Response to Comments
Site 21 Industrial Area Vapor Intrusion Sampling and Analysis Plan
St. Juliens Creek Annex
Chesapeake, VA

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Comments from EPA, provided 30 June 09.
RPM Comments

1. ***Comment:*** *SAP Worksheet 2*. Operable Unit per EPA Records is 12.

   Response: The requested revision will be made.

2. ***Comment:*** *SAP Worksheet 3***.** My email can be simplified to burchette.john@epa.gov

   Response: The requested revision will be made on Worksheet 3 and throughout the SAP.

3. ***Comment:*** *SAP Worksheet 9-1.* Not that it really matters, but I should have been present for the Site 21 Scoping session on worksheet 9-1.

   Response: Worksheet 9-1 has been updated to include the missing meeting participant.

4. ***Comment:*** *SAP Worksheet 10, Page 59 of 130, General Problem to address*. "The other buildings will not be evaluated unless the current land use changes." Please indicate that land use controls will be placed on the buildings not being investigated as is discussed earlier in the document.

   Response: Agreed, the sentence "Unoccupied buildings (Buildings 13, 46, 63, and 90) will not be investigated at this time, and land use controls prohibiting change in their current land use will be implemented."

5. ***Comment:*** *SAP Worksheets 15. Pages 79*. EPA is not in agreement that no action should be taken for J flagged results that could potentially be over the PAL unless other COC's are over the PAL. EPA believes that this statement should be

revised to read something along the lines of no action will be taken unless other COC's are detected.

Response: See response to EPA Toxicology Comment 3.

Comments from EPA, provided 30 June 09.
Toxicology Comments

1. ***Comment:*** *Page 62 of 130, Groundwater Samples*. The sentence reads, "USEPA 2002 provided groundwater screening values for use in vapor intrusion pathway evaluation; however, the guidance indicated that the standard values may not be applicable in cases of very shallow groundwater (e.g., less than 5 feet below ground surface). Therefore, the screening levels were not acceptable for use at Site 21." The last sentence should read, "Therefore, the screening levels were not acceptable for use at Site 21 *since shallow groundwater is less than 5 feet below ground surface.*

   Response: The sentence has been revised as follows, "Therefore, the screening levels were not acceptable for use at Site 21 since shallow groundwater is less than 5 feet below ground surface in most areas".

2. ***Comment:*** Page 66 of 130. The last bullet statement is incomplete. "National indoor and outdoor air background concentrations in comparison to site-specific outdoor air data to . . .???

   Response: The last bullet has been revised as follows, "National indoor and outdoor air background concentrations in comparison to site-specific indoor and outdoor air data".

3. ***Comment:*** *Page 79 of 130, footnote 2*. The footnote reads, "Due to the uncertainty of this data, no action will be taken solely on "J" flagged 1,2-DCA results that are below the laboratory QL if no other analytes have been detected above their PAL." EPA disagrees with this decision and recommends the following; "Due to the uncertainty of this data, no action will be taken solely on "J" flagged 1,2-DCA results that are below the laboratory QL if no other analytes have been detected.

   Response: The requested revision has been made and the following text has been added to the end of the footnote, "In cases where 1,2-DCA is "J" flagged and other analytes are detected below their PAL, the team will evaluate the data on a case-by-case basis with consideration of factors such as order of magnitude of detections in relation to the PALs".

Comments from EPA, provided 30 June 09.
APD Comments

1. ***Comment:*** *Refer to EPA RPM comment 5 and EPA Toxicology comment 3*. In addition, if there are two or more chemicals whose project action limits are below their QLs and are detected below the QLs and flagged with a "J", risk should be calculated for those flagged chemicals at their estimated values and also at the

values of their QLs. This way we would have a calculation of risk for the estimated measurements of those chemicals as well as the upper bound. At that point we can determine if further action is necessary.

Response: Comment noted. No changes have been made because there is only one chemical with a PAL less than its QL.

Comments from VDEQ, provided 22 June 09.
RPM Typographical Comments

1. ***Comment:*** *Worksheet 9, subheading Worksheet #9-4, purpose* – capitalize "creek"

   Response: The requested revision has been made.

2. ***Comment:*** *Worksheet 9, subheading Worksheet #9-5, date* – should say November 19, 2008

   Response: The requested revision has been made.

3. ***Comment:*** Worksheet 9-1, Site 21 Scoping Session, second sentence – worksheets should be one word

   Response: The requested revision has been made.

4. ***Comment:*** *Worksheet 9-1, last sentence before Worksheet #10* – add period

   Response: The requested revision has been made.

5. ***Comment:*** *Worksheet 9-4, last sentence before Statement from Tier II* – change "bee" to "been"

   Response: The requested revision has been made.

6. ***Comment:*** *Worksheet 9-4, Navy Rationale…, first bullet, fourth sentence* – remove first "and"

   Response: The requested revision has been made.

7. ***Comment:*** *Worksheet 9-4, Regulatory Rationale…, overview of discussion, third paragraph, second sentence from bottom* – change "adjust" to "adjustment"

   Response: The requested revision has been made.

8. ***Comment:*** *Worksheet 9-4, Regulatory Rationale…, overview of discussion, sixth paragraph, last sentence* – change "re-evaluates" to "re-evaluate"

   Response: The requested revision has been made.

9. ***Comment:*** *Worksheet 9-5, Site 21 Scoping Session, third sentence* – change "is it" to "it is"

Response: The requested revision has been made.

10. ***Comment:*** *Worksheet 11, last bullet* – remove last "to"

    Response: The requested revision has been made.

Comments from VDEQ, provided 22 June 09.
RPM Technical Comments

11. ***Comment:*** *Worksheet 9, subheading Worksheet #9-4, purpose* – add statement regarding the decision tree here since that was the main focus of the meeting

    Response: The worksheet purpose has been revised to the following: "Reach consensus-based decisions on how to move forward with the vapor intrusion investigations for SJCA Site 21 and NAB Little Creek Site 11a, focusing on the decision tree development." In addition, the objective of the "Navy Rationale" subtopic has been revised in the text to the following, "Present the Navy rationale for development of the proposed site-specific process, presented as a decision tree (Attachment A-3), and the requirements of the UFP-SAP to help the team develop a consensus-based path forward."

12. ***Comment:*** *Worksheet 10, General Problems to Address, second to last bullet* – we discussed that if the groundwater table was too shallow to collect subslab vapor samples we would wait a short period of time (two weeks, I think) to see if the groundwater elevation dropped – please capture this here and in the following locations:

    - Worksheet 10, last full paragraph
    - Figure 7, between Box 3 and Box 28

    Response: The following text has been added to the first sentence of the sub bullet to the second to last bullet, "after two attempts separated by a minimum of two weeks." Worksheet 10 has been revised to state, "If the groundwater table is too shallow to collect subslab vapor samples it may be due to a temporarily high water table and the collection of subslab vapor samples will be attempted two weeks following the initial mobilization. If the water table is still too shallow to allow for the collection of subslab vapor samples at that point, groundwater and concurrent air samples will be collected in accordance with the right-hand side of the decision tree (Figure 7)." The following footnote, Footnote 13, has been added between Box 3 and Box 28 on Figure 7, "If the groundwater table is not below the building foundation during the initial mobilization, repeat Box 3 after a 2-week wait. If the answer is still "No" on the second attempt, proceed to Box 28."

Comments from VDEQ, provided 22 June 09.
Risk Assessor Comments

Worksheet #10 - Problem Definition

1. ***Comment:*** Page 59, second to last bullet point: It looks like an "if" is missing from the text of the sub-bullet. I believe it should state, "…however, if the groundwater table is too shallow to allow for the collection of subslab vapor samples…"

   Response: See Response to VDEQ RPM Comment 12 for changes made to the text.

2. ***Comment:*** *Page 60, last paragraph*: More detail should be provided regarding the concept of "evaluating constituent ratios between the groundwater and indoor air samples, taking into account the vaporization potential of the COCs." How would this work? What process in envisioned by the authors? Note that this concept is also mentioned in Footnote 12 of Figure 7.

   Response: The text has been amended as follows, "This in part will be accomplished by evaluating constituent ratios between the groundwater and indoor air samples (e.g., TCE to cis-1,2-DCE concentrations in groundwater versus indoor air) to help identify potential sources (background and/or subsurface) of contaminants; taking into consideration the vaporization potential of the COCs using Henry's Law to account for differing volatilities." Consideration of additional lines of evidence (e.g., site history, potential identification and evaluation of a tracer compound[s], and/or building survey results) will help reduce the uncertainties associated with the conclusions suggested by this comparison. The evaluation will be performed in accordance with ITRC (2007) guidance. The specific evaluations to be used will depend on the type of data that are collected and the results of those data. Therefore, the team decided during the final scoping meeting to defer to use of professional judgment in evaluating the data, rather than developing specific decision points and processes in the work plan.

Worksheet #11 - Project Quality Objectives/Systematic Planning Process Statements

3. ***Comment:*** *Page 62, second paragraph*: The concept of using indoor air samples for current use and subslab vapor (SSV) samples for future use should be elaborated upon. How will SSV samples be used to predict indoor air Exposure Point Concentrations for future exposures? Note this concept is also presented in Box 14 of Figure 7.

   Response: Subslab-to-indoor air attenuation factors will be applied to the SSV sample results to predict future indoor air concentrations. If feasible and based on the magnitude of the subslab and indoor air results, a site-specific attenuation factor may be calculated (e.g., the ratio of the indoor air concentration to SSV concentration) and used to calculate the indoor air exposure point concentrations for assessing risk to future receptors in the current buildings. The applicability of

a site-specific attenuation factor derived using current data for use when assessing a future scenario will be assessed by: 1) considering the characteristics of the building; and 2) comparing the results with indoor air concentrations estimated using the more conservative USEPA (2002) attenuation factor of 0.1. The text has been amended to read, "If a complete vapor intrusion pathway is present, the indoor air data will be used to determine if concentrations in indoor air attributed to vapor intrusion pose unacceptable risk to current building occupants; and the subslab vapor data adjusted using attenuation factors to predict indoor air concentrations will be used to determine if concentrations in subslab vapor pose potential risk to future building occupants. If feasible and based on the magnitude of the subslab and indoor air results, a site-specific attenuation factor for existing buildings may be calculated using the data collected during the investigation (e.g., highest indoor air concentration to lowest subslab vapor concentration). The applicability of a site-specific attenuation factor will be reviewed and potentially used for a future use of current building scenario. For potential future new structures, indoor air concentrations will be estimated using a conservative attenuation factor of 0.1."

4. ***Comment:*** *Page 63:* It is stated that air samples will be collected in Summa canisters over a 24 hour period. If the primary exposure pathway involves commercial/industrial receptors wouldn't an 8-10 hour sampling event be more applicable.

   Response: The 24 hour period was selected based on the team's decision to collect data to evaluate both the current industrial and future residential scenarios. Eight-to-ten hour samples would match a commercial/industrial work-day; however, subslab results will initially be compared with unrestricted use (i.e., residential) screening levels derived based on a 24 hour daily exposure time. Note that air concentrations in 8 hour versus 24 hour samples generally only differ by a factor of between 3 and 5 (no definitive trend has been proven). Therefore, the collection of either an 8 hour or 24 hour sample should be appropriate for the evaluation planned at this site and no changes have been made.

5. ***Comment:*** *Page 66:* Should possible sources of the background concentrations mentioned in the last bullet point be discussed so that agreement on their appropriateness can be reached? Note, national background levels are also mentioned in Footnote 12 of Figure 7.

   Response: Per the decision tree (Figure 7), box 38 is a team question; "Are groundwater contaminants of concern contributing to indoor air." The agreement on their appropriateness, utilizing the multiple lines of evidence approach proposed in the decision tree and in worksheet 11, will be discussed by the team in answering the question. Potential sources of background concentrations include, but are not limited to, recent publications which summarize background indoor air concentrations (e.g., Dawson and McAlary, 2009 and USEPA, 2008) background outdoor air concentrations (e.g., New York State Department of Health, 2006). Because vapor intrusion is an evolving field

with new sources regularly becoming available and the fact that background data alone will not be used in decision making, team consensus on the specific sources is not necessary at this time and have not been added. No revisions have been made to the SAP.

Figure 7

6. ***Comment:*** In the boxes where residential or commercial screening levels are referred to would it be more appropriate to refer to Project Action Limits (PALs) as defined in Worksheet #11 instead of the more generic "screening levels" term?

   Response: The requested revision has been made in the boxes and notes on the figure.