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MCRD PARRIS ISLAND
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LETTER REGARDING U S EPA REGION IV COMMENTS ON REMEDIAL INVESTIGATION
ADDENDUM FOR SITE 45 FORMER MORALE, WELFARE AND RECREATION DRY
CLEANING FACILITY MCRD PARRIS ISLAND SC
4/19/2010
U S EPA REGION IV



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303-8960**

April 19, 2010

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

4SD-FFB

Naval Air Station, JAX
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Attn: Charles Cook
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And

Commanding General
Marine Corps Recruit Depot
Natural Resources & Environmental Affairs
Attn: Tim Harrington
PO Box 5028
Parris Island, SC 29905-9001

SUBJ: EPA Review of the Remedial Investigation Addendum for Site 45 – Former MWR Dry Cleaning Facility (January 2010)

Dear Sirs:

EPA has reviewed the second revision of the Draft Remedial Investigation Addendum for Site 45 (RI Addendum). The review has generated comments. While EPA feels sufficient data has been gathered to support moving forward in one manner or another, not all data has been addressed in the report and not all necessary findings and conclusions have been made. EPA is willing to work with the Navy to address the comments in the most expedient manner so that the document can be finalized and the team can move on. EPA will accept simple revisions to the RI Addendum Report in order to support the FS/PP/ROD. The following comments were generated:

GENERAL COMMENTS:

1. The RI Addendum references and summarizes the GSI Vapor Intrusion (VI) study to determine risk associated with vapor intrusion at specific facilities. While the GSI VI study results were summarized and presented, the actual report was not attached. Since

the results report has not been reviewed, please attach the report (if one exists), as an appendix to the RI Addendum. If a report does not exist, perhaps consider attaching the work plan which generated the results and the associated oversight agency comments for the record.

The RI Addendum does not use the VI Study data to calculate a risk for the new dry cleaner facility. It is assumed that although risk has not been quantitatively assessed, the Navy is willing to stipulate an action is required for the vapor intrusion pathway based on qualitative assessments of contamination levels and risk factors. The RI Addendum would typically be expected to present risk calculations and make specific conclusions and recommendations for or against the need for a remedial action for certain pathways based on that risk. However, vapor intrusion is a slightly different scenario. EPA is willing to accept a stipulation for action based on a qualitative assessment of contamination levels and risk factors for specific facilities at risk, such as being within 100 feet of contaminated groundwater which exceeds screening values, and/or the presence of sub-slab soil gas above screening criteria, and/or indoor air contamination above screening levels. The RI Addendum falls short of clearly stipulating the basis for taking an action for the vapor intrusion pathway and/or remedial action requirements for at-risk facilities. (See specific comments on Sections 6 and 7.)

Furthermore, the RI Addendum conclusions currently only mention vapor intrusion issues at the new dry cleaners. However, the USGS study results indicate a much higher concentration in the southern plume area than was previously understood to exist. Groundwater contamination concentrations within 100 feet (vertically and/or horizontally) of Building 293 greatly exceed EPA's screening values for vapor intrusion. Therefore, Building 293 should also be addressed in your conclusions. Recognize that calling for an action could mean anything from just monitoring, to engineered remediation, to immediate evacuation. The Feasibility Study (FS) will compare alternative remedies and select an action, and the extent of the action and its design can be addressed during future phases of the CERCLA process. (See specific comments on Section 6 and 7).

2. Based on the information presented in the Remedial Investigation Addendum for Site/SWMU 45 - Former MWR Dry Cleaning Facility dated January 2010 (RI Addendum Report), vapor intrusion (VI) is a potential concern for workers at the current dry cleaners. This concern is discussed in multiple sections of the RI Addendum Report. However, it is not clear if this facility is now part of the Site/Solid Waste Management Unit (SWMU) 45 unit as this issue was not addressed in the RI Addendum Report. Additional text is needed to explain whether the new dry cleaning facility is now part of the Site/SWMU 45 unit due to the results of the VI evaluation. Revise the RI Addendum Report to address this issue and modify text throughout the document as necessary.

The same questions also pertain to Building 293, as well as any other facilities which might lie within 100 feet vertically and/or horizontally of groundwater contamination levels which exceed the VI screening numbers, even if the only future action required may be monitoring.

3. The most recent figures included in the RI Addendum Report are dated September 13, 2005. The RI Addendum Report indicates that at present, Building 293 is the only building at Site 45. However, a figure depicting the current site layout including the location of the new dry cleaning facility was not provided in the RI Addendum Report. Additionally, the Site/SWMU 45 unit boundary is not depicted in any figures nor is it discussed in the text. Revise the RI Addendum Report to include a figure depicting the Site/SWMU 45 unit boundary including the location of the new dry cleaning facility and make any other necessary updates to the text throughout the document to address this.

The same would apply to any other facilities which lie within 100 feet horizontally and/or vertically of groundwater contamination levels which exceed the VI screening levels, even if the only future action required may be monitoring.

4. The RI Addendum Report indicates the current revision summarizes field activities conducted in the spring of 2005, as well as presenting a summary for the 2009 United States Geologic Survey (USGS) work and for the VI analysis. However, an update to the Site/SWMU 45 conceptual site model (CSM) was not presented in the RI Addendum Report to reflect the new data. Revise the RI Addendum Report to include an updated CSM to provide the most up to date conceptual understanding of the known and potential routes of migration and known or potential human and environmental receptors with respect to the 2009 USGS and VI analysis data.
5. Reportedly the Navy has been awaiting the USGS study in order to be able to move forward with the RI Addendum for purposes of filling delineation data gaps and source identification, as well as answering questions with respect to fate and transport of the groundwater plume. Yet, the USGS study was barely mentioned in the RI Addendum text; the data has apparently not been included or addressed in site boundary maps, the Conceptual Site Model (CSM), plume maps, etc., which are all an integral part of an RI Report. EPA believes the data should be incorporated in the above mentioned parts of the RI Addendum, or at least included as stand alone information for the administrative record and for future use in the FS, etc. Please update the RI Addendum to include and address the USGS data, findings, and conclusions throughout the document as appropriate. Specific comments below will identify Sections where EPA suggests addressing the report and data.
6. EPA also suggests including the USGS report as an appendix.
7. The 2009 USGS report indicates that contaminated groundwater associated with Site/SWMU 45 is entering the leaky storm sewers located to the southeast of the unit. These storm sewers ultimately discharge to Ballast Creek. According to this statement, migration of contaminated groundwater is potentially uncontrolled and is being detected outside of the current monitoring well network. Revise the RI Addendum Report to provide additional information regarding the adequacy of the current monitoring well network to monitor groundwater contamination, given this scenario and the Navy's plans for addressing surface water and/or sediments (see general comments below).
8. The RI Addendum Report states in the last paragraph of Section 1.2.3, United States Geological Society Storm Sewer Investigation and Related Investigation, "Because the

storm sewers at Site 45 range in diameter from 12 to 36 inches and a tidal change of greater than 3 ft takes place in some of the storm sewers at Site 45, the VOCs entering the storm sewers are substantially diluted upon entry. Volatilization probably also removes some of the VOC contamination in the storm sewers." Though this might have some legitimacy, additional information may be needed to fully understand the impact to surface water. Furthermore, it is unclear if historical releases of PCE product could have been transported down the storm sewers, either at the time of release, or from soil/subsurface soil sources prior to the initial clean-up efforts. Product transported down the storm drains and deposited into the marsh could have impacted sediments in the outfall area. Revise the RI Addendum Report to provide additional information regarding the potential impact to surface water and sediments given this scenario.

9. The RI Addendum does not clearly speak to surface water and/or sediments in the conclusions section. The Navy needs to clearly state if there is a basis for taking an action for surface water and/or sediments. If the Navy does not have sufficient data to make these conclusions, then the Navy should state when the data will be gathered, and when the conclusions based on presence/absence of contamination and/or risk will be made. If the actions for groundwater and specific vapor intrusion actions are to move forward without the final sediment/surface water data, then the Navy needs to clearly state that these media will be deferred until another time in the future, therefore resulting in the forthcoming FS, PP and ROD being Interim in nature, further requiring a final ROD for sediments and surface water some time in the future.
10. Update Tables and Figures to include the USGS and GSI data. This can be accomplished either as adding data to both the existing tables and figures to reflect inclusion of the data, or by including separate new tables and figures which would be inclusive of USGS and GSI data.
11. Due to the duration between the most recent site-wide sampling and now, as well as the effects of treatability studies having impacts on contamination levels, and since there may apparently be a reason the Navy has not already incorporated all data together, EPA recommends all wells be sampled to establish a new baseline prior to proceeding with the next phase of the CERCLA process.

SPECIFIC COMMENTS:

12. **Section 1.2.2 Site 45 Background and History** To the end of the first paragraph, add "South of the facility is Building 293, attorney offices."

In the next to last paragraph, modify the text to address whether or not risks to surface water and/or sediment needs to be addressed and why or why not. See General Comments above.

13. **Section 1.2.3, United States Geological Society Storm Sewer Investigation and Related Investigations, Page 1-3** EPA is not sure this is the most appropriate place to include the USGS information and data, since this is not "historical information" with respect to the 2005 investigation. EPA would suggest the information be addressed in Section 3, and that section be divided to first present the 2005 investigation information,

- and then the 2006-2009 USGS investigation. The information for the USGS may simply be summarized, hitting the highlights of information which would similarly be found in the subsections used for the 2005 investigation. The USGS report should be attached as an appendix and properly referenced in the text. Also, include the appropriate reference for the USGS study in the Reference section of the RI Addendum Report.
14. **Section 1.2.3, United States Geological Society Storm Sewer Investigation and Related Investigations, Page 1-3** Please correct the text to indicate the study began in 2006, not 2009.
 15. **Section 2.7 ECOLOGY, Page 2-4, last two paragraphs** Note the last sentence of the section, "If groundwater contaminants were to migrate as far as the marsh, then potential ecological impacts would need to be re-evaluated." Given the USGS report indicates contaminants are migrating through the storm drains to the marsh, this section should be updated to address the USGS findings and what has been determined, or what will need to be determined at a future date with respect to surface water and/or sediments, and "potential ecological impacts". (See General Comments above.)
 16. **Section 3.0 INVESTIGATION SUMMARY** See comments above pertaining to addressing the USGS report and data in this section.
 17. **Sections 3.2.3 and 3.2.4** These sections address DNAPL screening and results. EPA is uncertain if the USGS provided additional evaluation for DNAPL in the southern plume area or not. EPA region 4 understands that the EPA Ada, Oklahoma lab performed some additional investigation through analysis of saturated soil cores near the southern plume source area which would speak to the potential for the presence of DNAPL. Determine whether or not these results confirmed any potential presence of DNAPL and address it in the Addendum.
 18. **Section 4.0 NATURE AND EXTENT OF GROUNDWATER CONTAMINATION** Delete "Groundwater" from this title and modify text as appropriate. This section needs to be updated to include the USGS summary information and data. This should result in addressing nature and extent of surface water and sediment contamination as well as groundwater, clarifying if sufficient data exists or if additional data is needed, thereby deferring surface water and sediments to another time in the future. Additionally, this should provide updated data for clarifying where the individual contaminant plumes have been delineated, and/or where data gaps still exist. (Also see comments below.)
 19. **Section 4.1 2005 Groundwater Sample Results End of first par.** Determine if there was additional Deep well information gathered by either Tt, USGS or EPA at the southern plume area, or any of the treatability studies across the site. If so, update this section to include this data and explain if it supports the conclusions that "contamination is not migrating vertically to any great extent".
 20. **Section 4.2.1 2005 PCE Groundwater Plumes** The last paragraph of this section states "Since that time, February 2006 follow-on work did identify a new plume south of location 158. Navy and MCRD are still evaluating how to proceed with the new plume." Please clarify what is meant by this statement with respect to Remedial Investigation

conclusions and recommendations for Site 45, as well as proceeding with the CERCLA process. It is unclear what the Navy and MCRD are "still evaluating". Modify text as needed.

21. **Sections 4.2.1 through 4.2.5** The USGS data needs to be incorporated in Section 4.0 and summarized. It can either be incorporated into these sections and the referenced figures updated to reflect the additional new data, or add new Sections 4.2.6 through 4.2.11 (for example), to provide the same info for the USGS data and reference new figures to include the figures/data from the USGS report, etc. A final finding of data gaps should be identified if any still exists. The new figures should be added to the Figure List up front.
22. **Section 4.2.6 Vertical Profiling of Groundwater** Update the text in the last two paragraphs and associated bullets. Add USGS summary and data if additional vertical profiling was done. Update Figures or add new ones. Update the Figure List if need be.
23. **Section 4.3 NATURAL ATTENUATION UPDATE** Add USGS summary information and data here as it pertains to natural attenuation factors and address the USGS opinion regarding the potential for its use as a remedy.
24. **New Section 4.4 and/or 4.5** Don't forget to add USGS summary and data with respect to surface water and sediment and clarify if further delineation is needed. Or speak to the deferral of these media to another time, resulting in the forthcoming groundwater FS/PP/ROD being interim in nature, requiring a final ROD for Sediment and Surface Water at some point in the future.
25. **Section 4.4 CONCLUSIONS** Renumber as appropriate. Add conclusions pertaining to surface water and sediment as separate media, as appropriate, or speak to deferral of these media (see comment(s) above.)
26. **Section 5.0 CHEMICAL FATE AND TRANSPORT ANALYSIS** Add a brief summary of USGS findings regarding Fate and Transport and reference the USGS Report Appendix.
27. **Section 6.0 RISK ASSESSMENT** If appropriate, add "and Eco Risk Assessment" to the title. Include whatever level of risk assessment is needed for surface water and/or sediments. Or explain why it has not been included and if it needs to be addressed at a later time, explaining that the media are being deferred.
28. **Section 6.0 VAPOR INTRUSION ASSESSMENT** Add another introductory paragraph which explains the need for 1) modeling risk for hypothetical structures, and 2) soil gas sampling and/or soil gas plus indoor air sampling at existing structures within 100 feet horizontally or vertically of contaminated groundwater which exceeds VI screening levels for assessing facilities at risk when groundwater is at ≤ 5 feet below ground surface (bgs) as indicated by EPA's draft Vapor Intrusion guidance. This paragraph should lay the foundation for your "qualitative assessment of risk for the vapor intrusion pathway." Be sure to include sufficient information here to document the basis

for taking an action to address the vapor intrusion pathway for existing facilities. (See General Comments above.)

29. **Section 6.1.1 and 6.1.2, Site Setting, first par. and Exposure Assessment, Pars. 1 and the first paragraph past the numbered paragraphs** Modify the text to include the new dry cleaner building, and any other structures which are within 100 feet horizontally or vertically of groundwater contamination which exceeds the VI screening values.
30. **Section 6.1.2, first paragraph after the numbered paragraphs** After the first sentence, add "... For this type of building, the guidance recommends a site specific assessment be conducted, gathering soil gas and/or indoor air samples as needed."
31. **Section 6.1.5 Uncertainty Analysis** Add a bullet which states "EPA's Vapor Intrusion Guidance indicates that modeling is not appropriate for actual existing facilities when the top of the groundwater is ≤ 5 feet bgs since there is too much variability in the fate and transport of vapors at such shallow depths. Therefore, modeling for hypothetical facilities when the top of the groundwater is ≤ 5 feet bgs would be in question also."
32. **Section 6.3, CONCLUSIONS, First bullet** Modify the last sentence to read "...tasked with risk management decisions for Site 45. Based on the modeled risk, any future construction planned for Site 45 must address the vapor intrusion pathway. Institutional controls should be considered to ensure this happens."
33. **Section 6.3, CONCLUSIONS, Second bullet** EPA disagrees with this bullet EPA understands MCRD has plans to seal the storm water drains which are currently receiving a large portion of the plume. It is difficult to predict what effect sealing the drains will have on the plume migration direction and speed. Recognizing there is data on the general groundwater flow direction and rate, it is difficult to tell how much influence the drains have had and how much sealing the drains may change flow rate, direction, etc. Please add a mention of this uncertainty to the conclusion text bullet. Additionally, the USGS Report indicates the plume boundaries have already migrated considerable closer to Building 293.
34. **Section 6.3 CONCLUSIONS** Recognize that EPA expects that in future phases of the CERCLA process, facilities within 100 feet horizontally or vertically of groundwater contaminated at levels above EPA's VI screening levels, will need to have a facility specific assessment conducted in order to determine what the appropriate action will be, even if that action may only be monitoring. Actions may range from monitoring, to engineered remediation, to evacuation of the facility, etc., depending on facility specific assessments which will be conducted in support of either the feasibility study and/or remedial design.
35. **Section 7.0 CONCLUSIONS AND RECOMMENDATIONS, NATURE AND EXTENT/CHARACTERIZATION**

Bullet 1 – Modify this text as necessary if any conclusions about deep wells changed based on USGS, EPA Ada O.K., or other treatability study's data, etc. (see comment pertaining to deep wells in Section 4 above.)

Bullet 2 – Modify this conclusion if inclusion of the USGS or other data results in there being no more data gaps for delineation of groundwater plumes.

Bullet 3 – Modify this to state that Building 293 and the new drycleaner building is within 100 feet horizontally or vertically of groundwater which is contaminated above EPA's VI Screening levels, and as a result will require a facility specific assessment to determine what action is appropriate.

Bullet 4 – Modify this if it was found that USGS, EPA Ada O.K., or other data indicated the potential presence of DNAPL.

Add Bullet 5 – Address nature and extent for Sediments, if appropriate. Make conclusions if appropriate regarding any necessary action.

Add Bullet 6 – Address nature and extent for Surface Water, if appropriate. Make conclusions if appropriate regarding any necessary action.

36. **Section 7.0 CONCLUSIONS AND RECOMMENDATIONS, VAPOR INTRUSION**

Bullet 1 – Modify this bullet to read more like the text in the first bullet of section 6.3 after addressing the comment on 6.3 above, especially including "...Based on the modeled risk, any future construction planned for Site 45 must address the vapor intrusion pathway. Institutional controls should be considered to ensure this happens."

Bullet 2 – Modify the bullet to address the uncertainties associated with groundwater flow rate and direction after sealing the storm water drains, as described in comments above. State that the facility is within 100 feet horizontally or vertically of groundwater which is contaminated at levels which exceed EPA's VI Screening Levels.

Bullet 3 – Delete the last sentence. Add a sentence that states that since sub-slab soil gas levels exceed screening criteria it is concluded that a site related source is contributing to the sub-slab soil gas concentrations, and potentially acting as a source to indoor air concentrations. State that although a quantitative risk calculation has not been performed, a qualitative assessment results in a finding that indoor air samples exceed screening criteria at levels which would indicate an action is needed. State that since it could be relatively difficult and very costly to determine the degree to which the sub-slab concentrations are contributing to indoor air concentrations, it is recommended that an engineered action be considered for this facility if one can be designed and implemented at a reasonable cost. Monitoring should also be considered for some duration.

Add a Bullet 4 – Add text which more specifically states that a site specific assessment will be needed to determine what action is necessary for facilities within 100 feet horizontally or vertically of groundwater contaminated at levels above EPA's VI screening levels, even if that action may only be monitoring. Actions may range from monitoring, to engineered remediation, to evacuation of the facility, etc. These assessments will be conducted in support of either the feasibility study and/or remedial design.

37. **Section 7.0 CONCLUSIONS AND RECOMMENDATIONS, CONCLUSIONS**
Consider changing this title to "GENERAL GROUNDWATER CONCLUSIONS". Add text which states that the Groundwater contamination results in unacceptable risks and therefore an action is called for. Specify which pathways had unacceptable risks. Consider stating if the conclusions and recommendations in this RI Addendum are to be added to conclusions and recommendations from the RI, or whether they override the original RI. Or consider providing the original RI conclusions and recommendations here, showing which are still in place, or which have changed, if any. This should be done to help eliminate any confusion in the future and to have all conclusions and recommendations together in one document, clearly supporting the basis for action.
38. **Executive Summary-** Update the Executive Summary as appropriate based on other changes and/or additions to the RI Addendum Report. Specifically include the USGS and GSI VI investigations. Modify conclusions and recommendations to address additional information added to the Report, as well as being sure to address surface water and sediments as separate media from groundwater.
39. **Executive Summary, Page ES-1** The last sentence in the last bulleted item on Page ES-1 is not complete; it ends in mid-sentence and does not continue on to the next page. Revise the last bulleted item on Page ES-1 to correct this discrepancy.
40. **References Section** – Update the references as needed for referenced and attached documents, including the USGS Report, GSI Report, etc. as appropriate.
41. **List of Appendices, Tables, and Figures** – Update the lists as needed based on revisions.
42. **Acronym List** – Add ECD and define it. Update as needed based on revisions.
43. **Table of Contents** – Update the TOC as needed based on revisions.

If there are any questions on these comments, please do not hesitate to contact me at (404) 562-9969.

Sincerely,



Lila Llamas
Senior RPM

cc: Meredith Amick, SCDHEC
Annie Gerry, SCDHEC
Mark Sladic, TtNUS ✓