted. A parenthetical statement about the basis of ER-L will be added.

62. **Comment:** General Comment: U.S. EPA Region 4 recommends that multi-operable sites such as DOD facilities develop a strategy to evaluate the cumulative ecological risk for the facility. This is viewed as a passive activity organizing the individual operable unit data in a manner that will lead the development of a generalized statement concerning the potential for unacceptable risks from the base after the completion of remedial activities.

Response: This recommendation will be included in the Risk Management section (Section 8.0).

Appendix C

63. **Comment:** Appendix C, Page C-8: U.S. EPA Region 4 concurs with the Navy's use of ECTran as an appropriate analytical model for generating soil clean-up levels protective of groundwater. As is typical, the input and manipulation of the model is where U.S. EPA deviates with the facility. Section 3.2 of the ECTran document discusses determination of mixing zone thickness. Equation (7) and the saturated zone thickness between the top of the saturated zone and the depth of the deepest screened interval that shows detects of contaminants. The thickness of the saturated zone and a default value of 10' should NOT be used.

The last sentence in Section 3.2 refers to using a default value of 10' because a production well will have a minimum of a 10' screen. This is an inappropriate position for protection of groundwater. Even though a well is screened over a particular interval, the groundwater flow may come from discreet portions of that unit without contributions from the remaining 10'. Additionally a thin unit can discharge into a spring or stream and cause contamination to develop in areas and exceed the groundwater protection standard. In other words heterogeneity within a unit may cause the mixing zone to be considerably less than 10' and the ultimate calculations for the effects of contaminated leachate on groundwater may be underestimated.

Response: No drinking water well is in the study area, therefore, the 10-foot mixing depth argument based on drinking water well screen length will not be applied. Equation (7) and the thickness of contaminated saturated zone will be used to determine the impacted saturated thickness.

64. **Comment:** Appendix C, General Comment: The fence line (FL) discussed in this document should not always necessarily be the property boundary. Rather this point of compliance should be agreed on by the Parties on a case-specific basis.

Response: Agree. The proper fence line location (or exposure point) will be negotiated early on with the regulatory agencies before developing the remedial goal options (RGOs).

65. **Comment:** Appendix C, General Comment: The issue of the use of half lives is not as well defined in U.S. EPA Region 4 due to the site specific nature of determining what mechanisms are controlling the reduction in concentrations. If a generic modeling approach is the objective of this document, baseline soil clean-up levels protective of groundwater should be calculated first. The groundwater concentration history at the site can then be evaluated. There are various methods proposed for determining half lives based on site specific data (see Wiedemeier, T.H. et al 1995 and Wiedemeier, T.H. et al, 1996). Lastly, if actual site data is not obtainable for half lives, published half life data should be used as a starting point to calibrate the model. Several rounds of analytical data are necessary in order to perform an adequate verification of the calibration.

Response: No site-specific data is currently available for estimating decay half lives. Conservative literature values (i.e., reported maximum values) will be used as the first approximates for determining soil PRGs during the initial COC screening process. When sufficient site-specific data become available in the future, the suggested methods (i.e., Wiedemeier, T.H. et al) and/or simple fate and transport model calibrations will be applied to update the site-specific half lives for critical COCs identified in the initial study. As mentioned before, the initial COC selection/screening will be based on conservative assumptions when site-specific data is insufficient.

References:

¹ Supplemental Guidance to RAGS: U.S. EPA Region 4 Bulletins, Human Health Risk Assessment Bulletin Nos. 1-5 and Ecological Risk Assessment Bulletin Nos. 1-7, November, 1995.

² Evaluating Soil Contamination. Biological Report 90(2), U.S. Fish & Wildlife Service & U.S. Department of Interior, July 1990.

³ Dermal Exposure Assessment: Principals and Applications. EPA/600/8-91/001B, January 1992.

⁴ Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. Environmental Response Team, 1994.

Response to SCDHEC Comments

1. **Comment:** Section 1.0 Introduction

This document describes the regulatory authority of the Resource Conservation and Recovery Act (RCRA) properly but does not acknowledge RCRA in the introductory description (first paragraph). Please revise to include RCRA as part of the decision process.

Response: The text has been revised to indicate that RCRA is part of the decision process.

2. **Comment:** Section 1.3 Site Investigation Summary

This volume (V.III) of the Master Work Plan lists AOC A and AOC B as recommended for No Further Action. Volume I lists the IR Team determination recommends these AOCs for confirmation sampling. Please revise to correct.

Response: The text of Section 1.3 will be changed to indicate that AOCs A and B are recommended for confirmation sampling.

**RESPONSE TO COMMENTS FROM U.S. EPA REGION 4 FEDERAL FACILITIES BRANCH
DRAFT FINAL REMEDIAL INVESTIGATION WORK PLANS
FOR SITES 1/41, 2/15, and 3
MCRD PARRIS ISLAND, SOUTH CAROLINA**

Site 1 (Incinerator Landfill) and Site 41 (Former Incinerator):

1. **Comment- Pages 3-1 through 3-2, Section 3.0:** According to the text, "This section presents a conceptual model and discussion of potential migration and human and ecological exposure pathways." However, the text does not indicate whether the identified pathways are applicable to human receptors, ecological receptors, or both. Nor does it indicate if any other aspects of the exposure pathways identified are unique to the receptor being considered. This information must be provided to ensure development of an adequate site conceptual model.

Response: *The text of Section 3.0 will be revised to indicate which exposure pathways are applicable to human or ecological receptors. Also, if aspects of the identified exposure pathways are unique to a receptor, the text will also be revised to indicate this information.*

This comment is also relevant to the Draft Final Work Plans for Sites 2/15 and 3 and will be similarly addressed.

2. **Comment - Page 4-12, Section 4.2.2.3:** As discussed and agreed to during the July 1997 Partnering Meeting, two surface water samples will be collected and analyzed for hexavalent chromium for risk assessment purposes. Verification of the hexavalent chromium content of surface water samples is appropriate, since chromium has been detected in previous sediment samples and surface water samples have never been collected at this site.

Response: *It is agreed that Site 1 surface water samples should be analyzed for hexavalent chromium. The purpose of this sampling is to support toxicity assumptions that will be made during the human health risk assessment. The criteria for choosing media for this analysis is as follows.*

1. *If chromium was detected in a particular medium during past investigations of a site, a sample from this medium will be collected and analyzed for hexavalent chromium.*
2. *If chromium was not detected in a particular medium during past investigations of a site, a sample from this medium will be not be collected and analyzed for hexavalent chromium because chromium is not expected to be found in this medium.*
3. *If samples were not collected from a particular medium during past investigations, a sample from this medium will be collected and analyzed for hexavalent chromium.*

This comment is also relevant to the Draft Final Work Plans for Sites 2/15 and 3 and will be similarly addressed.

3. **Comment - Page 4-1, Section 4.0:** Given that a presumptive remedy approach will be used to evaluate this site, appropriate steps should be taken to notify the public of this approach. It is important that all stakeholders understand completely how the presumptive remedy process varies from the usual cleanup process, and the benefits of using this process. Please refer to U.S. EPA Directive entitled *Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills* (Directive No. 9355.0-67FS, December 1996) for information and documents to be provided to the public via mechanisms such as the Administrative Record, Fact Sheets, etc.

Response: *In accordance with the U.S. EPA Directive entitled Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills, the Administrative Record will include*

the necessary generic and site-specific information documenting the selection and non-selection of the containment presumptive remedy. The text of Section 4.0 will be revised to reflect this information.

This comment is also relevant to the Draft Final Work Plans for Sites 2/15 and 3 and will be similarly addressed.

4. **Comment - Page 5-2, Section 5.2:** The description of the ecological risk assessment to be performed must be comparable, in level of detail, to that provided for the human health risk assessment. For example, information on potential COCs (e.g. results of previous investigations), exposure pathways and receptor groups should be provided. Site-specific approaches to completing the generic steps identified in the Volume III Master Work Plan should also be provided. If Work Plan/SAP addendums will be generated to complete the plans for conducting the Ecological Risk Assessment (ERA), these addendums should also be clearly identified and described (e.g. purpose, contents, submittal criteria) in the present SAP.

Response: *Section 5.2 will be rewritten to describe the Navy's approach for conducting the ERA portion of the baseline risk assessment. In summary, the Navy believes that the ERA should be performed at the screening level only (Steps 1 and 2 of the ERA process) with data obtained from the upcoming RI/RFI rather than evidence of exceedences.*

This comment is also relevant to the Draft Final Work Plans for Sites 2/15 and will be similarly addressed.

For Site 3, the text of Section 5.2 will be revised to include the resolutions made during the September 8, 1997 conference call of the Tier I Partnering Team. During this conference call, the Team resolved to collect surface water and sediment samples at Site 3 at the onset of the field effort and to obtain analytical results from these samples within seven days. The need for biota sampling will be evaluated based on the results of this analysis. If necessary, biota sampling will be conducted before demobilization of the field effort.

Also for Site 3, a figure will be included in the SAP that overlays analytical data from the Verification Step onto the proposed surface water and sediment sampling points. This figure will be used as a check to ensure that Verification Step sample locations that exceeded U.S. EPA screening criteria are resampled and that areas not sampled during the Verification Step are sampled. Additionally, sampling points have been added within the Pond northeast of the Causeway and Ribbon Creek (southeast of the causeway) to evaluate the possible migration of contaminants from the site.

5. **Comment - Page 7-1, Section 7.2:** Regarding the rationale for the proposed sampling, the SAP currently includes some good general criteria for selecting sampling locations (e.g. "...a primary sampling concern will be to characterize the worst-case site condition of each media investigated.." (p. 4-6, Section 4.1); "If during field activities, the FOL deems that a location not contained in the Work Plan should be sampled because of surface features (e.g. depressions) that would cause preferential accumulation of contaminants, the sampling plan will be altered to include these locations (p. 7-1, Section 7.2).

However, as discussed and agreed to during the July 1997 Partnering Meeting, in order to assure that these goals are accomplished on a sample-specific basis, the RI Report will briefly describe (e.g. 1-2 sentences) the justification for each sample collected.

Response: *If during field activities, a sampling location is altered, rationale will be provided in the RI/RFI report that justifies such deviation.*

This comment is also relevant to the Draft Final Work Plans for Sites 2/15 and 3 and will be similarly addressed.

6. **Comment - Page 7-13, Figure 7-4:** As discussed and agreed to during the July 1997 Partnering Meeting, one additional monitoring well pair will be installed on the western and eastern sides of the landfill (total of 4 additional wells). This will result in the collection of a groundwater sample at least every 200-300' around the landfill perimeter, ensuring better characterization of potential offsite groundwater contaminant migration .

Response: *The monitoring wells will be added to the site-specific sampling plan for Site 1/41.*

7. **Comment - Page 10-1, Section 10.2:** Section 5.13.10 (Estimating Variability) of the U.S. EPA Region 4 SOPQAM cites the need for collecting material and preservative blanks. The Navy's decision not to collect QA/QC blanks for grout, sand bentonite and a preservative blank is acceptable, so long as the Navy assumes the risk for false positive detections.

Response: *As indicated in the response to comments to the Draft RI Work Plan for Site 1/41, false positive detections have not been a historical problem. However, QA/QC blanks for grout, sand, and bentonite will be collected and held for analysis pending the analytical results of the field investigation. If it is suspected that inorganic contaminants have been introduced by well installation materials, the samples will be sent to the laboratory for analysis. For inorganics, holding times will not be exceeded because the holding time for inorganic analysis is considerably longer than the 3-week turn-around time anticipated for analytical results. For organics, material blank analysis is not anticipated because monitoring well purging and development activities should dissipate minor organic contamination if present.*

This comment is also relevant to the Draft Final Work Plans for Sites 2/15 and 3 and will be similarly addressed.

Site 2 (Borrow Pit Landfill) and Site 15 (Dirt Roads):

1. **General Comment:** Comments 1, 3, 4, 5 and 7 on the Site 1/41 SAP are also applicable to the Site 2/15 SAP.

Response: *Please see the response to comments to Site 1/41 on the preceding pages.*

2. **Comment - Page 7-6, Figure 7-1:** As discussed and agreed to during the July 1997 Partnering Meeting, one additional sediment/surface water pair will be collected from the portion of the inlet closest to the treeline and the bermed southwestern edge of the landfill. These samples will be biased to monitor for the maximum concentrations of contaminants migrating from the landfill into this adjacent marshy area.

Response: *One sediment/surface water sampling location will be added to the site-specific SAP for Site 2/15.*

Site 3 (Causeway Landfill):

1. **General Comment:** Comments 1, 3, 4, 5 and 7 on the Site 1/41 SAP are also applicable to the Site 3 SAP.

Response: *Please see the response to comments to Site 1/41 on the preceding pages.*

2. **Comment - Pages 2-8 through 2-13, Section 2.3:** The results of previous investigations

(Verification Study and Extended Site Inspection) indicate that Site 3 contaminants may have adversely impacted ecological receptors. Several surface water and sediment samples contained metal concentrations which exceed Region 4 ecological screening values. Biological tissue samples contained pesticide and PCB concentrations which need to be evaluated for their effects on ecological receptors. Other sections of the present Work Plan (in particular, Sections 4 and 7) fail to acknowledge these findings, or specify how the proposed sampling will produce adequate information to address and resolve these concerns. In order for U.S. EPA to consider the RI for this site complete, it must include an adequate evaluation and assessment of this earlier data. The Work Plan must therefore be revised to address this information.

Response: *Please see the response to Comment Number 4 made to the site-specific sampling plan for Site 1/41.*

3. **Comment - Page 4-1, Section 4.0, Paragraph 3:** Please revise the second sentence to read "Additionally, if analytical results indicate the lower surficial aquifer has been adversely impacted by the landfill....".

Response: *This change will be made.*

4. **Comment - Page 7-9, Figure 7-3:** It is unclear why two of the three shallow wells proposed will be located at the northwestern end of the causeway, when "historical records indicate that more solid waste debris may have been disposed in the southeastern portion of the causeway" (p. 7-1). The RI Report submitted must clearly describe how the groundwater samples collected address the "primary sampling concern to characterize the worst-case site condition of each media investigated.." (p. 4-6, Section 4.1).

Response: *As discussed in the Tier I Partnering Meeting on July 10, 1997, surface water and sediment samples will be collected during the initial portion of the field investigation. The analytical results of these samples will indicate whether contaminant migration has occurred. Based on these results, the locations of the proposed monitoring wells will be moved, if necessary, to areas where contaminant migration has been observed.*

The text of Section 4.0, 6.0, and 7.0 will be revised accordingly to reflect the Partnering Team discussion.

**RESPONSE TO COMMENTS FROM U.S. EPA REGION 4 FEDERAL FACILITIES BRANCH
DRAFT FINAL REMEDIAL INVESTIGATION WORK PLANS
FOR SAPS (SITES 1/41, 2/15, and 3) - REVISED SECTION 5.2
MCRD PARRIS ISLAND, SOUTH CAROLINA**

1. **Comment - Section 5.2 - Paragraph 1:** The paragraph is OK, pending receipt of acceptable description of ecological risk methods/steps in MWP v. III.

Response: *Comments made to the ecological risk approach contained in Volume III of the Parris Island Master Work Plan have been incorporated.*

2. Section 5.2 - Paragraph 3:
 - a) **Comment:** Replace "Problem Formulation" w/ "Preliminary Problem Formulation."

Response: *The text will be revised.*

 - b) **Comment:** Include groundwater discharge to surface water as an exposure media.

Response: *Groundwater discharge to surface water will be included as an exposure media.*

 - c) **Comment:** Replace "soil organisms" and "terrestrial wildlife feeding on soil organisms" with "terrestrial invertebrates."

Response: *"Soil organisms" will be replace with "terrestrial invertebrates." However, "terrestrial wildlife feeding on soil organisms" will be replaced with "terrestrial vertebrates."*

 - d) **Comment:** Replace "sediment-dwelling organisms" with "benthic invertebrates."

Response: *The text will be revised.*

 - e) **Comment:** Replace "fish-eating birds" with "avian piscivores."

Response: *The text will be revised.*

 - f) **Comment:** Replace "shellfish-eating mammals" with "mammalian piscivores."

Response: *The text will be revised.*

3. **Comment - Section 5.2 - Paragraph 4:** Preliminary assessment should not consider/calculate midpoint concentrations or midpoint ingestion rates. The initial screening phase should use only the most conservative values. Delete all references to midpoint values.

Response: *Agree. The text will be revised accordingly.*

4. **Comment - Section 5.2 - Paragraph 5:** Regarding "recommendations for further investigation", "additional field work" is the only truly appropriate means for verifying or disproving potential ecological effects identified during the screening step. Modeling results are likely to be inconclusive, and risk management comes into play only after site risks are adequately characterized. If the technical memorandum indicates the need for additional work, a work plan addendum would also need to be submitted.

Response: *Agree. The text will be revised accordingly.*

**SCDHEC COMMENTS
NOTICE OF TECHNICAL INADEQUACY
DRAFT FINAL REMEDIAL INVESTIGATION WORK PLAN
SITE 1/41 - INCINERATOR LANDFILL AND FORMER INCINERATOR
MARINE CORPS RECRUIT DEPOT
PARRIS ISLAND, SOUTH CAROLINA**

(S. PETERSON, REVIEWER)

1. **Comment:** Please modify the title of this work plan to include RCRA terminology. As known, understood, and 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 reviewed this document to meet the requirements of an RCRA Facility Investigation (RFI) Work Plan. The Department is willing to recognize the following dually-titled document:

Draft Final RCRA Facility Investigation/Draft Final Remedial Investigation Work Plan
for
SWMU/Site 1 - Incinerator Landfill and
SWMU/Site 41 - Former Incinerator

or

Draft Final
RCRA Facility Investigation/Remedial Investigation Work Plan
for
SWMU/Site 1 - Incinerator Landfill and
SWMU/Site 41 - Former Incinerator

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

Response: The suggested title will be used. However, in accordance with Navy CLEAN format, the word "FINAL" will not be included in the title of the FINAL report.

2. **Comment:** According to the Region 4 RFI Work Plan Checklist, prepared by A.T. Kearney, dated 1989, an EPA Identification Number should be included on the cover page. The EPA identification number for MCRD Parris Island is SC6 170 022 762. Please include that identification number on the Final Work Plan.

Response: The EPA Identification Number will be added to the cover page of the document.

(D. HARGROVE, REVIEWER)

1. **Comment:** The title should reflect whether this document is a "DRAFT" or a "FINAL" document. Please revise.

Response: The last version of the site-specific sampling and analysis plan (SAP) for Site 1/41 was incorrectly missing the words "DRAFT FINAL" in the title of the document. However, Navy CLEAN format stipulates when a document is issued "FINAL", the words "DRAFT" or "DRAFT

FINAL” are to be removed from the title of the report. As such, the title will not contain the “FINAL” designation.

2. **Comment:** Response to Comments

Only the comments concerning the “DRAFT” version of this document should be included in this section. The Division of Hydrogeology understands that some comments made on other work plans have been incorporated into this document due to comparable applicability. Any additional comments that have been incorporated into this document should be included at the end of this section. Please revise.

Response: Comments made to the “DRAFT” and “DRAFT FINAL” Work Plans for Site 1/41 will be included in the Response to Comments Section of the “FINAL” Work Plan. Additionally, applicable comments concerning the Work Plans for Site 2/15 and 3 will be added to the end of this section.

**SCDHEC COMMENTS
NOTICE OF TECHNICAL INADEQUACY
DRAFT FINAL REMEDIAL INVESTIGATION WORK PLAN
SITE 2 - BORROW PIT LANDFILL AND SITE 15 - DIRT ROADS
MARINE CORPS RECRUIT DEPOT
PARRIS ISLAND, SOUTH CAROLINA**

(S. PETERSON, REVIEWER)

1. **Comment:** Please modify the title of this work plan to include RCRA terminology. As known, understood, and 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 reviewed this document to meet the requirements of an RCRA Facility Investigation (RFI) Work Plan. The Department is willing to recognize the following dually-titled document:

Draft Final RCRA Facility Investigation/Draft Final Remedial Investigation Work Plan
for
SWMU/Site 2 - Borrow Pit Landfill and
SWMU/Site 15 - Dirt Roads

or

Draft Final
RCRA Facility Investigation/Remedial Investigation Work Plan
for
SWMU/Site 2 - Borrow Pit Landfill and
SWMU/Site 15 - Dirt Roads

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

Response: The suggested title will be used. However, in accordance with Navy CLEAN format, the word "FINAL" will not be included in the title of the FINAL report.

2. **Comment:** According to the Region 4 RFI Work Plan Checklist, prepared by A.T. Kearney, dated 1989, an EPA Identification Number should be included on the cover page. The EPA Identification Number for MCRD Parris Island is SC6 170 022 762. Please include that Identification Number on the Final Work Plan.

Response: The EPA Identification Number will be added to the cover page of the document.

(D. HARGROVE, REVIEWER)

1. **Comment:** The title should reflect whether this document is a DRAFT or a FINAL document. Please revise.

Response: The last version of the site-specific SAP for Site 2/15 was incorrectly missing the words "DRAFT FINAL" in the title of the document. However, Navy CLEAN format stipulates when a document is issued "FINAL", the words "DRAFT" or "DRAFT FINAL" are to be removed from the title of the report. As such, the title will not contain the "FINAL" designation.

2. **Comment:** Response to Comments

Only the comments concerning the DRAFT version of this document should be included in this section. The Division of Hydrogeology understands that some comments made on other work plans have been incorporated into this document due to comparable applicability. Any additional comments that have been incorporated into this document should be included at the end of this section. Please revise.

Response: Comments made to the "DRAFT" and "DRAFT FINAL" Work Plans for Site 2/15 will be included in the Response to Comments Section of the "FINAL" Work Plan. Additionally, applicable comments concerning the Work Plans for Site 1/41 and 3 will be added to the end of this section.

3. **Comment:** Response to comment #1

This response clarifies that the groundwater risk assessment will be performed according to CERCLA requirements. However, compliance with the State Primary Drinking Water Standards has not been specified. According to the National Oil and Hazardous Substances Contingency Plan (NCP), remedial alternatives should be evaluated against NCP threshold criteria for overall protection of human health, and compliance with applicable or relevant and appropriate requirements (ARARs). The State Primary Drinking Water Standards are ARARs and must be followed. This comment does not require a specific revision. This is for future reference to be acknowledged in the resulting report.

Response: This comment is acknowledged.

4. **Comment:** Response to comment #8

The Division of Hydrogeology understands and accepts the reasoning behind removing Monitoring Well PAI-02-GW06 from the current investigative work. However, it should be noted that this well might be required at a future date to address the Floridan Aquifer.

Response: As discussed in Section 4.0, further investigation to evaluate potential impacts to the Floridan aquifer may be warranted if analytical results indicate the lower surficial aquifer has been adversely impacted by the landfill and the competency of the Hawthorn Formation as a confining layer has not been established.

**SCDHEC COMMENTS
NOTICE OF TECHNICAL INADEQUACY
DRAFT FINAL REMEDIAL INVESTIGATION WORK PLAN
SITE 3 - CAUSEWAY LANDFILL
MARINE CORPS RECRUIT DEPOT
PARRIS ISLAND, SOUTH CAROLINA**

(S. PETERSON, REVIEWER)

1. **Comment:** Please modify the title of this work plan to include RCRA terminology. As known, understood, and 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 reviewed this document to meet the requirements of an RCRA Facility Investigation (RFI) Work Plan. The Department is willing to recognize the following dually-titled document:

Draft Final RCRA Facility Investigation/Draft Final Remedial Investigation Work Plan
for
SWMU/Site 3 - Causeway Landfill

or

Draft Final
RCRA Facility Investigation/Remedial Investigation Work Plan
for
SWMU/Site 3 - Causeway Landfill

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

Response: The suggested title will be used. However, in accordance with Navy CLEAN format, the word "FINAL" will not be included in the title of the FINAL report.

2. **Comment:** According to the Region 4 RFI Work Plan Checklist, prepared by A.T. Kearney, dated 1989, an EPA Identification Number should be included on the cover page. The EPA Identification Number for MCRD Parris Island is SC6 170 022 762. Please include that Identification Number on the Final Work Plan.

Response: The EPA Identification Number will be added to the cover page of the document.

(D. HARGROVE, REVIEWER)

1. **Comment:** The title should reflect whether this document is a DRAFT or a FINAL document. Please revise.

Response: The last version of the site-specific SAP for Site 3 was incorrectly missing the words "DRAFT FINAL" in the title of the document. However, Navy CLEAN format stipulates when a

document is issued "FINAL", the words "DRAFT" or "DRAFT FINAL" are to be removed from the title of the report. As such, the title will not contain the "FINAL" designation.

2. **Comment:** Response to Comments

Only the comments concerning the DRAFT version of this document should be included in this section. The Division of Hydrogeology understands that some comments made on other work plans have been incorporated into this document due to comparable applicability. Any additional comments that have been incorporated into this document should be included at the end of this section. Please revise.

Response: Comments made to the "DRAFT" and "DRAFT FINAL" Work Plans for Site 3 will be included in the Response to Comments Section of the "FINAL" Work Plan. Additionally, applicable comments concerning the Work Plans for Site 1/41 and 2/15 will be added to the end of this section.

3. **Comment:** Response to comment #3

This response clarifies that the groundwater risk assessment will be performed according to CERCLA requirements. However, compliance with the State Primary Drinking Water Standards has not been specified. According to the National Oil and Hazardous Substances Contingency Plan (NCP), remedial alternatives should be evaluated against NCP threshold criteria for overall protection of human health, and compliance with applicable or relevant and appropriate requirements (ARARs). The State Primary Drinking Water Standards are ARAR and must be followed. This comment does not require a specific revision. This is for future reference to be acknowledged in the resulting report.

Response: This comment is acknowledged

4. **Response to Comment #4 to the Draft Work Plan for Site 3**

The following restates the comment made to the Draft Work Plan by D. Hargrove and the response to this comment:

"Comment: Table 4-1, Investigation Rationale, text page 4-4:

The section discussing data gaps/needs for the groundwater proposes risk assessment. As stated in comment 3(a), all groundwater in the state is classified as a potential drinking water source. In accordance with R.61-68 Water Classification and Standards, all groundwater of the State is classified as Class GB. This classification requires that concentrations of inorganic and organic constituents must not exceed established MCLs. Completing a risk assessment of the concentrations of contaminants found in the groundwater is inappropriate when concentration limits are established by regulation. In addition, MCLs are established at concentrations that already account for risk to human health.

Response

Please refer to the response to Comment 2 of this section."

- a. **Comment:** This response should reference the response to Comment #3 (not #2).

Response: The response will reference Comment #3.

- b. **Comment:** This response clarifies that the groundwater risk assessment will be performed according to CERCLA requirements. However, compliance with the State Primary Drinking

Water Standards has not been specified. According to the National Oil and Hazardous Substances Contingency Plan (NCP), remedial alternatives should be evaluated against NCP threshold criteria for overall protection of human health, and compliance with applicable or relevant and appropriate requirements (ARARs). The State Primary Drinking Water Standards are ARAR and must be followed. This comment does not require a specific revision. This is for future reference to be acknowledged in the resulting report.

Response: This comment is acknowledged