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MCRD PARRIS ISLAND
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LETTER REGARDING U S EPA REGION IV COMMENTS ON THE U S NAVY RESPONSES
TO COMMENTS ON THE CONDITIONAL APPROVAL OF THE DRAFT FINAL FEASIBILITY
STUDY, THE FEASIBILITY STUDY ADDENDUM AND THE DRAFT PROPOSED PLAN FOR
SITE 45 AND SITE 32 MCRD PARRIS ISLAND SC

10/31/2012

U S EPA REGION IV



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

October 31, 2012

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Naval Air Station, JAX
Navy Facilities Engineering SE
Installation Restoration, SC IPT
Attn: Mr. Dan Owens
PO Box 30
North Ajax Street, Bldg 135
Jacksonville, FL 32212-0030

AND

Commanding General
Marine Corps Recruit Depot
Natural Resources & Environmental Affairs Office
Attn: Ms. Lisa Donohoe
PO Box 5028
Parris Island, SC 29905-9001

Dear Mr. Owens and Ms. Donohoe:

The U.S. Environmental Protection Agency (EPA) has completed its review of the Responses to EPA Conditions for Approval of the Draft Final Feasibility Study (FS), the FS Addendum (September 2012) as part of those responses, and the Draft Proposed Plan (PP) (September 2012) for Site 45 – Former Morale, Welfare, and Recreation Dry Cleaning Facility and Site 32 Laundry Satellite Accumulation Area (Site 45), Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina. The review resulted in the comments listed in the attached document. Please feel free to contact EPA regarding any questions you may have regarding these comments. I can be reached at 404-562-9969.

Sincerely,

A handwritten signature in cursive script that reads "Lila Llamas".

Lila Llamas, Senior RPM
Federal Facilities Branch
Superfund Division

Attachment

cc: Meredith Amick, SCDHEC
Peggy Churchill, TtNus

Internet Address (URL) - <http://www.epa.gov>

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**EPA COMMENTS FOR REPOSES TO CONDITIONS FOR APPROVAL OF THE
DRAFT FINAL FEASIBILITY STUDY, THE FEASIBILITY STUDY ADDENDUM, AND THE
PROPOSED PLAN FOR SITE 45
FORMER MORALE, WELFARE, AND RECREATION DRY CLEANING FACILITY
SEPTEMBER 2012
MARINE CORPS RECRUIT DEPOT
PARRIS ISLAND, SOUTH CAROLINA**

EPA COMMENTS ON THE RTCs TO THE FS CONDITIONS FOR APPROVAL:

1. **Response to Comments (RTCs):** If any changes are made as a result of these comments, please update the RTCs in the document (see conditions 9, 10, and 11).
2. **Uncontrolled Migration of Contaminated Groundwater Remedial Action Objective and Alternatives:** In the response, the Navy states again that Site 45 contaminants “are not reaching Ballast Creek through the storm sewer”. Perhaps a definition of “Ballast Creek” would help clarify this issue. Regardless of the defined boundaries of Ballast Creek, the Navy has provided data which indicates site related contaminants are migrating through the storm sewer system in storm water/infiltrated groundwater, to the outfall south of the site (Outfall 881) and into the surface water of the marsh adjacent to Ballast Creek (documented uncontrolled migration, not potential). The Navy has committed to selection of a remedial alternative to address the uncontrolled migration of groundwater as documented by the Navy. EPA concurs with this commitment.
3. **Modify Soil RAO No. 1:** Response accepted and documentation in the Proposed Plan is confirmed.
4. **Soil Cleanup Goals:** Response is acceptable based on site-specific technical data, although the SCDHEC guidance referenced is not applicable to the site.
5. **ARARs:** The ARARs Table attached to the RTCs is not complete. The Alternatives for controlling groundwater migration should be added to the table along with any applicable ARARs which relate to these alternatives that were not previously included. The Navy/MCRD should finalize negotiation of final ARARs with EPA and the State and **submit change pages to this document to reflect the final approvable version of the ARARs.**
6. **RCRA Listed Waste:** The response is accepted. Please note: In order to minimize the amount of remediation waste that has to be managed as RCRA Listed hazardous waste, the Navy should propose to EPA and SCDHEC a “No Longer Contains” concentration for PCE consistent with EPA policy and guidance. for handling remediation waste which is not part of the main waste pile and which may have low levels of contamination (i.e. well purge water, decon water, soil cores, , etc.) This No Longer Contains Determination does not have to go in the FS or PP but would be best negotiated prior to finalization of the ROD or the RD.
7. **FFA Sites Addressed:** Although the response is positive, the inclusion of Site 32 was only implemented on the Figure in the FS Addendum, but not in the FS Addendum Title or text. Please modify the title and text of the FS Addendum to indicate this also addresses Site 32.

8. **Site Boundary:** While the updated site boundary addresses the concern for inclusion of the storm sewer system toward the marsh, review of GSI sample locations indicate the line drawn to represent the extent of impact to the new dry cleaner does not appear to be sufficiently representative. Please modify the site boundary line to be more inclusive of the new dry cleaner building.
9. **GSI Work Plan and Report:** The response incorrectly references "Attachment 2" instead of "Attachment 3". Please correct.
10. **Table 6-2:** The response incorrectly references "Attachment 3" instead of "Attachment 4". Please correct.
11. **Table 6-8 and Table 6-9:** The response incorrectly references "Attachment 4" instead of "Attachment 5". Please correct.
12. **Vapor Intrusion (VI) Risk Assessment:** Response accepted.
13. **Alternatives Analysis: Remedial Time Frames -** Please clarify why time frames were not provided separately for the northern plume and southern plume respectively as was done previously. The time frames mentioned in the PP, Table 3, Page 16 have not been updated, as they were in Table 5. Please correct this.
14. **Soils Delineation:** EPA concurs with the Navy's commitment to a Remedial Design Investigation Work Plan. Please note, the soil gas sampling committed to here, and in multiple RTCs throughout site documentation, appears to have been overlooked in the description of monitoring in groundwater alternatives. While this work plan will provide a baseline from which to proceed, ongoing monitoring of soil gas will be necessary for Building 192, and may or may not be necessary for Building 293, depending on results of the baseline. This may have been an oversight in the drafting of remedial alternatives and the review thereof, but should be captured in the alternatives description in the Proposed Plan. Details of exact monitoring requirements and plans thereof will be finalized during the design phase.
15. **Background Values:** Response accepted.
16. **Note for the Administrative Record:** Response accepted.

The assumption is made that the remainder of the RTCs included have not changed from the time they were originally submitted and reviewed. Feedback provided at that time stands. Please clarify if any changes were made to the RTCs.

EPA COMMENTS ON THE FS ADDENDUM:

17. **Section 1.1:** See Condition 7 above and correct the document accordingly.
18. **Section 1.2:** For clarity in the administrative record and for better understanding of site conditions, in a new subsection please clarify what sanitary sewer line components were sliplined/sealed within the Site 45 boundary and how that was accomplished. Please include the information although EPA understands this was conducted as a Base Maintenance activity, not as

part of site remediation. Please provide a figure indicating the sanitary sewer components addressed.

19. **Section 1.2:** Please indicate on a site figure where the catch basins of the storm sewer are located.
20. **Section 1.2.1, top of page 1-3:** Sample results from STS14 had exceedances of MCLs. Please remove it from this sentence.
21. **Section 1.2.2:** Please clarify if decisions pertaining to contaminants other than site related contaminants are proposed to be made here, in Site 45 documentation, or within Site 14 documentation. EPA will consider concerns from the Natural Resource Trustees (NRT), and will also want to ensure all sampling data not related to CERCLA Sites is provided to other interested offices (NPDES, etc.)
22. **Section 1.2.3:** It should also be noted that leaky pipes may also provide a conduit for contamination and that the pipe if underlain with gravel may create a preferential pathway for contaminated groundwater to migrate.
23. **Section 1.2.4:** Please clarify what, if any, "portion" of the system within Site 45 was not inspected.

Additionally, the reported goal of the inspection was to assess pipes and "junctions". Previously in the document the system was described as having "manholes, piping, curb inlets, catch basins, and junction boxes." Please clarify which of these components were included in the inspection.

Please clarify if the sanitary and/or storm sewer system pipes are set in gravel or set directly in soils, and how this is known for all pipes. Consider if confirmation investigation is needed to validate the CSM for these pipe systems to ensure COCs are not also migrating through preferential pathways beneath the pipes.

Furthermore, please clarify to which component of the system the data/recommendations in Table 1-7 refers. Does "Inlet" refer to a "curb inlet", and/or a manhole, and/or a junction box? Please clarify exactly what was inspected or not and to what these recommendations refer. Also clarify if catch basins were inspected in any way.

Clarity of the recommendations and to what they apply may affect the description of Groundwater Migration alternatives. Whatever is being infiltrated should be specified as requiring remediation (specifying inlets, manholes, junction boxes, etc. separately from pipes in GM3 and GM4). Modify GM Alternative language throughout the document as necessary to address this issue.

24. **Section 2.0:** Modify GM Alternatives 3 and 4 as necessary based on the comment above.
25. **Groundwater RAO No. 4:** EPA suggests adding the word "potential" after "mitigate" and before "impacts", as well as adding at the end of the sentence ", as well as to prevent any potential further contamination of environmental media."

26. **Alt GM-1, last sentence Page 2-1:** Consider deleting and replacing with “Protective LUCs to restrict site activities would not be implemented.”
27. **Alt GM-2:** Consider adding STS04 for monitoring.

Note: Also, is some method of confirming pipe installation methods (gravel or no) needed? If so, it needs to be part of the RD WP Investigation data gathering effort as a one-time look. If it confirms gravel is present, then monitoring here would need to have that preferential pathway investigated and/or monitored in addition to the pipes. Please explain when and how this issue will be addressed.

Note: Monitoring also needs to occur during injection phases of remedial alternatives for GW. This should be included as part of the treatment RD.

Since the Navy has proposed GM-2 as being preferred, the Navy should consider establishing GM-3 or GM-4 as a contingency remedy to GM-2 in the PP. Modify the PP text as appropriate if the Navy is still considering GM-2 in the Draft Final PP.

For now, at least modify the last sentence of Component 1 to read, “... will be discussed by the MCRD Parris Island Partnering Team upon completion of monitoring and analysis of data indicating conditions requiring additional action as described above”.

Component 2 LUCs:

Specify generally the LUCs that would be relied upon to meet the LUC Objectives. Administrative controls such as procedures to get approval before entering system. Revising Base Master Plan to indicate use and activity restrictions, erection of signs to warn against unauthorized entry of manholes, etc.

Modify the first bullet as follows. In the first sentence, place a period after “...are implemented.” Prior to the remainder of text insert “Entry without proper safety measures is prohibited unless prior written approval...” This will still read more like a combination of objective and use restriction. A more general objective would read: Prevent exposure to contaminated groundwater in the storm sewer system.” The way to achieve that objective is prevent entry all together or if authorized under controlled conditions with worker safety measures. The Navy should consider placing this statement in another area, not actually as part of the objective.

Overall Protection: This alternative does not protect the environment since contaminated GW allowed to continue to enter system and possibly continue plume migration. Revise accordingly. ARARs: See below. Long Term Effectiveness: LUCs is not a permanent solution to environmental contamination that would be occurring as the groundwater continues to migrate. Revise accordingly.

Short-Term Effectiveness: Modify the first sentence to read, “...GM-2 would not reduce uncontrolled migration of groundwater in the short term, but would reduce human health...”

Costs: See below.

28. **Compliance with ARARs for all GM Alternatives:** Please provide an updated ARARs Table including the GM Alternatives and any additional action-specific ARARs which need to be added for review, which may result in additional questions and/or comments. This is not captured again for each alternative individually below. Ensure this is addressed for each. Furthermore, this document does not include a table of Action-specific ARARs so need to reference the original FS table.
29. **Costs for all GM Alternatives:** The detailed breakdown of estimated costs referenced as "Attachment A" apparently has not been provided. Please provide the attachment for review, which may result in additional questions and/or comments. This is not captured again for each alternative individually below. Ensure this is addressed for each.
30. **GM-3:** See wording issue above regarding "manholes" versus "inlets" etc., and resolve accordingly.

Component 1: Since inspection via camera is required here does that mean the AH Environmental Consultants inspection did not include manholes? If it did, why do we need it done again here? If it did not, why not?

Component 2 LTM: If the Navy is considering GM-3 as being preferred in the Draft Final PP, the Navy should consider establishing GM-4 as a contingency remedy to GM-3 in the PP. Modify the text in the PP as appropriate.

LTM language modified above applies here.

Component 3 LUCs: LUCs would be maintained as long as there is contamination at levels not acceptable for unrestricted use and unlimited exposure

Long Term Effectiveness: Explain how not sealing entire system is not as effective and permanent since pathways for migration remain in the pipes.

Short-term effectiveness: Some credit should be given here for reducing uncontrolled migrations. Modify the first sentence to read, "...GM-3 would reduce uncontrolled migration of groundwater within the storm sewer and would reduce human health risks...".

Explain whether the cost estimates included any reduced time for monitoring and LUCs. If not, why not? Perhaps a range of costs should be presented representing the possibility that reducing migration may allow for reduced or eliminated monitoring.

31. **GM-4:** See wording issue above regarding "manholes" versus "inlets" etc., and resolve accordingly.

Component 1: Since inspection via camera is required here does that mean the AH Environmental Consultants inspection did not include manholes? If it did, why do we need it done again here? If it did not, why not?

Component 2 STM: Consider adding STS04 for monitoring.

It is not sufficient to simply show a decreasing trend in order to justify no more monitoring. If the seals hold and are effective, concentrations of site contaminants should drop immediately. The quarterly monitoring for 1 year would still be prudent to ensure the seals are holding across seasons and various water table levels. Monitoring should continue periodically to ensure the seals are holding, perhaps annually for 5 years as is the case for GM-3, at which point a decision can be made to no longer monitor or to discuss additional action. EPA is willing to discuss this.

Component 3 LUCs, last par., last sentence: Modify the sentence to read, "...after the sealing is completed and determined to be sufficiently effective based on 1 year of quarterly sampling."

Overall Protection: Explain how this Alt is protective of the environment, namely protecting surrounding soils and areas that would otherwise be contaminated with migrating gr groundwater
Long Term Effectiveness: Revise to discuss "Short-term monitoring."

Short-term effectiveness: Some credit should be given here for reducing uncontrolled migrations. Modify the first sentence to read, "...GM-4 would effectively eliminate uncontrolled migration of groundwater within the storm sewer and would reduce human health risks...".

Explain whether the cost estimates included any reduced time for monitoring and LUCs. If not, why not?

32. Table 1-7: Please explain why no feedback is provided regarding the following: 681AN, 681A, 675A, 674A, XXXA, 655A, 660A, 647A, 635B, and XXXB. Also see earlier questions about what was inspected and what are "inlets" vs manholes, junctions boxes, etc.

33. Table 2-1: EPA differs in opinion for the following (assuming going from top to bottom):

Threshold Row 1 - GM2 should be medium, low, or NA (addresses HH but does not control contaminated groundwater migration into the environment).

Balancing Criteria Row 1 - GM3 should be high if GM 4 is high. EPA believes the sealing methods should be equally long lasting, whether in manholes or manholes and pipes.

Balancing Criteria Row 3 - GM2 should only be medium. It protects HH, but may or may not protect the environment at any given point in time.

Costs for O&M: For GM-3, if, as the Navy reported on a call, sealing the manholes is anticipated to significantly reduce the amount of infiltration of groundwater LTM may be able to be discontinued or reduced after some monitoring, thereby reducing O&M costs. This does not appear to have been accounted for in reduced O&M costs. EPA suspects it may not be as effective as reported, in which case the numbers would stay the same.

34. Figure 1-1: Representation of Site 32 and designation of the former dry cleaning building are confusing. Here (and in PP Figures) the building is numbered 191 on the figure including the inset, but the text indicates "Building 193". The key indicates the lines drawn around the former building is Site 32, but the lines drawn for the former building is just a small pad or loading dock, which could be an SAA. EPA believes these are backwards on the key. Also, the Site 32 text box should point to the small pad/loading dock dashed line, not the dark dashed building

line, to avoid confusion. Please reconcile these issues on the figure here and/or in the text, and in the PP.

35. **Table 6-9:** The table appears to be mis-titled (soil gas .vs. indoor air.) Please correct this.
36. **Table X-X:** The Navy had committed to sampling additional wells and installing some new ones where data gaps exist. Please clarify at what point this will now occur, since funding was insufficient to address all needs during the most recent sampling event. Can this be part of the RD WP Investigation?

EPA COMMENTS ON THE PROPOSED PLAN:

37. **Preferred alternatives throughout the document:** EPA is in agreement with the Navy regarding preferred alternatives for soils and groundwater remediation. However, for groundwater migration alternatives, EPA is in disagreement. In alternative GM-2, no action is taken to reduce and/or eliminate uncontrolled groundwater migration through the storm sewer system to protect the environment, and therefore the threshold criteria are not being sufficiently addressed by this alternative and the alternative is not consistent with EPA groundwater guidance. Additionally, the remedy does not sufficiently address EPA's preference for treatment and permanent solutions, and is relying on LUCs and monitoring as default solutions rather than permanent engineered controls. Only Alternatives GM-3 and GM-4 take engineered actions intended to control migration of contaminated groundwater through the storm sewer system, therefore one of these should be preferred. Based on information provided to date, GM-4 is EPA's preferred alternative.

If the Navy feels GM-3 will not sufficiently control migration, as EPA suspects, then GM-4 should be selected. (However, if GM-3 is selected and is determined to not be sufficient, the pipes can subsequently be lined to effectively create GM-4. This will incur the expense of a second mobilization and may require an ESD, which could be avoided by selecting GM-4 initially.)

No data has been provided regarding the construction of manholes and pipes (depth) relative to various concentration areas of the plumes (central plume lines, hot spot slugs, etc.) which would support one alternative or the other. If this data is available, please provide it. Otherwise, the data available to date suggests the inlets (openings) and pipes leak, and a portion of the site has sanitary sewer lines and storm sewer lines which are below the groundwater table. The combination of these factors indicates manholes and pipes will need sealing (GM-4).

38. **Throughout the document:** There appears to be a discrepancy between the text and Figure 2 and 3, where in the text indicates the former building to be Building 193 while Figure 2 and the inset on the figure and Figure 3 indicate Building 191. Please reconcile these differences in the text and figures as appropriate.
39. **Introduction, page 1, column 2, par 1, middle of par:** Please modify to indicate "U.S. EPA and SCDHEC serve as regulatory agencies, as well as partners on the Parris Island Partnering Team for MCRD in connection with..." or similar.
40. **Introduction, page 1, column 2, par 3, middle of par:** Please modify to indicate "The Navy and U.S. EPA, in consultation with SCDHEC, will jointly select the final remedy...". Further

down modify to indicate "The Navy and EPA, in consultation with SCDHEC, may modify the final site remedy...".

41. **Page 2, text box Scroll figure:** The last bullet should be modified to indicate GM-4 requirements.
42. **Page 2, column 2 towards the bottom:** The text mentions 51 cubic feet of contaminated soil was removed from the site. For clarity in evaluating soils alternatives, please indicate the location of the removal on Figure 4, to ensure the same area is not being excavated and the clean fill disposed of as contaminated soil.
43. **Page 3, column 2, Soil:** There are no federal soil quality standards in regulations, only RSLs which are screening levels.
44. **8,000,000 ppb:** This is an extremely high concentration and the contaminated soils would be considered principal threat waste consistent with EPA guidance. Also under the NCP and CERCLA 121(b), treatment to address toxicity, mobility and volume is expected. Add a couple of sentences on presence of PTW and EPA guidance as well as CERCLA preference and NCP expectations to use treatment.
45. **Page 3, column 2, bullets 1 and 4 (surface and subsurface soil PCE):** As commented on in the FS and as responded to by the Navy, daughter products of PCE should be included as COCs and corresponding remedial goals should be established. In groundwater extensive degradation will occur before remedial goals are reached. Even for soils, since so much time has elapsed since the original RI was conducted, it can be assumed the PCE has degraded to some degree. Although PCE may still be the driver for soils, samples taken pre and post excavation should ensure PCE and its daughter products have been fully remediated to 4 feet bgs. Sample analysis for waste profiles should include PCE and its daughter products. The RTC for the FS indicated Tables 2-3 and 2-4 will be updated. Please ensure this happened. Please ensure the most recent COC tables, and all other information, is utilized when updating this PP. Modify this bullet to include cleanup goal information for the PCE daughter products as well as PCE.
46. **Page 3, column 2, all bullets:** If cleanup goals being proposed in the PP are for industrial use (see page 9), then also include the concentration relevant to industrial use at a 10^{-6} risk level in the bullets for each COC. This will allow a quick comparison of residential to industrial cleanup numbers for the public and EPA.
47. **Residential Use Prohibited:** If cleanup goals for soils are proposed to be set at industrial use levels (see page 9), then LUCs prohibiting residential use will have to be implemented and maintained until additional remediation efforts are taken to allow for unrestricted use and unlimited exposure. Ensure the PP addresses this requirement.
48. **Depth of soils remediation:** A depth of 4 feet is proposed as corresponding to the depth of the water table. The depth of the water table varies on site, ranging from 5 feet or so bgs up to as shallow as 1 foot bgs at times. Given the variation in water table depth, please explain when the soils remediation will be conducted relevant to the groundwater remediation. Explain if the clean fill is at risk for being recontaminated if remediation proceeds ahead of groundwater remediation. At what depth does the Navy's data indicate the contaminated groundwater plume begins? Is the variation at site likely due to changes in contaminated groundwater levels, or more

likely from perched rain infiltration? Please explain what is known or suspected about the site and/or explain when this issue will be clarified.

49. **Page 7, column 1, last par before vapor intrusion:** According to the concentrations in the bullets above, it appears the sentences should read "...up to 7,000 times greater..." instead of "2,000".
50. **Page 7, Vapor Intrusion:** The text states no buildings are over the southern plume, yet the site boundary as indicated on Figure 2, indicates the new dry cleaner is over a portion of the southern plume. Please modify the text. Further down, the text indicates soil gas is not "significantly" impacting indoor air at Building 192. EPA suggests some other means of explaining what is known about soil gas and indoor air at Building 192 be used to clarify without using undefined words like "significant". Perhaps use info from the quantitative risk assessment.
51. **Page 7, column 2, Scope, par 1, last sentence:** Insert "restore" before groundwater Add "to its beneficial use as a potential drinking water source" after groundwater.
52. **Page 7, column 2, Scope, 2nd par.:** Please remove the parenthesis from around Site 32.
53. **Page 7, column 2, Summary of risks, last sentence before HH:** Please add, "...if monitoring data indicates ecological screening levels are exceeded in surface water and/or sediments." to the end of the last sentence.
54. **Page 8, column 1 and 2, bullets:** Comments and corrections were also made to the record of risk summaries in the RI and FS. Please check all bullets and risk summary statements on this page and ensure the most recent corrected versions of risk summary has been utilized in this PP.
55. **Page 8, column1, last par:** Please modify the last sentence to read "Soil COCs include PCE (and its degradation daughter products), PAHs, and arsenic."
56. **Page 8, column 2, first par after the text box:** According to the concentrations in the bullets on page 3, it appears the sentences should read "...up to 7,000 times greater..." instead of "2,000".
57. **Page 9, vapor intrusion:** Reconcile "No buildings are currently located over the plume." With the Site boundary in Figure 2.

Furthermore, in the next sentences, EPA suggests rewording as "Results of the measured indoor air risk assessment indicate the cancer risk is at the lower end of the U.S. EPA's target risk range, therefore, soil gas data will be collected during the remedial design phase as a baseline and conditions will be monitored periodically for a period of time. Monitoring soil gas will occur beneath Building 192 and in the area between the southern plume and Building 293 to verify that vapors from the plume are not migrating toward Building 293."

58. **Page 9, last par. Before RAOs:** Insert a subtitle section for something like "Risk Conclusions" to separate this from the vapor intrusion discussion preceding it.
59. **Page 9, GW RAO #4:** After the "4" before the ":" add "(Migration Control)" to set this apart.

60. **Page 9, par after GW RAO #4:** Delete this paragraph. The discussion is unnecessary. Replace it with a general statement regarding groundwater classification of the groundwater at Site 45 according to EPA and SCDHEC Regulations.

Delete the last incomplete paragraph before CLEANUP GOALS as well.

61. **Page 9 Cleanup Goals:** Revise title and others uses throughout section to "Cleanup Levels" Also, delete the term 'target', explain MCLs are chemical specific ARAs
62. **Page 9 and cont'd on Page 10, Soil Cleanup Goals Table:** 1) Include PCE daughter products as appropriate for both parts of the table; 2) Modify "COCs" to be Soil COCs for Direct Exposure Pathway"; 3) Delete "Target risk level" and insert the proposed cleanup goals; 4) Please include the units for each goal since there is room in the table; 5) refer the reader back to the cleanup goals on Page 3 from which the proposed cleanup goal is being chosen; 6) modify "Other Compounds" to be "Soil COCs for Leachability to Groundwater".
63. **Page 10, Cleanup Goals for GW Table:** It is unclear what is intended by the lower half of the table for "Vapor Intrusion Affected Areas". Are these supposed to be indoor air concentrations? All groundwater will be remediated to MCLs, regardless of if they have a potential impact to vapor intrusion or not. Please either explain the table and clarify media and units, or delete the lower half.
64. **Page 10, Soil Cleanup Alternatives:** Since remediation to industrial levels for soil is proposed, all soil alternatives would have to include LUCs to prohibit residential use. Please modify the soil alternative descriptions to include this.
65. **Page 10, Soil Alt. S-2, first sentence:** Please end the sentence with "down to 4 feet bgs."
66. **Page 11, Alt, G-2 and all others which require monitoring to evaluate the effectiveness of natural attenuation:** EPA requires three years of data to evaluate MNA. EPA suggests three years of quarterly or semi-annual sampling for this purpose.
67. **Page 11, Groundwater Alternative LUCs Prohibiting Use:** EPA suggests the Navy prohibit groundwater use down to 40 feet to prevent any possible draw down of contaminants. At 40 feet or so there is a significant clay layer which should mitigate any potential draw down effects. Groundwater use between 18 and 40 feet would not be anticipated to be necessary anyway.
68. **Page 11, New LUC:** Please add a LUC prohibiting intrusive activity below the water table. Soils are remediated down to 4 feet, the approximate water table level. Intrusive activity in the top four feet of the site should be fine. However, some portions of the plume are highly contaminated and avoidance should be practiced.
69. **Page 11:** Modify "Migration Control" to be "GW Migration Control Alternatives". Describe the GM Alternatives as done for the other alternatives.
70. **Page 11 and 12, Evaluation of Alternatives:** EPA agrees with the Navy's choices except for GM-2. See EPA's first comment on the PP and comments on the FS. Modify the PP accordingly. EPA is willing to discuss this, but unlikely to change position due to GM-2's insufficient achievement of threshold criteria, permanence, preference for engineered controls, and

compliance with EPA groundwater remediation guidance, which calls for migration of contaminated groundwater to be under control to protect the environment.

71. **Page 11, contingency remedies:** The Navy should select GM-4. If the Navy proposes GM-3 in the Draft Final PP the Navy should consider specifying GM-4 as a contingency remedy. EPA also suggests G-3 be the contingency remedy for the northern plume, and G-2 be the contingency remedy for the southern plume to avoid ROD mods in case different approaches are needed over time. An ESD may still be needed. Alternatively, the Navy could create a modified G-2+3 to be selected for the entire site (not plume specific), specifying ISCO in high concentration source zone areas not previously treated with EZVI, and Enhanced bio in plume areas where source zone concentrations have been reduced but MNA needs supplementation. Combining the Alternatives provides more flexibility in implementation and remedy adjustments needed down the road, as well as avoiding the need for ROD mods and/or ESDs in the future.
72. **Page 12, Preferred Alternative:** The same comments as Page 11 Evaluation of Alternatives apply here. Additionally, the selection of a GM alternative has been omitted here. Please include one throughout the discussion.
73. **Page 12, Soil bullet:** LUCs should be added.
74. **Page 12, new bullet:** Add a bullet for GM Alternative.
75. **Page 12, monitoring bullet:** Modify to read "Additional groundwater, stormwater, soil gas, surface water, and sediment will be necessary at various times and will be specified in the RD. Monitoring would be conducted to".
76. **Page 20, Table 4:** For Short Term Effectiveness, GM-2 should mention that no reduction of groundwater migration would take place; GM-3 should mention that a significant reduction in uncontrolled groundwater migration could be anticipated; GM-4 should mention that uncontrolled migration should effectively be eliminated.
77. **Page 26, LUCs bullet:** Revise to state "LUC Objectives". See prior comments regarding 18 feet versus 40 feet. Add LUCs to prohibit intrusive activity below the water table and to prohibit residential use. Next to last sentence suggests there is VI risk that should be addressed so a LUC Objective is needed. Also, need LUC Objective to prevent exposure to soils and GW at levels exceeding UU/UE levels. Last sentence is actually administrative procedures to prevent unauthorized entry is an actual LUC that satisfies one of the LUC Objectives. Revise accordingly.
78. **Page 26, column 1, last full par:** Move this paragraph up to follow LUCs bullet above.
Page 26, column 1, last partial par.: Before this paragraph add a subtitle such as "Statutory Requirements". Also, Section 121(b) relates to preferences for treatment and Section 121(d) addresses protection of HH&E and compliance with ARARs.
79. **Page 26, column 2, first full par:** Add the GM-4 Alternative info.
80. **Page 26, column 2, RD Phase:** Go back through these comments and generate a list of all sampling which was mentioned to be part of the RD WP Investigation. Add them if they are not listed here.

- 81. Page 26, column 2, Contingency Remedy:** Comments for “contingency remedy” on Page 11 also applies here. Modify accordingly.
- 82. Page 27, column 1, par before 5YR:** EPA does not concur with GM2 as the Preferred Alt for GW Migration and instead prefers GM-4. Also, at the end add sentences on treatment of PTW (namely high COC concentration soils). See earlier comment. Modify text accordingly.
- 83. Table 5:** EPA differs in opinion for the following (assuming going from top to bottom):

Threshold Row 1- GM2 should be medium, low, or NA (addresses HH but does not control contaminated groundwater migration into the environment).

Balancing Criteria Row 1- GM3 should be high if GM 4 is high. EPA believes the sealing methods should be equally long lasting, whether in manholes or manholes and pipes. However, GM-3 is not as effective as GM-4.

Balancing Criteria Row 3 – GM2 should only be medium. It protects HH, but may or may not protect the environment at any given point in time.

Costs for O&M: For GM-3, if sealing the manholes is anticipated to significantly reduce the amount of infiltration of groundwater, LTM may be able to be discontinued or reduced after some monitoring, thereby reducing O&M costs. This does not appear to have been accounted for in reduced O&M costs. However, if sealing the manholes is not anticipated to significantly reduce the amount of groundwater infiltration, then the numbers should stay the same.

Shade GM-4 as the preferred alternative.