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LETTER AND COMMENTS FROM U S EPA REGION I REGARDING DRAFT FINAL
FEASIBILITY STUDY FOR DATA GAPS ASSESSMENT TANK FARM 3 NS NEWPORT RI
9/24/2012
U S EPA REGION I



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION I

5 Post Office Square, Suite 100
Boston, MA 02109-3912

September 24, 2012

Mr. Roberto Pagtalunan
NAVFAC MIDLANT (Code OPNEEV)
Environmental Restoration
Building Z-144, Room 109
9742 Maryland Avenue
Norfolk, VA 23511-3095

Re: Draft Final Feasibility Study for Decision Unit 4-1 at Site 12, Tank Farm 4

Dear Mr. Pagtalunan:

EPA reviewed the Draft Final Feasibility Study for Decision Unit 4-1 at Site 12, Tank Farm 4 dated August 2012 (FS) in light of EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*. The FS presents the development and evaluation of remedial alternatives to mitigate unacceptable human risk associated with chemicals of concern in soil and groundwater at Decision Unit 4-1 at Site 12, Tank Farm 4. Detailed comments are provided in Attachment A.

This FS speculates that the cause for the elevated metals concentrations in the groundwater at DU 4-1 may be related to the release of petroleum at the upgradient storage tanks. While this is reasonable, the seven groundwater monitoring wells existing at DU 4-1 are all located at or adjacent to oil-water separators, known release areas, or discharge piping from the oil-water separators. The presumption that all or a significant portion of the groundwater at DU 4-1 is impacted to the same degree as at the seven existing monitoring wells has not been demonstrated because no monitoring wells that would not have been impacted by the activities and releases that occurred at DU 4-1 exist. Therefore, the Navy has not demonstrated that plumes do not exist, contrary to the discussion in this FS that states that no definable groundwater plume exists. As a result, the available data do not show whether active groundwater remediation at the locations where PRGs are exceeded would be effective. The pre-design investigation should include groundwater monitoring wells upgradient of the impacted wells in DU 4-1 to demonstrate that the groundwater contamination is not a result of the releases specific to DU 4-1.

Please include the annotated historical U.S. Conservation Service soil map for DU 4-1 showing the two soil types present at DU 4-1 before construction of the tank farm. (This figure was provided in the responses to the initial round of comments.)

The Navy needs to follow up with a letter to describe how contamination along the fence lines will be addressed and it is not discussed in the Draft Final FS. This issue remains unresolved.

The only groundwater remedial action proposed is Monitored Natural Attenuation (MNA). No supporting information has been provided in the FS about the effectiveness of MNA or the

timeframe that will be required for MNA to achieve the remedial goals as was requested by EPA. Also, as previously requested by EPA, no contingency plan or alternative has been presented or discussed in the event that MNA is not successful. EPA recommends that *in situ* treatment to modify groundwater geochemistry be included as an alternative retained for detailed analysis - particularly because the Navy is unable to justify the selection of MNA as a reasonably appropriate remedy for DU 4-1 based on currently available data.

Please explain how the Navy will enforce the restricted recreational use. Other than requiring a permit for bow hunting, no discussion is included in the FS describing how casual recreational users would be denied access to the site. Please clarify this in the FS.

Documentation in the February 2012 responses regarding the presence of endrin aldehyde, and PCBs in groundwater sample MW913 was not definitive. The other sample purported to have contaminated the MW913 sample was not analyzed for pesticides and reportedly was not extracted for two days after MW913. Although one of the duplicates did not contain PCBs or pesticides, the Navy will need to resample MW913 to verify that PCBs and endrin aldehyde are not present.

Please revise the tables in Appendix B1 to be consistent with the tables in the FS. Specifically, Tables 1, 8, 9, and 11 in Appendix B1 regarding retained COCs and selected PRGs do not match Section 1.10 and Tables 2-4 through 2-6.

I look forward to working with you and the Rhode Island Department of Environmental Management toward the cleanup of Tank Farm 4. Please do not hesitate to contact me at (617) 918-1385 should you have any questions or wish to arrange a meeting.

Sincerely,



Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Pamela Crump, RIDEM, Providence, RI
Deb Moore, NETC, Newport, RI
David Peterson, USEPA, Boston, MA
Chau Vu, USEPA, Boston, MA
Steven Parker, Tetra Tech-NUS, Wilmington, MA

ATTACHMENT A

<u>Page</u>	<u>Comment</u>
p. ES-3	See general comment concerning the addition of an active treatment alternative for groundwater. Add to the text of GW-2: “Monitored natural attenuation and land use controls to prevent residential use of groundwater until groundwater cleanup standards are achieved – \$515,350.”
p. 1-2, ¶1	In the second sentence, change “and exceedances of chemical-specific ARARs” to “exceedances of chemical-specific ARARs, and background levels of contaminants within the site. ”
p. 1-13, ¶3	In the second sentence, describe whether the levels of dioxin/furan were compared to EPA’s revised standards for these contaminants.
p. 1-16, ¶2	In the last sentence, although there were no exceedances of federal MCLs, also list whether there were any exceedances of federal MCLGs, federal risk-based standards, or more stringent state groundwater standards.
p. 1-19, §1.10	<p>Please clarify the discrepancy between the table and the subsequent text. The asterisk in the table indicates that arsenic drives the exceedance of the 1×10^{-5} risk threshold, but the subsequent text indicates that the risk from PAHs exceeds that for arsenic for the industrial worker.</p> <p>Also, if arsenic is driving the exceedance of the 1×10^{-5} threshold as the table states, what drives the additional risk to cause exceedance of the 1×10^{-4} threshold? and why does that driver not also drive exceedance of the 1×10^{-5} threshold? The inclusion of the asterisk on this table appears to have caused discrepancies. Please edit to clarify.</p>
p. 2-4, ¶1	Remove the second sentence since the State’s groundwater classification regulations are not an ARAR. Replace the last sentence with one that states that the federal drinking water standards require that the aquifer be restored to potable use.
p. 2-5, ¶5	In the first sentence, replace “balanced by comparison” with “adjusted so that they don’t exceed.”
p. 2-9, §2.2.2	In the last paragraph, the text states that <i>this approach ensures that the HI from each target organ will be less than 1.0</i> given that the individual HQs will be less than 1.0 when there are fewer than ten COCs. If some of the COCs affect the same target organ, this would not be true.
p. 2-9, ¶6	Replace the last sentence that continues on to page 2-10 with: “Background concentrations may set the PRGs for inorganic compounds if approved background concentrations are established for the site, based on EPA guidance.”

- p. 2-15 Add another Soil RAO to prevent future migration of soil contaminants either to groundwater or adjacent wetlands/waterways.
- Add another Groundwater RAO to restore the aquifer to potable drinking water standards.
- p. 2-17, §2.4.1 The second full paragraph states that the I/C DEC's do not need to be met by the remedial action. In order for that statement to be correct it needs to note that a land use control is required to prevent exposure to the COCs below two feet in depth. Without the land use control, the statement is not correct because it is not reasonable to assume that future I/C exposure to soil beneath two feet would not occur without the restriction. Please edit the text and specify what area will need to be covered by the industrial land use control.
- In the last paragraph that discusses soil quantities for residential PRG exceedances, please also discuss the need for land use controls and quantify the area to be covered by the required land use control.
- p. 3-9, §3.3.2 The conclusion at the bottom states that groundwater monitoring is not required because the Navy believes the COCs are not leaching into groundwater. EPA does not concur because, as Section 2.4.2 states, between 22 and 43 million gallons of groundwater are potentially impacted by COCs exceeding the PRGs and in leaving contamination in place in the soil, the potential for leaching remains. Therefore, long-term groundwater monitoring should be a component of the soil remedies.
- p. 3-16, §3.3.6 Please edit the table of representative process options to include long-term groundwater monitoring.
- p. 3-16, §3.4 As discussed in the general comments, please discuss groundwater treatment alternatives as a contingency in case MNA is not viable.
- p. 3-19, §3.4.2 The first sentence in the last paragraph is not correct. As stated above in the FS text, groundwater monitoring in itself would not be effective in achieving the remedial goals but it would be used to evaluate MNA and the presence of COCs in groundwater. Please correct the text.
- p. 3-24, §3.5 Alternatives SO2 and SO3 need to include groundwater monitoring for the reasons stated earlier. Please modify the descriptions of Alternatives SO2 and SO3 accordingly.
- p. 3-25, ¶1 As discussed in the general comments, include at least one groundwater treatment alternative as a contingency in case MNA is not viable.
- p. 4-1, §4.0 Please edit the text throughout this section to include groundwater monitoring as a component of Alternatives SO2 and SO3.
- p. 4-2, §4.1.2 The scope of Alternative SO2 also needs to include the supplemental

investigation and sampling of the debris area and the former test pits as discussed for Alternative SO3. If contamination exceeding any PRG is found, additional actions would be required. Please modify this alternative description accordingly.

- p. 4-3, §4.1.3 In the second last sentence of the first paragraph, please change *exposure to metals* to *exposure to COCs* to make the remedy more generic. It is possible that supplemental sampling will identify areas of organic contamination that will be left in place.
- p. 4-3, §4.1.3 In the fifth sentence, specify whether the 15 mg/kg was set by background, risk, or ARAR-based standards.
- p. 4-3, §4.1.3 In the first sentence of the fourth paragraph, and elsewhere as appropriate, please change *a former test pit* to *former test pits* because more than one test pit had elevated TPH concentrations and is a suspected contamination area requiring further investigation.
- p. 4-4, ¶2 Insert text describing how LUCs would be created and maintained in case the Navy transferred the property to another party.
- p. 4-4, ¶3 In the first sentence, replace “state regulatory-based remedial objectives” with “ARAR and risk-based remedial standards.”
- p. 4-5, ¶4 In the third sentence, change “ARARs” to “chemical-specific ARARs and TBCs.”
- p. 4-6, §4.2.2 The text throughout this section does not clearly identify the requirement for LUCs for soil management to prevent construction worker exposure to manganese in subsurface soil. As noted earlier, I/C DEC are applicable to subsurface soil (greater than 2 feet deep) if not protect by an LUC. Please revise the text accordingly. Also, this alternative should include long-term monitoring.
- p. 4-8, §4.2.3 The text throughout this section does not clearly identify the requirement for LUCs for soil management to prevent construction worker exposure to manganese in subsurface soil. As noted earlier, I/C DEC are applicable to subsurface soil (greater than 2 feet deep) if not protect by an LUC. Please revise the text accordingly. Also, this alternative should include long-term monitoring.
- p. 4-10, §4.2.3 The last sentence under *Cost* refers to a 2.7 percent discount rate whereas elsewhere in the document, including Appendix C, a 2.3 percent discount rate is referenced. For calendar year 2012, the real 30-year discount rate is 2.0. The 2.3 percent rate was effective for calendar year 2011; the 2.7 percent rate was effective for calendar year 2010. Please correct the references and cost estimates.
- p. 4-11, §4.3 In this comparison of alternatives, the requirement for long-term monitoring under SO-2 and SO-3 needs to be discussed and compared.

- p. 5-1, §5.0 As discussed in the general comments, include at least one groundwater treatment alternative as a contingency in case MNA is not viable. Identify how long it will take for the MNA alternative to achieve drinking water standards.
- A footnote in Table 5-8 states that GW2 cannot meet the Health Advisory for Manganese standard. If correct, there is no ARAR compliant groundwater alternative.
- p. 5-3, §5.1.2 Monitoring parameters listed at the top of the page should also include alkalinity, carbon dioxide, arsenic, temperature, and PAHs. Details of the long-term monitoring will be finalized when the long-term monitoring plan is developed.
- p. 5-4, ¶4 In the second sentence, insert “ARARs and” before “TBCs.” Remove the last sentence.
- p. 5-4, ¶5 Remove the first two sentences.
- p. 5-6, 3rd ¶ In the second sentence, insert “MNA and” before “LUCs.” Note that GW2 only meets the chemical-specific ARARs/TBCs if MNA can achieve drinking water standards within a reasonable timeframe. The reasonableness of a MNA only alternative should be judged in light of a treatment alternative.
- p. 5-6, ¶9 See previous comment about adding an additional groundwater RAO to require achieving potable drinking water. Therefore, for RAO 1 (preventing exposure) the RAO can be met after the LUCs are established. However, for RAO 2 it will not be met until the estimated date for MNA to achieve drinking water standards.
- p. 5-7, §5.3 An accurate comparison cannot be made until a treatment alternative is added, since there is no way to determine whether the GW2 meets MNA standards.
- Please correct the discussion under *Compliance with ARARs*. In paragraph two, the text states that chemical-specific ARARs would eventually be met but in paragraph three the text states that chemical-specific ARARs are already met because there are no exceedances of MCLs, etc. Also, in the third paragraph please acknowledge that chemical-specific TBCs will have to be achieved before the remedy can be considered completed.
- p. 5-8, ¶7 See previous comment about adding a groundwater RAO that will require achieving potable drinking water. Therefore, for RAO 1 (preventing exposure), the RAO can be met after the LUCs are established. However, for RAO 2 it will not be met until the estimated date for MNA to achieve drinking water standards.
- Table 2-4 Please add the risk-based PRGs for ease of comparison to other PRGs, site data, and background.
- Please include a surface soil PRG (585 mg/kg) for manganese, required for confirmation sampling if Alternative SO3 is the selected alternative because SO3 addresses a hot spot. Therefore, the surface soil exposure point concentration is not relevant. Similarly, surface and subsurface soil PRGs are also required for

each PAH for confirmation sampling for Alternative SO3 for PAH hot spots.

Table 2-5 See comment for Table 2-4.

Table 2-6 This table correctly identifies the arsenic MCL as a PRG, but the text elsewhere (e.g., page ES-2) states that there is no PRG for arsenic in groundwater. Please correct the text throughout the FS to acknowledge the arsenic PRG for groundwater.

Table 2-8 Please clarify how the combined soil background values were calculated when either one or no specific soil background value is available for a specific soil type. Please footnote the reference for this.

Table 3-2 For the screening of Monitored Natural Attenuation, please clarify what *Retained, but not as a stand alone measure* means. As written it suggests MNA would only be used in support of another alternative, but that does not appear to be the intent.

Biological *in situ* treatment was retained in Table 3-2, but was not evaluated further in the text in Section 3.4. As noted in comments on the Draft FS, *in situ* treatment to modify the geochemistry of the impacted groundwater may be the most effective remedy to achieve the remedial goals and should be retained and developed into a remedial alternative.

Table 3-3 As discussed in previous comments, groundwater monitoring needs to be retained as a component of the soil alternatives to address contamination left in place in soil. Please add it in this table.

Table 3-4 As discussed in previous comments, groundwater monitoring needs to be retained as a component of the soil alternatives to address contamination left in place in soil. Please add it in this table. See previous comment concerning the need to add at least one treatment alternative.

Table 4-1 Add "long-term monitoring" to alternatives SO2 and SO3. For SO4, is manganese the only soil contaminant that will be left exceeding unlimited use standards after the excavation? If not, the LUCs need to be based on more than just where there manganese standards are exceeded.

Tables 4-2 & 4-5 The RI Remediation Regulations are "Applicable."

Table 4-5 Regarding the RI Remediation Regulations, Table 2-1 states that both the direct contact and leachability standards were used to develop soil PRGs, so the text for Table 4-5 needs to specify whether the alternative will meet both direct contact and leachability standards under the regulations.

Table 4-6 There are location-specific ARARs for SO2 if monitoring wells, fences, or signs will be installed or maintained within floodplain, wetlands, or state buffer zone to wetlands (see Table 4-9).

Table 4-7	<p>There are action-specific ARARs for SO₂ since the installation, sampling, and maintenance of monitoring wells, as well as the installation and maintenance of fences and signs that involve the same ARARs listed in Table 4-10 for SO₃. In addition, as documented in Table 2-3 the following action-specific ARAR should be added:</p> <p>Rules and Regulations for Groundwater Quality (Well Standards) – Appendix 1 - Applicable Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells. Applies to the abandonment of existing monitoring wells.</p>
Table 4-8	The RI Remediation Regulations are “Applicable.”
Table 4-10	<p>As documented in Table 2-3, the following action-specific ARAR should be added:</p> <p>Rules and Regulations for Groundwater Quality (Well Standards) – Appendix 1 - Applicable Identifies the standards and specification that must be followed for the installation or abandonment of monitoring wells. Applies to the abandonment of existing monitoring wells.</p>
Table 5-1	See previous comments concerning the addition of a treatment alternative.
Table 5-2	Regarding the RI Remediation Regulations, if there is no state standard that is more protective than the federal standards remove this ARAR. If it is retained, the Regulations are “Applicable.”
Table 5-5	<p>For all of the listed chemical-specific ARARs and TBCs, the Action to be Taken text needs to state that each standard will be achieved within a reasonable period of time through MNA. The LUC sentence needs to state that the LUCs are temporary until such time as the groundwater standards are achieved.</p> <p>Since Table 5-8 states that the Health Advisory for Manganese will not be met by this alternative, it needs to explain that.</p> <p>Regarding the RI Remediation Regulations, if there is no state standard that is more protective than the federal standards remove this ARAR. If it is retained, the Regulations are “Applicable.”</p>
Table 5-6	There are location-specific ARARs for GW2 if monitoring wells that will be installed or maintained within floodplain, wetlands, or state buffer zone to wetlands (<i>see</i> Table 4-9).
Table 5-7	Cite EPA MNA guidance (<i>see</i> Table 2-3). To meet this standard the amount of time it will take to achieve drinking water standards through MNA needs to be

identified and a determination made that the time period is reasonable as compared to a treatment alternative.

Regarding EPA Groundwater Guidance. Replace in the last sentence of the Action to be Taken, replace “application of the Land Use Controls (LUCs)” with “MNA within XX years. LUCs will be maintained to prevent groundwater use until groundwater cleanup standards are achieved.”

Add the State Clean Air Act standards and Sediment and Erosion Control Guidance from Table 2-3 pertaining to the installation and maintenance of the monitoring wells for this alternative.

Table 5-8 If footnote a is accurate, then GW2 does not meet the ARAR. It also may not meet the ARAR criteria if MNA cannot achieve groundwater cleanup standards within a reasonable period of time.

Please explain why GW-2 does not reduce residual risk given that this table indicates that GW-2 reduces environmental risks.

As previously commented by EPA, please specify how long MNA will take to achieve drinking water standards (*i.e.*, citing > 30 years is not sufficient).

Figure 2-8 This figure purports to show manganese concentrations in surface soil that exceed the industrial PRG. However, Table 2-4 indicates that no industrial PRG for manganese in surface soil was selected. Please clarify how Figure 2-8 was developed and also refer to EPA’s comments on Table 2-4.

Figure 2-12 This figure purports to show PAH concentrations in surface soil that exceed the industrial PRGs. However, Table 2-4 indicates that no industrial PRGs for surface soil were selected for many PAHs. Please clarify how Figure 2-12 was developed and also refer to EPA’s comments on Table 2-4.

Figure 2-14 This figure purports to show PAH concentrations in subsurface soil that exceed the industrial PRGs; however, Table 2-4 indicates that the only industrial PRG developed for subsurface soil PAHs was for benzo(a)pyrene. Please clarify how Figure 2-14 was developed and also refer to EPA’s comments on Table 2-4.

p. R-4 Please change the citation for Regional Screening Levels (RSLs) from June 2011 to May 2012 (or the latest edition of the RSLs when the FS is completed) and confirm that any RSL values referenced in the FS have not changed with the publication of an updated RSL list.

Appendix A3 Figure 3 indicates the oil-water separator (OWS) and associated contaminated soil was removed in 2002. The removal action at Tank Farms 4 and 5 was conducted in 2004-2005 and the OWS was removed at that time. Please correct the figure.

Figure 3 should also show human exposure to subsurface soil.

- Appendix B1, §2.2 The discussion in this section refers to four soil types at Tank Farms 4 and 5 and the last sentence in Section 2.2 states that background soil concentrations used for this FS were based on a combination of all four soil types. However, this FS only addresses DU 4-1 and page 2-10 in Section 2.2.3, the FS states that only two soil types, Ne and Se are present at DU 4-1. Therefore, background soil data based on four soil types is not applicable to DU 4-1. The Navy needs to demonstrate that background concentrations based on the two soil type pertinent to DU 4-1 are greater than the background concentrations based on the four soil types. Otherwise, the background values need to be corrected and comparisons re-evaluated.
- Appendix B1 The Navy agreed that Tables 4, 5, 6, 7 should include the toxicity data that were used to calculate PRGs for iron and cobalt, as well as arsenic and manganese, but the change was not made. Please correct.
- Appendix B1, Table 8 The PRGs presented in this table are not consistent with the PRGs presented in Table 2-4. See also EPA's comments on Table 2-4. Please edit the introduction to this section to clearly state that some of the PRGs have been superseded and that the reader should rely on the PRGs presented in the body of the FS.
- Appendix B1, Table 9 The PRGs presented in this table are not consistent with the PRGs presented in Table 2-4. See also EPA's comments on Table 2-4.
- Appendix B1, Table 10 Please clarify how the combined soil background values were calculated when either one or no specific soil background value (NA) is apparently available for a specific soil type. Please document the reference in a footnote.
- Appendix B1, Table 11 The PRGs presented in this table are not consistent with the PRGs presented in Table 2-6. See also EPA's comments on Table 2-6.
- Appendix C-3, Figure 1 Please confirm that this figure shows the area that the Navy proposes to protect with an industrial LUC for soil management.