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EMAIL REGARDING U S NAVY RESPONSES TO U S EPA REGION III COMMENTS ON THE
DRAFT SITE 7 OLD DUPONT DISPOSAL AREA REMEDIAL INVESTIGATION REPORT NWS
YORKTOWN CHEATHAM ANNEX FISC WILLIAMSBURG VA

4/16/2015
CH2M HILL

From: Ivester, Marlene/VBO
Sent: Thursday, April 16, 2015 11:03 PM
To: Hoover, Gerald
Cc: Park, Scott R CIV NAVFAC MIDLANT, EV; Smith, Wade (DEQ); Sawyer, Stephanie/VBO; Lampshire, Laura/WDC; Kowalski, Thomas CIV NAVFAC MIDLANT, EV
Subject: RE: EPA Draft Comments on Site 7 RI Report
Attachments: Responses to Draft TOX comments Site 7 RI.docx; Responses to Draft BTAG Comments on Site 7 RI.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Jerry,

Attached are responses to BTAG and Tox comments on the draft Site 7 RI (Hydro had no comments that needed to be addressed). Please review and let me know if you would like to set up a call and discuss these further. Also, since you submitted the comments as draft, let me know how you are going to proceed w/ an official comment letter.

A reminder that our Team goal was a draft final document by 4/16/15. While we are over on that goal, I still think we can meet the final document goal of 5/30/15.

Regards,

Marlene

From: Hoover, Gerald [mailto:Hoover.Gerald@epa.gov]
Sent: Tuesday, March 10, 2015 5:06 PM
To: Ivester, Marlene/VBO; scott.park@navy.mil; Sawyer, Stephanie/VBO; Wade.Smith@deq.virginia.gov
Subject: EPA Draft Comments on Site 7 RI Report

Team,

Attached are draft comments on the Site 7 RI Report from BTAG, EPA Hydro, and EPA Tox. As we've done in the past, I would like to set up a conference call, after you've had a chance to review these, and discuss the comments.

Please advise as to an appropriate time to have a conference call.

Thanks,

Jerry

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## Tox Comments – CAX Site 7 Draft RI

Thank you for the opportunity to review the draft *Site 7 – Old DuPont Disposal Area Remedial Investigation Report* for the Naval Weapons Station Yorktown, Cheatham Annex. Overall, the analysis and conclusions within the report appear appropriate. Within the Human Health Risk Assessment, the conceptual site model, the identification of COPCs, the description of the exposure and toxicity assessment, and the risk characterization were sufficient and accurate. The recommendation to develop a focused feasibility study to address site-related COCs (TCE, 2,4-dinitrotoluene, 2,6-dinitrotoluene, and chloroform) is supported by the evidence and assessment. The comments below are for your consideration.

### Primary Concern:

1. Page H-19, Section F.8 (as well as Section F.6.2.9 and F.6.2.10) – According to the COC selection criteria, COCs are COPCs that contribute “a carcinogenic risk greater than  $1E-6$  to a cumulative carcinogenic risk that exceeds  $1E-4$ .” For the future resident, the cumulative carcinogenic risk is  $3E-4$  (which exceeds  $1E-4$ ), therefore:
  - Future Resident, 2<sup>nd</sup> bullet – cancer risk due to chromium in soil ( $1E-4$ ) exceeds  $1E-6$
  - Future Resident, 6<sup>th</sup> bullet – cancer risk due to TCE in groundwater via vapor intrusion ( $2E-5$ ) exceeds  $1E-6$ ; however, TCE is a COC in groundwater due to HI exceedance.

**Further consideration of chromium in soil as a COC is requested.**

***Response: Exposure to soil alone does not result in a carcinogenic risk above  $1E-4$ , which is why chromium in soil was not considered a COC for soil. It is unlikely shallow groundwater (the groundwater evaluated in the HHRA) will be used as a potable water supply, and therefore unlikely the future resident would be exposed to both soil and groundwater. Additionally, chromium was identified as a COPC for soil and risks were calculated for chromium in soil assuming all of the detected chromium is hexavalent chromium is in the hexavalent form, which is conservative and unlikely. However, we will add the following text as an additional bullet item to Sections F.8 and F.6.2.9; COC for soil assuming future resident exposed to both soil and groundwater: chromium (assuming all detected chromium is hexavalent chromium).***

### Additional Comments:

2. Section 4, Nature and Extent of Contamination – Recommend deletion of references to background in this section. The purpose of this section, as outlined in the first sentence, is to evaluate “the nature and extent of contamination” with comparison to screening values. The discussion of background levels introduces a complicating comparison at this stage of the RI report, as comparisons to background are to be made only after risk calculations have been conducted (as the RI report states).

***Response: The purpose of this section is to evaluate the nature and extent of contamination, which includes the nature of contamination as it relates to being associated with past site use or background conditions at the base and the site. The following sentence will be added to the last paragraph of the introduction section of Section 4.0. “The constituents exceeding the screening criteria are discussed in the following subsections in terms of nature and extent of contamination, historic site use, and concentration relative to base-wide or site background concentrations”.***

3. Page H-5, Section F.3.3, COPCs and Appendix G, Table 2-5 – endosulfan II, gamma-chlordane, and dioxin have HLC > 1E-5 and should be considered in the groundwater-air exposure scenario.

**Response: Endosulfan II, gamma-chlordane, and dioxin are not considered volatile on the RSL table. The reason their HLCs are > 1E-5 is not because they are volatile, but because their water solubilities are very low. USEPA guidance in RAGS Part B uses two criteria to determine chemicals that easily volatilize, HLC > 1E-5 and MW < 200. These chemicals all have MWs over 300. Pesticides and dioxin are not very volatile and we have never treated them as VOCs for evaluation in the groundwater-to-air pathway.**

4. Page H-6, Section F.4.1, Conceptual Site Model for Human Health and Figure F-1 – the recreator receptor is characterized as current/future in Figure F-1; however, the bullet in Section F.4.1 states the recreator receptor as future. Please correct in Figure F-1 as only future.

**Response: The recreator receptor will be identified as future only on Figure F-1.**

- Page H-16, Section F.6.2.10, Future Industrial Worker – The cumulative HI (RME) for groundwater is 3 (2.0 for VI and 0.5 for groundwater) and not 2 as provided in the sub-bullet. In addition, the HI for TCE in potable groundwater was 0.5, which is greater than 0.1 to a cumulative target organ HI that exceeds 1 (in this case, the HI for immune and heart effects was 3E+0), and TCE should be characterized in the last bullet of this section as a COC for the VI pathway and potable groundwater. This change must also be reflected in Section F.8 under industrial worker (4<sup>th</sup> bullet).

**Response: Based on the rounding in Microsoft excel the cumulative HI for groundwater is 2 (value is 2.49 based on 0.96 from ingestion and 1.53 from VI). However, as it doesn't change the results or conclusions of the HHRA, the HI will be changed to 3. The following sentence will be added to the last bullet in Section F.6.2.10 and in Section F.8: "When considering exposure through both the VI pathway and potable use, trichloroethene would also be a COC for the potable use pathway."**

5. Page H-17, Section F.7.3, 1<sup>st</sup> paragraph – Delete, "The noncarcinogenic toxicity factors are most likely an overestimate of toxicity." This statement is conjecture, as the toxicity factors are estimates but the direction of estimation, either over- or under-, is impossible to ascertain.

**Response: As requested, the sentence will be deleted. However, the toxicity factors and adjustment used are designed to be conservative and to be more likely to over-estimate the hazard instead of underestimate the hazard.**

6. Page H-17, Section F.7.3, 2<sup>nd</sup> paragraph – Delete, "however, most of the experimental studies indicate the existence of a threshold level." This is incorrect. A threshold for carcinogenicity cannot be determined by individual experimental study, and the statement that 'most' experimental studies support a threshold is not supported.

**Response: Text will be deleted as requested.**

7. Page H-18, Section F.7.3, 5<sup>th</sup> paragraph – Delete, “however, these values should be interpreted cautiously because USEPA has not approved these toxicity values.” PPRTVs are supported by the Agency, as evidenced by their availability on an Agency website.

**Response: Text will be deleted as requested.**

Appendix G, Table 2.6 and 2.7 – A VISL value for trans-1,2-dichloroethene could not be located. Please clarify.

**Response: The VISL was calculated for trans-1,2-DCE based on an RfC for trans-1,2-DCE from the PPRTV archive (as included in the RAIS database). However, as indicated in the June 17, 2014 memo Removal of the trans-1,2-Dichloroethylene (CASRN 156-60-5) Provisional Peer-Reviewed Toxicity Value (PPRTV) assessment from the Electronic Library from Scott Wesselkamper, Director, Superfund Health Risk Technical Support Center (STSC), the trans-1,2-DCE PPRTV was archived due to inconsistencies in the conclusions regarding the RfC derivation. Therefore, this VISL will be removed from Tables 2.6 and 2.7.**

Appendix G, Table 7.7 – The cancer risk for the adult from water vapors at showerhead need to be calculated for chloroform and TCE, 8.7E-7 and 2.7E-6, respectively, because this route of exposure is not evaluated for children. The lifetime cancer risk for this route is then removed from Table 7.9.

**Response: No change will be made. The cancer risk associated with adult showering is included on Table 7.9 to calculate the cumulative cancer risk to the lifetime resident, which includes exposure while an adult.**

Appendix G – some of the total organ HI sums were incorrect and, although the conclusions do not change, the sums should be accurate.

- Table 9.3 – total neuro HI = 9E-3
- Table 9.3 – total gastro HI = 8E-3
- Table 9.4 – total gastro HI = 5E-3
- Table 9.5 – total neuro HI = 9E-3
- Table 9.5 – total gastro HI = 8E-3
- Table 9.6 – total gastro HI = 5E-2
- Table 9.8 – total neuro HI = 6E-1
- Table 9.10 – total neuro HI = 9E-2
- Table 9.10 – total immune = 3E+0
- Table 9.10 – total heart = 3E+0

**Response: Table 9.3 total gastro HI, Table 9.4 total gastro HI, Table 9.5 total gastro HI, Table 9.6 total gastro HI, Table 9.8 total neuro HI, and Table 9.10 total neuro HI, will be changed as indicated.**

**In terms of Table 9.4 total neuro HI, Table 9.5 total neuro HI, Table 9.10 total immune, and Table 9.10 total heart, these are the values Microsoft excel calculated based on rounding of the individual and total numbers. However, as these changes would not change the results or conclusions of the HHRA, they will be made.**

## **Draft BTAG Comments on CAX Site 7 Draft RI Report**

In response to your request, representatives of the BTAG have completed the review of the subject document and offer the comments presented below. It should be noted that BTAG focused its review on Appendix H: Baseline Ecological Risk Assessment.

***General Response to Overall Comments: The ERA contained in the Site 7 RI report was basically a “repackaging” of the ecological risk screening contained in the SI report for soils since there were no new soil data collected at the site for the RI; the main difference was that the SI only looked at detected chemicals. The final SI concluded no unacceptable risk for ecological receptors related to soil exposures. Groundwater samples were collected in 2014 but were only analyzed for VOCs and dissolved manganese. The 2014 VOC data were used in the RI in place of the 2011 VOC data (which were used in the SI) but there were no changes in risk conclusions (the final SI concluded no unacceptable ecological risks associated with groundwater) since there were no exceedances of ESVs for VOCs in either data set. Similarly, the inclusion of the 2014 manganese data in the RI ERA did not change the risk conclusions from the SI since the 2014 manganese data showed lower concentrations compared with the 2011 data. Given that the final SI report concluded no unacceptable risk to ecological receptors from potential soil and groundwater exposures, and there were no significant changes in the analytical data set used in the RI for these media, comments on the RI ERA suggesting large numbers of ecological COPCs in these media are not warranted. There were extensive comments on the SI report which were resolved prior to the report being finalized, and the new data collected in 2014 for the RI were based on the conclusions of the final SI report. The main focus of the ecologically-related RI sampling conducted in 2014 was to sample surface sediments in the adjacent York River since the SI analysis related to this medium had relatively high levels of uncertainty. The inclusion of these new sediment data is the only significant difference between the SI and RI ERAs; there were no BTAG comments on the sediment portion of the RI ERA.***

1. Page H-4, Section H.2.2 Analytical Data Used in the ERA: The text indicates the backfill material “...likely contains lower chemical concentrations...” than original site soil. The basis of this statement should be provided. If the statement cannot be supported it should be deleted.

***Response: The portion of the sentence which reads “... , which likely contains lower chemical concentrations, ...” will be removed from the text.***

2. Page H-6, Section H.2.3.3 Exposure Pathways and Routes: The list of “...aquatic biota (aquatic/benthic invertebrates, fish, and reptiles)...” needs to include plants (as shown in table H-4) and amphibians.

**Response: Aquatic plants are already included in the text (see the second paragraph, second sentence). For amphibians, please see the response to Comment 3.**

3. Page H-8, Section H.2.3.3: The text states “Amphibians are unlikely to occur on this site based on the salinity of the York River.” However, Site 7 is approximately 400 feet from Cheatham Pond. This would be well within the distance amphibians are known to travel (e.g., up to 30 kilometers). The quoted statement only describes a portion of the potential “sources” of receptors. Amphibians need to be included as an ecological receptor, even if only in the uncertainty section.

**Response: Even if Site 7 is within the dispersal distance of some amphibian species that may occur in Cheatham Pond, there are no freshwater wetland or aquatic habitats on Site 7 that would support the aquatic life stages of these receptors. Thus, amphibians are not appropriate receptors for this site under current site conditions.**

4. Page H-13, Section H.3.3.4 Aquatic Plants: This section indicates that tissue concentrations for only above ground vegetative portion of plants were estimated. Since some ecological receptors consume the roots (tubers), this only represents a portion of the potential exposure. It should be noted that the contaminant concentrations in roots may be different than the above ground portion of the plant.

**Response: While it is true that some receptors will consume roots/tubers, there is very little in the way of emergent aquatic vegetation along the shoreline of Site 7. For that reason, receptors such as the muskrat were not included in the list of aquatic receptors that were evaluated in the ERA. Thus, consumption of the roots of aquatic plants is not a significant potential exposure for ecological receptors at the site.**

5. Page H-19, Section H.5.3.1 Comparison with Ecological Screening Values: Under soils, the text indicates mean soil concentrations are compared to soil ecological screening values (ESVs) for plants and invertebrates. Because both of these ecological receptor groups have no or limited mobility, maximum concentrations compared with ESVs need to be used to identify contaminants of potential concern (COPCs).

**Response: Maximum concentrations were used to select Step 2 COPCs consistent with EPA and Navy ERA guidance. For Step 3A, COPC selection considered background UTLs and central tendency chemical concentrations (since the endpoints evaluated for these receptor groups were based on communities/populations and not individual organisms), as well as the magnitude and frequency of ESV and UTL exceedances (which account for maximum concentrations).**

6. Page H-21 Section 5.4.3 Groundwater: Even in the baseline ecological risk assessment, the maximum concentrations are used to identify COPCs likely to potentially pose risk to ecological receptors.

***Response: The Navy strongly disagrees with this comment. There are no direct exposures of ecological receptors to groundwater; exposures only become possible at the point groundwater begins to discharge to a surface water body or surfaces as a seep. The sole use of maximum groundwater concentrations is thus unrealistically conservative. While maximum concentrations are used in the screening portion of an ERA (Step 2) to identify initial COPCs, per EPA and Navy ERA guidance, the BERA incorporates other factors, including central tendency concentrations, to develop more realistic estimates of potential ecological risks. See also the general response.***

7. Section H.5.5.2 on page H-22 of Appendix H states that based on the mean concentration, gamma-chlordane exceeded its ecological screening value by a factor of 2.31 in groundwater. The section further states that gamma-chlordane was not selected as a final contaminant of potential concern since the mean hazard quotient would be below 1 assuming a dilution factor of 10, and does not appear to be site-related since it was detected in samples from upgradient wells at similar concentrations and was not detected in site soils. The use of a dilution factor is not appropriate for receptors in the hyporheic zone where receptors would be exposed to undiluted groundwater. While the data suggest that gamma-chlordane in groundwater may not be related to Site 7, there may be an upgradient source that needs to be identified and investigated.

***Response: Dilution factors account for dilution and attenuation as groundwater travels from the location of the monitoring well to the receiving water body, as well as when it discharges to the water body. The first part of the dilution (prior to discharge) is still applicable to pore water concentrations within the hyporheic zone. See also the general response.***

8. Page H-23, Section H.6 Uncertainties: The reporting limits discussion is not adequate. The text states "Because these chemicals were not detected, they are not known to be present on the site...." When a reporting limit exceeds the ESVs and there is no background value, a conclusion about whether or not the chemical is potentially present at levels of concern cannot be made. The chemicals that meet this criteria cannot be eliminated as COPCs.

***Response: These chemicals are identified as COPCs in Step 2. In Step 3A, however, they are not retained as COPCs since the uncertainties are considered acceptable based on the evaluation contained in this section.***

9. Table H-24 Ecological Screening Statistics – Site 7 Soil: The ESVs for DDD, DDE, and DDT are not adequately protective. All three ESVs need to change to the EcoSSL value for DDT and metabolites (21 µg/kg). This means that DDT would be a Step 2 and 3a COPC because the maximum detection limit exceeds the ESV and there is no background value.

***Response: The Eco-SSL ESVs referenced in the comment are based on food web exposures for bird and mammal receptors while the soil screen in Table H-24 is based on exposures of lower trophic level receptors (plants and invertebrates). Thus, the SSL values are not appropriate for use in the screen provided in Table H-24. The Eco-SSL values for DDT and metabolites are considered, however, in the food web exposure evaluation of the ERA (see Table H-26), as described in Section H.5.3.2.***

10. Table H-24: Regarding plants and invertebrates, this table identifies 17 VOCs, 18 SVOCs, three pesticides, five explosives, and seven inorganics that are COPCs. The reasons that support these chemicals as COPCs include (a) because no ESVs exist, (b) the maximum detection limit is greater than the ESV, (c) the detected concentration exceeds the ESV and background, or (d) the detected concentration exceeds the ESV and no background value exists.

***Response: The Navy disagrees that all of the chemicals identified in the comment are COPCs, even at Step 2. For example, non-detected chemicals without ESVs or UTLs are not considered COPCs; this is considered a “standard” uncertainty in ERAs. See also the general response.***

11. Table H-33 Ecological Screening statistics – Site 7 Groundwater: This table shows the maximum HQ for 33 chemicals exceeded one, with a range from 1.02 to 182. Please adequately explain why these groundwater contaminants were not carried forward as COPCs.

***Response: The rationale for excluding these chemicals is contained in Sections H.5.4.3 and H.5.5.2. See also the general response.***

12. Table H-34 Exceedances – Site 7 Groundwater: This table shows that three chemicals (4,4'-DDD, gamma-Chlordane, and manganese (total and dissolved)) at sample location CAS07-MW04-0111 had concentrations exceeding the surface water ESV and background (when available) in 2011 but not 2014. Additional data would be required to support that groundwater concentrations of chemicals would likely not cause risk to ecological receptors during long term monitoring.

***Response: Pesticides and total manganese were not analyzed for in 2014 groundwater samples per the final SAP and the results of the final SI. In terms of the 2011 data,***

*please see the general response. No additional data are warranted for these chemicals.*