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MCRD PARRIS ISLAND
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U S NAVY RESPONSES TO SOUTH CAROLINA DEPARTMENT OF HEALTH AND
ENVIRONMENTAL CONTROL COMMENTS ON TECHNICAL MEMORANDUM FOR SITE 3
CAUSEWAY LANDFILL MCRD PARRIS ISLAND SC
7/1/2008
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST

General Comments

1. **Comment:** Typically the Department does not review a document that is received without a Navy cover; however, due to the major revisions that will be necessary to this document, the Department has expedited their review and submission of comments. In the future documents without official Navy cover will not be reviewed.

Response: The document was submitted as a working draft instead of as a formal D1 or D2 submittal.

2. **Comment:** All comments to the Technical Memorandum must be resolved prior to moving forward with the Proposed Plan and Record of Decision.

Response: The schedule for the Proposed Plan and Record of Decision will be revised once the results of the proposed fish tissue sampling have been incorporated into the Site 3 Technical Memorandum and the Technical Memorandum has been finalized.

3. **Comment:** Prior to implementing fishing restrictions as a Land Use Control, the Department requires fish tissue samples with elevated concentrations of site related contaminants.

Response: The need for Land Use Controls (fishing restrictions) will be evaluated once the results of the proposed fish tissue sampling have been incorporated into the Site 3 Technical Memorandum and the Technical Memorandum has been finalized.

GENERAL COMMENTS

1. **Comment:** It is unclear in the document if the contamination present is site related or from non-point source, road run-off, basewide pesticide applications or other forms of anthropogenic contamination. Please be sure that the document clearly identifies contamination attributable to the landfill and does not over estimate risk based on background.

Response: Note – the response presented here incorporates responses to the following comments from SCDHEC and EPA (including discussion points on SCDHEC comments) pertaining to background:

- Susan Byrd (SCDHEC) – General Comment No. 1
- Susan Byrd (SCDHEC) – General Comment No. 2
- Susan Byrd (SCDHEC) – Specific Comment No. 3
- EPA General Comment No. 3
- EPA Specific Comment 13

Six background samples were collected for each media (except groundwater) at Parris Island. The background samples were collected from Pickney Island and an undeveloped area on the southern portion of Parris Island. The background data sets for Parris Island were presented in the RFI/RI for Site/SWMU 3 as Appendix C-1 (TtNUS, November 1999). The entire sediment background data set has been incorporated into the revised Technical Memorandum as Appendix D.

In addition to the background data set, typical facility pesticide concentrations were identified for soil/sediment. This data set was developed by compiling pesticide concentrations in soil/sediment samples collected at non-pesticide sites at Parris Island and was presented in the RFI/RI for SWMU 3 as Appendix F-4. This data has also been incorporated into the revised Technical Memorandum as part of Appendix D.

The text has been revised to indicate that the background sediment data set and the typical facility pesticide concentration data set are included in Appendix D in the revised Technical Memorandum. The Appendix provides information associated with the development of the background sediment data set and the typical facility pesticide concentration data set (as presented in the Site 3 RFI/RI).

The screening values for background sediment (2 times the mean background/typical facility pesticide concentrations) have been incorporated into the appropriate screening tables and used in the screening of the Post-IRA sediment data to determine if contamination present in the Post-IRA sediment at Site 3 is site related or not. Any reference to $\frac{1}{2}$ the background/typical facility sediment concentration has been removed from the revised Technical Memorandum.

For the HHRA in the revised Technical Memorandum, any sediment contaminant whose maximum concentration does not exceed the screening value (2 times the mean background/typical facility pesticide concentration) was not selected as a sediment COPC and will not be analyzed for in the fish tissue samples that will be collected in October 2009. For those contaminants whose

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maximum concentration exceeds the screening values, comparison to the range of background/typical facility pesticide concentrations (Appendix D of the revised Technical Memorandum) will be made in the uncertainty section of the HHRA in the final Technical Memorandum (if the fish tissue data warrants the discussion).

For the ecological risk assessment in the revised Technical Memorandum, background/typical facility pesticide concentrations were not considered in the initial determination of ecological COPCs (Steps 1 and 2 of EPA's 8-step ecological risk assessment process). However, the Post-IRA sediment data were compared to 2 times the mean background/typical facility pesticide concentrations in Step 3A (COPC Refinement). The determination of COPCs remaining at the end of Step 3A was made using a lines of evidence approach and was not based solely on comparison to background/typical facility pesticide concentrations. Food chain modeling was to be performed only for those COPCs whose average concentration exceeded the 2 times mean background/typical facility pesticide concentration (food chain modeling was not performed in the revised Technical Memorandum because none of the average sediment concentrations exceeded the 2 times mean background/typical facility pesticide concentration).

Discussion on the bioavailability of mercury in an estuarine environment will be included in the uncertainty sections, if mercury in fish tissue presents a potential risk (human health or ecological) and can not be attributed to background conditions.

Fish tissue samples are to be collected in October 2009 and the results of this sampling will be used to evaluate risks associated with human consumption of fish exposed to contaminants in the sediment in the 3rd Battalion Pond. Fish tissue samples are also being collected from General's Landing Creek (reference location) to try and differentiate chemicals present in the fish as a result of exposure to Site 3 contaminants from chemicals present in the fish as a result of exposure to background/anthropogenic sources.

2. **Comment:** In continuation with Comment 1, the Department recommends a more thorough discussion and use of the background data set. Looking at the entire background data range indicates that most of the COPCs for the human health and ecological risk assessments appear to be attributable to background. Although the media of concern at Site 3 is sediment, the Department recommends the use of EPA's *Guidance for Characterizing Background Chemicals in Soil at Superfund Sites* (June 2001).

Response: See the Response to General Comment No. 1.

3. **Comment:** During a August 21, 2008, recent MCRD Team conference call it was recommended that the MCRD contact Mr. Butch Younginer of DHEC's Bureau of Water at (803) 898-4399 regarding SC fishing advisories and applicable fish tissue data from the area surrounding MCRD. Currently SC has fish advisories in the area of SWMU 3 for shark, tilefish, king mackerel, and swordfish. However, these species are not likely to be present in the estuary habitat associated with SWMU 3. Mr. Younginer also stated that the bioavailable form of mercury, also known as methyl mercury, is not the predominant form of mercury present in the saline wetland environment. SCDHEC fish tissue data does not indicate bioaccumulation of mercury in the saltwater estuary.

Response: Based on discussions with U.S. EPA and SCDHEC, fish tissue samples will be collected from the 3rd Battalion Pond and from General's Landing Creek (reference location). Top

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predators (red drum or croakers) will be collected to evaluate bioaccumulation of chemicals through the food chain (mercury and copper) and bottom feeders will be collected to evaluate exposures to chemicals that are found predominantly in sediment (PCBs and pesticides). The samples to be collected from General's Landing Creek (reference location) will be used to try and differentiate chemicals present in the fish as a result of exposure to Site 3 contaminants from chemicals present in the fish as a result of exposure to background/anthropogenic sources.

Discussions on the State's fishing advisories and on the uptake of mercury will be included in the uncertainty section of the HHRA in the final Technical Memorandum (if the fish tissue data warrants the discussion).

4. **Comment:** In accordance with EPA risk assessment guidance, the Department recommends the use of the 95% Upper Confidence Limit (UCL) instead of the maximum and average concentrations for the exposure point concentration in the human health risk assessment.

Response: Maximum sediment concentrations were used in the revised Technical Memorandum to identify those chemicals that are to be analyzed in the fish tissue samples. Maximum fish concentrations will be used in the screening of the data to determine those chemicals that will be evaluated in the HHRA in the final Technical Memorandum. As discussed with U.S. EPA and SCDHEC, average fish concentrations will be used as the exposure point concentration when evaluating the magnitude of the risks in the HHRA in the final Technical Memorandum.

The ecological risk assessment used the maximum and mean concentrations in Steps 1 through 3A in the revised Technical Memorandum. The 95% UCL was to be used for calculations if the ecological risk assessment needed to proceed past Step 3A. Note: the ERA as revised did not need to proceed past Step 3A and 95% UCLs were not needed for the ERA.

5. **Comment:** The document is unclear in the use of the combined 2001 and 2003 data sets. Based on the 2002 tech memo using 2001 data, only Area 4 had elevated ecological risk primarily due to pesticides. The more recent data, only from Area 4, indicates the pesticide concentrations have decreased. Combining the 01 and 03 data sets for Area 4 presents an overestimation of current site risks.

Response: The 2003 sediment data (collected from Area 4 of the Pond) were combined with the 2001 sediment data in the July 2008 Technical Memorandum and in the revised Technical Memorandum. For selecting sediment COPCs that are to be analyzed for in the fish tissue samples to be collected, the 2003 sediment data were combined with the 2001 sediment data collected from Areas 1 through 4 of the pond. Samples collected from the marsh in 2001 were not included in this selection process, although the 2001 marsh samples were evaluated in the HHRA in the revised Technical Memorandum. The table used for identifying sediment COPCs for the HHRA (Table 10) was revised to indicate that the Associated Samples listed at the bottom of the table were collected from the four areas of the Pond in 2001 and from Area 4 in 2003.

The ecological risk assessment evaluated the data separately for each area in the initial screening step, and collectively for the overall risks associated with exposure to all sediment. The ecological risk assessment was revised to more clearly discuss the DDD and DDE results from the 2001 and 2003 sampling events and includes a discussion of possible reasons for the lower

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concentrations detected in the 2003 samples.

6. **Comment:** The human health risk assessment at Site 3 uses EPA default parameters for the conservative adult fishing scenario. Based on the above-mentioned conference call, it was determined that these conservative default parameters were not applicable to Site 3. Please revise the document using only the site specific parameters. If interviews with local fishermen/women indicate that these parameters are less conservative, please adjust the risk assessment using the most conservative but realistic parameters. A brief discussion on why someone would be less likely to fish as Site 3 than other areas at MCRD would be helpful. Please include any information regarding access restriction to Areas 1-4 such as alligators, security, more suitable nearby fishing areas etc.

Response: As per discussion with U.S. EPA and SCDHEC and based on the interview with the site-specific subsistence fisher person, the exposure parameters from Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, EPA-823-B-00-007, Office of Water, Washington, DC. (U.S. EPA, November 2000) will be used in the fish tissue HHRA in the Final Technical Memorandum to evaluate potential risks associated with consumption of fish from the 3rd Battalion Pond.

The uncertainty section of the HHRA in the Final Technical memorandum will include discussions on the access restrictions at the pond, along with other uncertainties inherent in the evaluation of risks associated with consumption of fish from the pond.

7. **Comment:** The Department is hesitant to concur with any recommendations regarding the path forward for this site until after the completion of the extensive revisions. If the human health risk assessment concludes that unacceptable risks are associated with the site specific fishing scenarios, then fish tissue sampling will be recommended prior to the implementation of Land Use Controls.

Response: Based on discussions with U.S. EPA and SCDHEC, fish tissue samples will be collected from the 3rd Battalion Pond and from General's Landing Creek (reference location) to evaluate risks associated with consuming fish from the 3rd Battalion Pond. The results of the HHRA to be conducted in the Final Technical Memorandum using this data and the data from previously collected sediment samples will be used to evaluate the need for Land Use Controls.

SPECIFIC COMMENTS:

1. **Comment:** Section 3.2, 2003 Sediment Samples, Page 6: Several COPCs from the 2001 sampling event were excluded from analysis in the 2003 sampling event. Zinc and copper were identified in 2001 as ecological chemicals of potential concern, but the 03 sediment samples were only analyzed for DDD, DDE, DDT, arsenic, lead, mercury, and total organic carbon. Please clarify.

Response: As indicated on page 6 of the draft Technical Memorandum, the analytical program for the 2001 samples was based on the results of the pre-interim remedy sediment sampling and the COCs identified for each area. The list of analytes for each area was identified on Table 4 (in the draft and in the revised Technical Memorandum).

The analytical program for the 2003 samples collected from Area 4 was limited to DDD, DDE, DDT, arsenic, lead and mercury based on the results of the 2001 samples collected in Area 4. The

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concentrations of copper and zinc in the 2001 samples from Area 4 did not exceed the Region 4 ESVs and were not identified as ecological COPCs in the 2001 data for Area 4.

2. **Comment:** Paragraph 1, Page 8: Please clarify the conclusions of the 1998 human health and ecological risk assessments with regards to PAHs. The document states that the “risk assessment prepared for the RFI/RI Report indicated that direct contact with 1998 sediment did not pose unacceptable risks.” It is unclear if this statement is referring to the human health or ecological risk assessments. The paragraph goes on to discuss the Ecological Screening Value comparisons, but fails to summarize the ecological and human health risk assessment conclusions regarding PAHs.

Response: The paragraph in question was intended to provide an initial evaluation of the 2001 sediment data. The text (now on page 19 in the revised Technical Memorandum) was revised to read as follows:

“PAHs are a complex class of chemicals; therefore, BAP equivalent values are used for human health comparison, and total PAH values are used for ecological comparison. The BAP equivalent values and total PAH values were calculated for the 2001 sediment samples (see Appendix D). Even though the BAP equivalent values exceeded human health criteria at all but one 2001 sediment sample location (PAHs were not detected in PAI-03-SD-46-01 – Pond Side Area 1), the concentrations detected in 2001 (Table 5) are less than concentrations detected in the 1998 samples (Table 2).

Because direct exposures (e.g., incidental ingestion and dermal contact) were within U.S. EPA acceptable risk levels in the initial RFI/RI HHRA, and the sediment PAH concentrations in the post-IRA sediment samples (2001) are less than the concentrations detected in the pre-IRA sediment samples (1998), the HHRA presented in Section 5.0 will only evaluate potential exposures to recreational users through fish ingestion.

Although several individual PAH concentrations exceeded U.S. EPA Region 4 ESVs in two samples collected in 2001, only the maximum total PAH value exceeded the ESV for total PAHs (duplicate sample collected at location PAI-03-SD-41). The concentrations of PAHs in the original sample collected at this location are much less and averaging the concentrations in these two samples results in a total PAH value less than the ESV for total PAHs.”

3. **Comment:** In various places, ½ the background value was used in tables and discussions. Please refer to General Comment 2 regarding appropriate background comparisons, and remove the ½ background references in discussions, tables, and figures.

Response: All references to ½ the background value in text, tables, and figures have been removed from the revised Technical Memorandum. Comparison to background consists of comparison to 2 times the mean background/typical facility pesticide concentration (see Response to General Comment 1) or the range of background concentrations (to be included if needed in the uncertainty sections of the final Technical Memorandum).

4. **Comment:** Section 6.2.2, Screening Results, Page 24: The text states that arsenic, copper, and lead exceed ESVs in Area 2; however, the referenced Table 18 indicates that no analytes were retained as COPCs. The Table 18 footnote indicates the maximum concentrations were only slightly above ESVs and

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less than alternate screening values. Please include the alternate screening values in Table 18 and clarify in the text.

Response: Although not noted in the comment, similar situations existed for Tables 16, 17, 19, and 20 versus the text in Section 6.2.2. The ERA text and Tables 17-23 in the revised Technical Memorandum have been revised to clearly separate the initial screening and COPC refinement steps, and to include alternate screening values where applicable.

5. **Comment:** Section 6.3.2.5, Pond Side Sediment-Area 4, Page 30, Paragraph 2: The text states that the maximum concentration of DDD was detected from PAI-03-SD-59 at 47.5 ug/kg. Table 20 and Figure 4 indicate the maximum DDD concentration is 58 ug/kg. Please clarify.

Response: The maximum concentration for 4,4'-DDD is 58 ug/kg. The second paragraph on Page 30 in the draft Technical memorandum stated that the maximum DDD screening HQ (not the maximum concentration) was 47.5. No changes to the text are needed.