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LETTER AND U S NAVY RESPONSE TO COMMENTS TO DRAFT TECHNICAL MEMORANDUM BENTHIC INVERTEBRATE EVALUATION SOLID WASTE MANAGEMENT UNIT 3 (SWMU3) JEB LITTLE CREEK VA
8/8/2012
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August 8, 2012

NPL/BRAC Federal Facilities Branch (3HS11)
Office of Federal Facility Remediation and Assessment
USEPA Region III
Attn: Mr. Jeffrey M. Boylan
1650 Arch Street
Philadelphia, PA 19103

Subject: Response to USEPA Comments on *Draft Technical Memorandum – Benthic Invertebrate Evaluation, SWMU 3 – Pier 10 Sandblast Yard* at Joint Expeditionary Base (JEB) Little Creek, Virginia Beach, Virginia.

Dear Mr. Boylan:

On behalf of the Navy, CH2M HILL has prepared the following responses to comments received via email from USEPA on June 8, 2012, on the *Draft Technical Memorandum – Benthic Invertebrate Evaluation, SWMU 3 – Pier 10 Sandblast Yard* at Joint Expeditionary Base (JEB) Little Creek, Virginia Beach, Virginia:

Comment 1: The document should acknowledge that actions at the site were focused based on the Navy's initial proposal to address the site under a removal action. This is important because of the resultant focus on ABM and metals, a single ecological endpoint, the identification of remedial action objectives, and the development of preliminary remediation goals. Since addressing the site as originally proposed by the Navy has changed, other ecological endpoints and/or contaminants should be evaluated and addressed as necessary.

Response: The ecological risk assessments (ERAs) that have been conducted as part of the SWMU 3 RI and SRI were completed prior to the Navy's initial decision to conduct a sediment removal action at the site. The baseline ERA presented in the RI evaluated aquatic receptors, including benthic invertebrates, aquatic plants, fish, reptiles, great blue heron, osprey, and raccoon, and utilized site-specific surface sediment, subsurface sediment, and surface water samples collected and analyzed for VOCs, SVOCs, and/or metals. Based upon the conclusions and recommendations of the RI, the baseline ERA presented in the SRI focused on the potential impact of ABM-related metal COCs identified in sediment to the benthic invertebrate community. The initial proposal to address the aquatic portion of the site under a removal action was made based upon the information available at the time the SRI was completed, in place of conducting additional ecological studies (i.e., Step 4 of the ERA process) to more fully define the potential ecological impacts of these COCs on the

benthic invertebrate community endpoint. Since defined in the RI, the endpoints and COCs have not changed throughout this process, and there is no new information that would warrant expanding the endpoints or COCs previously identified. No changes were made to the document.

Comment 2: Section 3.7 discusses the development of preliminary remediation goals for metals and ABM. The section states that there was a strong positive correlation between the ABM content and concentrations of copper, lead, nickel, tin, and zinc. The regression equations were used to calculate associated sediment concentrations using 1% ABM (the lowest possible integer). According to Table 1, this 1% ABM was chosen as the PRG for copper, lead and tin. An explanation should be provided stating how 1% ABM was chosen as an acceptable concentration since the regression equation would allow a concentration less than 1% to be calculated.

Response: One percent ABM was selected because one is the lowest possible integer and percent ABM in sediment was only estimated to the nearest integer during the 2007 SRI sampling; the regression equations were developed as part of the SRI using the 2002 and 2007 data and the PRGs were developed soon after the SRI was completed and prior to the 2010 sampling. The 4th sentence of the 1st paragraph of Section 3.7 was revised to read: "The resulting regression equations were used to calculate associated sediment concentrations using 1 percent ABM (the lowest possible integer; also, percent ABM in sediment was only estimated to the nearest integer during the 2007 SRI sampling)." The 1st sentence of the 5th paragraph of Section D.1.1.3 was revised to read: "The resulting regression equations (**Table D-2**) were used to calculate associated sediment concentrations using 1 percent ABM (the lowest possible integer; also, percent ABM in sediment was only estimated to the nearest integer during the 2007 SRI sampling and the regression equations were developed as part of the SRI using the 2002 and 2007 data)."

Although fractional percent ABM values can be entered into the regression equations, and fractional percent ABM was estimated during the 2010 sampling (using a more accurate method), the one percent ABM was retained because the resulting values from the regression equations were generally consistent with literature-based ecological effects values (ER-M values) and/or maximum background values.

Comment 3: Section 3.7 on page 4 states that a PRG for ABM content was established at equal to or less than 1%, based on visual observation. An explanation should be provided stating how ABM content can be accurately estimated visually in sediment at this level with reasonable certainty and consistency.

Response: The estimation method was documented as part of the final, approved SAP for the 2010 sampling (SOP 012 in Attachment B of the SAP). Prior to the 2010 sampling, the visual estimation methods used to estimate percent ABM were only considered accurate to the nearest integer. It should be noted that based on further discussion, the Tier I Partnering Team has agreed that the establishment of a sediment PRG for percent ABM is no longer warranted. Therefore, visual estimation of percent ABM in sediment is no longer needed. No changes to the document were made.

Comment 4: On page 4, Section 3.7, indicates that sediment concentrations associated with the 1 percent ABM (the lowest possible integer) were calculated. It is not clear why this value was selected as a "criteria." The text needs to adequately explain this.

Response: Please see the response to Comment 2.

Comment 5: On page 4, Section 3.8 indicates the vertical extent was defined as the shallowest depth at which the RQs were below established criteria. The text needs to clearly document that once it was established that the RQ was below the criteria, that samples below this depth were analyzed to ensure the RQ remained below criteria.

Response: The initial vertical depth was estimated based upon percent ABM (the depth where percent ABM was ≤ 1 percent). A 6-inch vertical sample was then taken from the sediment core just below this ABM-defined depth and analyzed for the metal COCs. If the RQ was met in this sample, no additional samples at deeper depths were analyzed. This procedure was documented in the final, approved SAP (December 2009) for the vertical delineation sampling. Section 3.8 was revised to better reflect the sampling methods and Section D.1.1.3 was updated to include discussion of the vertical delineation sampling.

Comment 6: The Review of Remedial Alternatives implies that the reduction of risk is a balancing criterion along with cost. This is not the case. Reduction of risk to acceptable levels is a threshold criterion.

Response: Comment noted. It is acknowledged that the protection of human health and the environment is a threshold criterion; however, as described in the U.S. EPA *Guidance for Optimizing Remedy Evaluation, Selection, and Design*, this criterion is described as follows: "Addresses whether or not a specific alternative will achieve adequate protection and describes how the contamination at the site will be eliminated, *reduced,* or controlled through treatment, engineering, and/or institutional controls." The evaluation of cost versus overall risk reduction was utilized as a tool to identify where sediment removal was no longer a cost effective remedy for the site in an effort to help define the removal action boundary. It was not intended to eliminate areas of the site from requiring action. No changes to the document were made.

Comment 7: Note the remedial action objective originally developed (establish of a benthic community) was made under the proposal to address the site contamination under a removal action and this RAO reflected the ecological endpoint that the partnering team agreed was impacted by the site contaminants. Moving forward, this objective will need to be revised to reflect the relationship between site contaminants and their impact on the benthic community. For example: reduce the concentrations of site contaminants to allow for the development of a healthy benthic community. Additional RAOs may need to be developed to address risk to other ecological endpoints.

Response: Comment noted. Please see the response to Comment 1 regarding additional ecological endpoints. The Tier I Partnering Team has decided to proceed with a non-time critical removal action (NTCRA) in the Dry Dock Area. As a part of the development of the EE/CA for this NTCRA, the Partnering Team has agreed to revise the RAO to focus on contaminant reduction (of the metal COCs) in sediment rather than the establishment of a benthic invertebrate community. The last paragraph of Section 6, and the last paragraph of Attachment D, Section D.5.4, was revised to read as follows: "Although the current, non-

CERCLA-related physical characteristics of the site (such as bottom DO concentrations) may be having more of an impact on the condition of the benthic invertebrate community than the CERCLA-related metals detected in site sediments (due to bioavailability considerations), the magnitude of these metals concentrations may potentially result in unacceptable risks to ecological receptors should these physical characteristics change over time; therefore, remedial action at SWMU 3 is warranted. Given the current physical limitations in the Dry Dock and Offshore Areas (primarily low bottom DO concentrations), it is unlikely that a benthic invertebrate community that would approach that in a similar urban reference area would be established following remedial action; therefore, the remedial action objectives established for the site should focus on the reduction of metals concentrations and not the establishment of a comparable (to an urban reference condition) benthic invertebrate community."

Comment 8: Page 5, Section 4.2 indicates two sediment samples were collected from each of three locations surrounding each of the 60 sample stations. Sediment from one grab sample was analyzed for AVS/SEM. One grab sample from each location was used for ABM percent estimate and analyzed for the select metals. The second grab sample was used for analysis of benthic invertebrates. The text needs to adequately address the uncertainty of the data results obtained due to the variability that can exist in concentrations of COCs between sediment samples (this could also include AVS/SEM, ABM percent estimates, and benthic invertebrate data).

Response: The sampling followed the procedures outlined in the final, approved SAP for the 2010 sampling. As described in Section 4.2, within each 100 x 100 foot grid, two Ponar grab samples were collected from each of three locations for a total of six grab samples per grid. Following collection, sediment from one grab sample collected at each location was placed directly in the sample container for AVS/SEM analysis. Of the two Ponar grabs collected from each of the three locations, one grab sample was designated for ABM content estimation and analytical chemistry sample collection, and the other for benthic invertebrate enumeration. The three similarly designated grab samples (one from each location) were then composited prior to ABM estimation, analytical chemistry sample collection, and/or benthic invertebrate enumeration for each grid. Given that the sampling used a compositing strategy, and composites (except for AVS/SEM) were homogenized within grids, the uncertainty is minimal over the spatial area sampled (100 x 100 foot grids). No changes to the document were made.

Comment 9: Page 6, Section 4.2 indicates that 57 composite samples were collected for benthic invertebrate analysis. The text needs to clearly state why only 57 sample locations were analyzed for benthic invertebrates when 60 sampling stations were established. However, page 8, Section 5.1.2 indicates benthic invertebrate surveys were conducted at all 60 grids in 2010. Please resolve why the text on these two pages does not convey the same information about the number of grids that were analyzed for benthic invertebrates.

Response: As stated in the text of Section 4.2, a total of 66 benthic invertebrate samples were collected, 57 composites and 9 replicates. The 57 composites represent 57 of the 60 grids. The 9 replicates (3 sets of 3) represent the remaining 3 grids. No changes to the document were made.

Comment 10: On page 7, Section 4.3.2.2 indicates that background data from Little Creek Cove was used. In the past, BTAG has raised issues about the use of Little Creek Cove as a background sample location. This section needs to clearly acknowledge that the "urban background conditions" reflected in these samples includes potential impact from this site as well as other CERCLA sites at the installation, as well as other releases of contaminants currently addressed through other environmental programs.

Response: Section 4.3.2.2 was revised to acknowledge the limitations of the urban background sediment samples. Additionally, Attachment D was updated to reflect the uncertainty of using these data.

Comment 11: On page 8, Section 5.1.2 indicates that of the 60 grids, 14 had zero organisms and 33 had less than 10 organisms. This section also indicates that 31 of 60 of the grids had no pollution sensitive organisms. Of these 31 grids, the text needs to indicate if they include any of the 14 grids that had no organisms. The 14 grids with no benthic organisms need to be identified on Figure 5. According to Table D-9, there are 17, not 14, grids with no benthic organisms (525, 530, 534, 538, 539, 540, 543, 544, 545, 546, 550, 552, 558, 563, 567, 571, and 574). Please resolve the text to reflect this.

Response: The 31 grids without any pollution sensitive organisms include the 14 grids with no organisms. This has been added to the text. Figure 5 currently includes the total number of organisms in the bottom right corner of each grid; grids with no organisms are indicated by a zero. A reference to figure 5 was added to the text; however no changes to the figure were made. Table D-9 includes the individual replicates for the three grids (534, 550, and 558) that had replicate samples. Each of these grids had at least one replicate with no organisms. However, the average of the three replicates was used to represent the grid, so none of these grids was considered to have no organisms. Thus, the count of grids with no organisms is 14, not 17. This was clarified in the Section 5.1.2 and Attachment D Section D.5.2.

Comment 12: On page 10, Section 5.1.3 indicates that a bottom DO of 4 mg/L is an approximate threshold below which impacts to benthic invertebrate community appear to be acute at this site. Text needs to be added to this section comparing these data with background data consistent with the physical/chemical nature of this SWMU, except for contaminants. It is interesting to note that 1) for the 17 sample locations where no benthic invertebrates were found the dissolved oxygen ranged from 0.77 mg/L to 4.79 mg/L; 2) for the 15 sample locations where benthic organisms were found at similar depths as in the 17 sample locations where there were no benthic invertebrates, the dissolved oxygen ranged from 0.78 to 5.32 mg/L; and, 3) in the 26 remaining sample locations with benthic invertebrates the dissolved oxygen ranged from 4.29 to 6.56 mg/L. There were two sample locations with benthic invertebrates with no deep depth data available and with dissolved oxygen of 4.7 and 5.55 mg/L. From these depth/DO data, it is unclear how meaningful it is to establish a DO of 4 mg/L as a threshold below which impacts to benthic invertebrates appear to be acute. Also, because other factors (e.g., temperature, decomposition, and salt concentration) can influence DO, it is not clear that a one-time sampling event can accurately describe DO or benthic invertebrates throughout the year. These data that are available suggest that those grids with no benthic invertebrates during this sampling event may have organisms at other times of the year. Additional information is needed to adequately address this concern.

Response: As indicated in the text of Section 5.1.3, this threshold was specifically qualified as being based solely on the 2010 data, and at the water temperature and salinity present at the time of this sampling. It is used qualitatively in the evaluation during the comparison of the different spatial areas of the site within the context of the 2010 sampling event; this use is appropriate. However, Section 5.1.3 and Attachment D Section D.5.2.1 were modified to clearly indicate that this threshold is not intended to be a universally applied value for the site for all time periods.

Comment 13: Section 5.1.4 on page 10 states that because a reference area was not sampled for benthic invertebrate metrics, the Connector Channel data set from SWMU 7b was used as a reference for SWMU 3. An explanation should be provided stating why a reference area for SWMU 3 was not sampled as this would have been the most direct approach for assessing impacts. The physical and chemical conditions in the Connector Channel should be compared to the conditions in all areas of SWMU 3 to justify its use as a reference. It is important to note that BTAG expressed reservations regarding the use of the Connector Channel as a "reference" based on both its physical setting and condition, as well as its proximity to other sources of contamination.

Response: As a result of Partnering Team discussion in December 2011, the use of the SWMU 7b Connector Channel as a reference area has been removed from the document and a qualitative comparison among the spatial areas of the site was included.

Comment 14: Section 5.1.4 on page 10 states that most near-shore samples and about half the Marina samples achieve the minimum values from the SWMU 7b Connector Channel for each of the benthic metrics, which indicates that they are within the "reference range." The section further states that very few near shore samples and no Marina samples achieve the average values for the reference, indicating that they are at the low end of the "reference range." An explanation should be provided for these statements as Figure 5 shows that site samples had a maximum density of 168 individual organisms while Section 5.1.4 on page 10 states that the density at the reference ranged from 230 to 4,583 organisms. In addition, site samples achieving the minimum values for the reference and at the low end of the "reference range" would hardly seem adequate to conclude these represent reference conditions. A more appropriate approach could be to compare the mean and distribution between the reference and SWMU 3.

Response: As a result of Partnering Team discussion in December 2011, the use of the SWMU 7b Connector Channel as a reference area has been removed from the document.

Comment 15: Section 5.2 on page 11 states that given the physical limitations in the offshore areas (low bottom dissolved oxygen), it is unlikely that a community that would approach that in the reference area would be established following any type of remedial action aimed at reducing the chemical concentration in surface sediment in this area. Low dissolved oxygen could represent a temporary condition and likely may increase with improvements in water quality. The issue to address is whether a benthic community would be able to develop should water quality and dissolved oxygen improve in the future, given the presence of site related chemical contamination. If the conclusion is no because the high metal concentrations in sediment would prevent this from occurring, than a remedial action is warranted allowing the improvement of the benthic community in the long-term as water quality improves.

Response: As a result of Partnering Team discussion in December 2011, the use of the SWMU 7b Connector Channel as a reference area has been removed from the document. Additionally, per the response to Comment 7, Sections 6 and D.5.4 have been revised.

Attachment D: Ecological Risk Evaluation

Comment 16: On page D-2, Section D.1.1.2 indicates sampling activities continued along each transect until ABM was absent from two consecutive sample locations. This text needs to reflect that contamination associated with ABM is only found where ABM is located or that sampling beyond the presence of ABM did not show contamination.

Response: The following was added to the beginning of the 4th paragraph of Section D.1.1.2: "COC concentrations detected in surface sediment samples exceeded at least one ecological screening value (TEL, ER-L, PEL, and/or ER-M) in all samples collected. With the exception of zinc at two locations, all samples collected from the transect ends were below the ER-M." It should be noted that, while the 2007 SRI data helped to define the study area, additional lateral delineation sampling was conducted in 2009 to bound areas where metal COC concentrations exceeded agreed-upon PRGs. Results of the 2010 surface sediment sampling, which encompassed the entire 2009 remediation boundary (including 100 x 100 foot grids with high ABM content as well as the off-shore grids with ABM <1 percent), indicate the remediation area has been adequately defined based solely on metal COC concentrations.

Comment 17: On page D-3, Section D.1.1.3 identifies LW03-C-SD201-00-02C (very high ABM and metals) as an outlier that was removed when correlation coefficients (r^2 values) were calculated. One interpretation of this sample is that it represents a hot spot and needs to be specifically addressed in the conclusions. This sample also needs to be located on a figure.

Response: The evaluation discussed in this section occurred in the SRI, which has been finalized and accepted by the Partnering Team. In addition to the high point, two low points were also removed from the evaluation, potentially biasing the regression line high, not low. SI and RI sample locations were added to Figure D-2 and a reference to this figure was added to Section D.1.1.3. Based on the results of the 2010 sampling, this location falls within the proposed remediation boundary (Grid 523).

Comment 18: On page D-4, Section D.1.2 indicates the Tier I Partnering Team decided to not require sampling of the reference area for benthic invertebrates. This section needs to clearly state the rationale for this decision.

Response: The last sentence was revised to read: "Per discussions by the Tier 1 Partnering Team, due to the interconnectedness of Little Creek Harbor and Little Creek Cove, the dynamic nature of the system, and Little Creek Cove's receipt of storm water runoff from various locations within the facility, including other CERCLA sites within the ER Program, the sampling of a reference area for benthic invertebrates (in Little Creek Cove) was removed from the SAP."

Comment 19: On page D-11, Section D.5.2.1 indicates zero counts always yield meaningful values for taxa and total density but this is not always true for the other eight metrics. Specifically explain why it is true and why it is not true for the other eight metrics.

Response: A zero value for number of taxa and total density means that no organisms were present, a meaningful result. However, if a sample contains no organisms (and is therefore presumed to be impacted), it has an undefined value for any of the parameters based upon a percentage (since you are dividing by zero). The sample would also have a value of zero for density of the dominant taxon and density of pollution tolerant organisms; low values for these two parameter suggest a healthy, not an impacted, community. This has been added to Section 5.1.3 and Attachment D Section 5.2.1.

Comment 20: On page D-11, Section D.5.2.1 indicates that four metric values were reported but not included in the statistical evaluation. Explain why this was the chosen course of action.

Response: These four metrics were included on the preliminary list of metrics in the SAP but were proposed for deletion, at the December 2010 Partnering Team meeting, because they were not useful metrics based on a review of the actual benthic invertebrate data. At the December 2010 Partnering Team meeting, when the metrics were finalized, BTAG requested that these four metrics be reported (not deleted) but the Partnering Team agreed that they need not be included in the statistical analysis. This has been added to Attachment D Section 5.2.1.

Comment 21: On page D-11, Section D.5.2.1 indicates that Spearman coefficients were given more weight if the results of the two methods differed. Adequately explain why this decision was made.

Response: This was done because the data were rarely normally distributed, an assumption of the Pearson statistic. The Spearman statistic does not have any distribution assumptions. This has been added to Attachment D Section 5.2.1.

Comment 22: On page D-14, Sections D.5.2.2 and D.5.3 indicate the benthic invertebrate community in most of the Near Shore Area and in about half of the Marina achieves the minimum reference condition. Based on the data in Table D-19, it is not clear that this conclusion is correct. The five reference samples contained total densities of benthic invertebrates ranging from 230 to 4,583 organisms. The other three samples contained densities of 1034, 1523, and 1739. It is not clear that the sample location with 230 organisms can statistically be included with the other four samples. Therefore, when it is excluded, the total density in 1 of 11 marina, and 5 of 19 Near Shore sample locations exceed the minimum reference value of 1034. This information also needs to be included in the text.

Response: As a result of Partnering Team discussion in December 2011, the use of the SWMU 7b Connector Channel as a reference area has been removed from the document.

Comment 23: On page D-15 states "...as the SEM/AVS ratios were almost always less than one." Table D-6 shows 4 of 13 samples were analyzed for SEM/AVS and had ratios greater than one. The rest of the sample locations have the symbol "- -," which is not defined. Table D-6 does not support the quoted text. Table D-6 does support that approximately 31 percent of the locations analyzed for SEM/AVS had ratios greater than one meaning the concentrations of metals was greater than the binding capacity of AVS and would be available to benthic organisms. This may mean that 18 of 60 sample locations would have metals bioavailable to benthic invertebrates.

Response: The symbol "—" indicates that AVS/SEM was not measured in the sample. This has been added as a footnote to Table D-6. Table D-6 shows the older (2002 and 2007) data for which AVS/SEM was measured in relatively few samples. The quoted statement refers to the 2010 data presented in Table D-7, for which AVS/SEM was measured in all 60 samples. For the 2010 data, the SEM/AVS ratio exceeded one in only 2 of the 60 samples, as summarized in the first paragraph of Section D.5.1. The text has been revised to more clearly indicate that these statements are based upon the 2010 data.

Comment 24: On page D-7, Section D.2.1 states "The benthic invertebrate community…in the vicinity of SWMU 3 appears to be significantly impaired." On page D-9, Section D.5.1 indicates approximately 10 percent of the benthic invertebrate community is comprised of pollution sensitive organisms. This suggests that 90 percent of the benthic invertebrate community is pollution tolerant. Please define what pollution sensitive and pollution tolerant organisms mean.

Response: The "pollution classification" for each taxa is listed in Table D-9, if available. Since not all taxa have classifications, the sum of the percent pollution sensitive and the percent pollution tolerant do not add up to 100. Since both of these parameters were metrics in the analysis, their values for each sample can be found in Table D-9. For example, SD501 is comprised of 21.7 percent pollution tolerant organisms and 8.33 percent pollution sensitive organisms (the remainder had no available classifications). This explanation has been added to the text. Note that these two metrics were only used qualitatively in the evaluation (please see the response to Comment 19).

Comment 25: On page D-15, Section D.5.3 indicates that SEM/AVS ratios were almost always less than one. According to Table D-6, there were 13 sample locations (2002/2007) where SEM/AVS data were obtained. Four (approximately 31%) of these SEM/AVS values were greater than one (2.62 to 9.88). The table needs to tell the reader what the symbol "- -" means. Table D-7 (2010) shows 2 of 60 (approximately 3%) sample locations with SEM/AVS ratios greater than one (1.105-2.774). Comparing this SEM/AVS information in these two tables can be interpreted as meaning that a single point in time sampling effort for SEM/AVS is not sufficient for interpreting impacts from this information. This is, of course, consistent with the known seasonal variability in AVS. As expected, this information indicates that SEM/AVS changes. The report needs to adequately discuss this and how the timeframe of sampling may impact the results of SEM/AVS analyses.

Response: Please see the response to Comment 23. The text has been modified to indicate that AVS may vary seasonally. However, the 2010 data, collected in late summer when DO levels are typically lowest and organisms are typically most stressed, may be the most relevant data on a seasonal basis.

Comment 26: On page D-15, Section D.5.3 states "…ABM is inert (consisting essentially of coarse sand)…and the paint residues (which contain the metals) do not decay…." These claims need to be supported. In addition, the composition of ABM also needs to be specifically detailed.

Response: Based upon grain size analysis, ABM appears predominantly in the coarse sand fraction. The "black beauty" materials consist mainly of silicon dioxide (sand), aluminum oxide, iron oxide, and calcium oxide. Metals in the paint residues do not degrade since they

are elements although they may change chemical form based upon ambient environmental conditions. This has been added to the text.

Comment 27: On page D-15, Section D.5.3 states "...it is unlikely that a community that would approach that in the reference area would be established following any type of remedial action aimed at reducing the chemical concentration in surface sediment...." It is not clear what supports this statement. It is not clear that the reference area (channel to Desert Cove) is appropriate for SWMU 3. In the 17 sample locations where no organisms were found, the depth ranged from 16.2 to 31.4 feet and the DO ranged from 0.77 to 4.79 mg/l. In the 15 sample locations where benthic organisms were found, the depths (16.3 to 22.5 feet) were similar as those with sample locations with no organisms and the DO ranged from 0.78 to 5.32 mg/l. This information suggests that depth and DO are not necessarily the limiting factors, but may act synergistically with other factors (e.g., contaminant concentrations) to limit the benthic invertebrate community.

Response: As a result of Partnering Team discussion in December 2011, the use of the SWMU 7b Connector Channel as a reference area has been removed from the document.

Comment 28: Table D-1 contains the symbol * and needs to define it for the reader.

Response: The following footnote was added to Table D-1: " * = The matrix spike duplicate was outside of the control limits".

The above responses (and other Team comments/responses) have been incorporated into the draft final version of the technical memorandum.

Please do not hesitate to contact me at 757-671-6266 if you have any questions concerning these responses.

Sincerely,

Cecilia Landin
Activity Manager

cc: Mr. Bryan Peed/NAVFAC Mid-Atlantic
Mr. Paul Herman/VDEQ
Administrative Record File