N61414.AR.001547
NAB LITTLE CREEK
5090.3a

U S NAVY REVISED RESPONSE TO U S EPA COMMENTS TO DRAFT TECHNICAL MEMORANDUM POST MILCON ACTION EVALUATION SWMU 7B SMALL BOATS SANDBLAST YARD (DESERT COVE) NAB LITTLE CREEK VA
2/10/2012
CH2M HILL

CH2M HILL
5700 Cleveland Street
Suite 101
Virginia Beach, VA
23462
Tel 757.671.8311
Fax 757.497.6885

February 10, 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: Revised response to USEPA Comments on *Draft Technical Memorandum, Post-MILCON Action Evaluation, SWMU 7b – Small Boats Sandblast Yard (Desert Cove)*
Joint Expeditionary Base (JEB) Little Creek, Virginia Beach, Virginia
Navy CLEAN 1000, Contract N62470-08-D-1000, Task Order WE32

Dear Mr. Boylan:

On behalf of the Navy, CH2M HILL is pleased to submit the following revised response to the comments received October 24, 2011, from USEPA on *Draft Technical Memorandum, Post-MILCON Action Evaluation, SWMU 7b – Small Boats Sandblast Yard (Desert Cove), Joint Expeditionary Base (JEB) Little Creek, Virginia Beach, Virginia* (CH2M HILL, May 2011):

Comment 1: Page 3, Under Environmental History, the text indicates the partnering team judged the ecological risks from PAHs, arsenic, selenium, and silver in sediment to be acceptable and does not require further investigation. The reasons supporting the bullet that PAHs are not likely attributable to a CERCLA release from SWMU 7 need to be included. In the second bullet, only the maximum HQ value is relevant because the ecological receptors are benthic invertebrates with limited mobility (this applies to both arsenic and selenium). In order to say the arsenic concentrations are at background levels, they must be compared with background levels. The fact that mean and maximum concentrations are similar does not necessarily suggest that the chemicals are at background levels, but may suggest that the contaminant distribution is relatively homogonous.

> **Response 1:** This text reflects team consensus and was extracted essentially verbatim from the November 2008 partnering team minutes and the Final SWMU 7b-Desert Cove Revised Ecological Risk Assessment Work Plan and Sampling and Analysis Plan (CH2M HILL, 2009).
>
> As discussed in the 2004 RI ERA, the assessment endpoints evaluated focus on receptor populations/communities, which encompass larger spatial areas, making the mean concentration relevant. As the investigation work plan and sampling and analysis plan

states, the current ERA should use similar methodology to that of the 2004 ERA. Because the community focus of the benthic invertebrate assessment endpoint has not changed, the mean concentration is also relevant to this ERA.

Based upon this comment, as well as VDEQ Comment 1, Bullets 1, 2, and 3 now read as follows:

- "PAHs are not likely attributable to the CERCLA activities (sandblasting) at SWMU 7b. PAHs are not typically associated with sandblasting residues. PAHs are likely to be primarily attributable to the nineteen (19) storm water outlets which convey storm water runoff from various locations within the facility, including numerous parking areas.
- Arsenic was identified as a secondary COC in the Cove Area and Pier Area during the 2004 RI, where only the discrete RI sediment samples were used to derive the list of COCs. When considering both the discrete and composite RI samples, the site-wide maximum hazard quotient (HQ) for arsenic in surface sediment is low (1.54) and the site-wide mean HQ is less than 1. Arsenic is not typically associated with sandblasting residues. Although arsenic was not measured as part of the background sediment investigation, the similarity of the mean (8.1 mg/kg) and maximum (12.6 mg/kg) concentrations suggests that this chemical is present at background levels. Additionally, the primary metal COCs, which are typically associated with sandblasting residues, do not show similar uniform distributions.
- Selenium was identified as a secondary COC in the Channel, Cove, and Pier Areas during the 2004 RI, where only the discrete RI sediment samples were used to derive the list of COCs. When considering both the discrete and composite RI samples, the site-wide maximum HQ for selenium in surface sediment is low (2.50) and the site-wide mean HQ is less than 1. Additionally, selenium was only detected in a small number (about 25 percent) of the surface samples."

Comment 2: Page 5 - There is concern about the location of the background samples. They are located in an area surrounded by Navy ship docks, Navy Superfund Site, and a drainage channel that is adjacent to other Navy Superfund Sites. Additionally, the outfalls of storm drains potentially receiving surface runoff from the site area discharge into the cove, and the cove has most likely been influenced by airborne migration and deposition of contaminants from the site. The uncertainty associated with using these background sample location data needs to be adequately addressed.

Response 2: At the November 2008 partnering meeting, the partnering team accepted the use of this background data set (from SWMU 3), determining that a SWMU 7b-specific background data set was not needed. The decision was documented in the SAP, where the data evaluation approach is defined. Section 5.1.2.2 was revised to read:

"In June 2007, the Navy, in partnership with USEPA and VDEQ, agreed to collect background sediment samples from an urban cove area unaffected by sandblasting activities for use in developing remediation goals for SWMU 3. Following a review of historical data (see **Attachment D, Table D-12**), the northern portion of Little Creek Cove was identified as a potentially suitable area for this purpose. Similar to

SWMU 7b, Little Creek Cove receives storm water runoff from various locations within the facility, including other CERCLA sites within the ER Program.

A traditional, statistically-based work plan was not developed for the collection of urban background sediment samples. In July 2007, surface sediment grab samples were collected along a series of transects and visually inspected for grain size and ABM content. Based upon these observations, eight surface sediment samples (and one field duplicate) were collected (**Figure 5**) and analyzed for the SWMU 3 COCs (copper, lead, mercury, nickel, tin, and zinc), TOC, pH, and grain size. Three of the samples were also analyzed for AVS/SEM. The data from this background sampling are provided in **Attachment D, Table D-13**. The background sediment samples were broadly similar in terms of physical characteristics to site samples (see **Attachment D, Table D-14**) but tended to be higher in TOC and composed of a higher percentage of fines (silt/clay). In addition, the range of concentrations in the background sediment samples was narrow (low variability), which suggests that these samples represent urban background for this geographical area.

During the scoping of the post-MILCON investigation, the use of these urban background sediment data in the evaluation of SWMU 7b was considered. Following the risk management decision for secondary COCs (PAHs, arsenic, selenium, and silver), it was determined that the background sediment investigation analyte list was now inclusive of all remaining SWMU 7b sediment COCs and suitable for comparison against site data. The approach for using these background data is documented in the 2009 and 2010 SAPs (CH2M HILL, 2009; 2011) and consists of a comparison of the maximum value from the background data set with site-specific concentrations."

Comment 3: Results Summary, Pages 7 and 8 - Due to the aforementioned concerns, comparisons with background are suspect in terms of risk evaluation, and even attribution. Furthermore, comparisons with only maximum "background" concentration are also suspect. At a minimum, comparisons with mean "background" concentrations must also be provided.

Response 3: Please see the response to EPA Comment 2. Comparison of site data to the maximum value from the background data set was presented and agreed upon in the 2009 SAP (CH2M HILL, 2009). The following text has been added to Section 5.3.2.2 concerning the agreed-to process to be followed for risk screening and risk acceptability at SWMU 7b:

"The process to be followed for risk screening and risk acceptability was developed through a series of discussions at a number of Tier 1 partnering team meetings, including September 2008, October 2008, November 2008, March 2010, and December 2010. These discussions and the data evaluation approach are summarized in the SAP (CH2M HILL, 2011)."

Mean ratios to background were also added to Tables D-17 and D-20.

Comment 4: Risk Characterization, Page 10 – Comparison with background concentrations is not part of risk characterization and the risk assessment process. The EPA Superfund Guidance Section 8.1 states that "The risk assessment establishes whether a risk is present

and defines a range or magnitude of the risk. In risk management, the results of the risk assessment are integrated with other considerations to make and justify risk management decisions. Additional risk management considerations can include the implications of existing background levels of contamination, available technologies, tradeoffs between human and ecological concerns, costs of alternative action, and costs of a remedy selection."

Response 4: Please see the response to EPA Comments 2 and 3. In addition, both Navy and EPA ERA guidance are considered in the ERA. The Navy ERA guidance, which describes a process consisting of 8 steps organized into 3 tiers, is conceptually similar to the 8-step ERA process outlined in EPA ERA Superfund guidance. The major differences between the Navy ERA guidance and the EPA ERA guidance are:

1) The Navy guidance provides clearly defined criteria for exiting the ERA process at specific points.

2) The Navy guidance divides Step 3 (the first step of the BERA) into two distinct sub-steps (Steps 3A and 3B), with a potential exit point after Step 3A.

3) The Navy guidance incorporates risk management considerations (including the use of background) throughout all tiers of the ERA process.

Both guidance documents allow the overall process to conclude in a similar manner but differ somewhat in the sequencing of certain decision inputs, such as background. Risk was characterized through a comparison with literature-based sediment screening values and an evaluation of the benthic invertebrate survey data. Background was also considered in the evaluation concurrently with these other lines of evidence, rather than following the risk characterization, consistent with Navy ERA guidance.

Comment 5: Comparison with Sediment Screening Values, Page 11 – As noted in the past, comparisons should primarily be made with the EPA Region 3 BTAG Screening Values. We have evaluated and selected values which maintain a level of protectiveness appropriate with the screening process as described by EPA guidance. While the other "screening" values may be provided, the discussions and summaries should be focused on comparisons with the BTAG screening values. Currently the comparisons discussed are those made with values that are not sufficiently protective.

Response 5: For the SWMU 7b COCs (except tin, which does not have a Region 3 BTAG screening value), the BTAG screening value is equivalent to the TEL, which is included in the screening tables. A footnote to this effect has been added to Table D-11 and to the text. The text (including Appendix D) was also revised to more clearly describe exceedances of the TEL.

This ERA is at a point in the process well past "screening". This, plus the urban nature of the water body, makes the other values included relevant.

Comment 6: Spatial Analysis, Page 13 – The last paragraph of this section includes the statement "Therefore, on balance, the Cove is not significantly affected and risks are generally acceptable (which is a similar conclusion reached for the comparison to screening values and background)". This implies that an evaluation of risks posed by contaminants present at "background" concentrations was performed.

Response 6: Please see the responses to EPA Comments 2, 3, and 4. No changes to the text are warranted.

Comment 7: The potential cause(s) of the low DO should be discussed.

Response 7: Because ABM is inert (essentially is coarse sand) and the paint residue has little, if any, organic content, site-related parameters will not induce any sediment oxygen demand and will not contribute to depressed dissolved oxygen levels. The most common cause of lower dissolved oxygen concentrations at the bottom of a water body is high organic loading (of nitrogen and phosphorous, typically from urban and agricultural runoff, wastewater systems, and atmospheric deposition) which induces a large biomass of phytoplankton/algae which, when it dies and drops to the bottom of the water column, is decomposed by bacteria which use of much of the available oxygen. This is typically most acute in July/August, when high water temperatures enhance decomposition while retaining the minimum amount of DO (since warmer water holds less DO at saturation than colder water). This discussion has been added to the Risk Evaluation in Section 5.3.2.2 and to Attachment D, Section D.5.3. See also the response to EPA Comment 13.

Comment 8: Page D-11 – Section D.4 refers to Table D-12 as containing historic data that suggests the area selected for background sampling was appropriate. The document needs to discuss how the data in this table adequately represents urban background for this geographical area.

Response 8: Please see the responses to EPA Comments 2 and 3. The sediment data in Table D-12 were not considered as "adequately representing urban background for this geographical area" in and of themselves. If they were, the background sampling would not have been necessary and these data would have been used directly. In June 2007, the Team concluded that there was nothing in these historical data that would preclude this area from being considered as background. Thus, in July 2007, a reconnaissance survey was conducted (as described in the text) prior to sample collection to determine general suitability in terms of physical parameters and to ensure that ABM was not present.

Comment 9: Pages D-12 and D-13 – Section D.5.1.1 refers to mean HQs calculated for the Connector Channel, Cove, and Pier Area. Because the ecological receptors are primarily benthic invertebrates, the ecological risk to these receptors needs to be based on maximum HQs, as these receptors have limited mobility.

Response 9: Maximum, mean, and 95% UCL HQs were all calculated and presented in the text and tables. Because the assessment endpoints were based upon receptor populations, the use of central tendency exposure estimates is relevant to a baseline ERA. No changes to the text are warranted beyond those made in response to EPA Comment 5.

Comment 10: Page D-17 – In Section D.5.2.1 the author refers to R^2 values above 0.50 (strong?) in one paragraph and above 0.60 (strong) in another paragraph and a reference to Table D-25. The text does not explain why the two R^2 values are different. In addition document the meaning of the relationship between the R^2 values associated with probabilities that have been identified as significant.

Response 10: In response to VDEQ Comment 7, the following categories were added and used in the report to describe the strength of the correlations: (1) weak: < 0.50; (2) moderate: 0.50 to 0.80; and (3) strong: >0.80. Additionally, within the document, the term "statistically" has been inserted when discussing the statistical significance of a correlation.

Comment 11: Page D-17 – Table D-25 states that "...very few of these correlations were strong (R^2 values rarely exceeded 0.60)." This table shows 32 to 37 percent of R^2 values exceeded 0.50. There appears to be an inconsistency in using the phrase "very few" as well as the value that R^2 numbers need to exceed.

Response 11: Please see the response to EPA Comment 10. The text has been changed to make the terminology consistent.

Comment 12: Page D-21 – The document states in part "...the Channel samples can be considered representative of reference conditions in this system." This seems inappropriate when there are identified background samples.

Response 12: The background samples were intended only for comparison of sediment chemistry. During scoping of the 2010 SAP, the partnering team decided not to use this area as a reference for benthic invertebrate sampling. At the December 2010 partnering meeting, the benthic invertebrate investigation data was presented and the team agreed to the use of the Connector Channel as the reference for the benthic invertebrate analysis (please see the response to DEQ Comment 6). No changes to the text are warranted.

Comment 13: Page D-21 – At the end of the first paragraph, the text states "Although the benthic community in the Pier Area differs from that in the Channel for some metrics, the lower DO concentrations, rather than elevated COC concentrations in sediment, is most likely the primary contributor to the differences in community characteristics." Please discuss whether this also means that elevated COC concentrations in sediment would not be a problem if DO concentrations were elevated and therefore, not likely the primary contributor to differences in community characteristics.

Response 13: Based upon the regression analyses, bottom DO was the best (and often only) significant predictor of the benthic invertebrate metrics. Site-related factors, such as the concentrations of the COCs and ABM, were not important predictors, although several of these parameters (particularly copper and tin) were statistically significantly correlated with some of the benthic invertebrate metrics (based upon individual comparisons). However, SEM/AVS ratios, which were all less than 1 in 2010, suggest that the metals have low bioavailability. This has been added to the text.

Comment 14: Page D-21, Section D.5.2.3 – The text indicates that the three polychaete taxa represented 80 percent of the total taxa in 2002 and 53 percent of the total taxa in 2010. This represents a decrease of 27 percent in this timeframe. This would not seem to support a description of the benthic community as being "similar". This suggests the need for continuing monitoring of the benthos to see if this "pattern" remains constant, or not. It is not clear why the species specific percent values of polychaetes do not add up to the above values noted for 2002 and 2010. In addition, it is not clear that two non-consecutive years of

comparable data are sufficient to support the statement that the benthic community "...appears to be temporarily stable on a gross scale..." between 2002 and 2010.

> **Response 14:** The numbers for total polychaetes were very similar between 2002 and 2010 (comprising 84 and 78 percent of the community, respectively). While the three most numerous taxa (all polychaetes) were the same between years, the relative abundance of each showed some variability between years. Since other polychaete species were present, the totals for these three taxa do not add up to the total for the entire group. Considering the semi-quantitative nature of the 2002 sampling and the differences in sampling methodology between the two events, the results are consistent on a gross scale as stated in the text. No changes to the text were made.

Comment 15: Page D-22, Section D.5.3 – The text identifies sample locations M1, 301, 403, and 404. It is not clear from the figures (e.g., D-3, D-4) where these sample locations are.

> **Response 15:** These sample locations are shown on Figures D-3 and D-4 but the figures use the full sample ID (e.g., LW07-M1-SD401) while the text uses the truncated form (e.g., M1) because the full sample IDs were not the same between sampling events although samples from the sample location had the same grid identifier (e.g., M1) within the sample ID regardless of year. The text and Appendix D were revised to include the full station ID as identified on the figures.

Comment 16: Page D-23, Section D.5.3 – The text indicates that the potentially affected area of M1, 301, 403, and 404 is small. This equates to approximately 0.52 acres of the area that was sampled in the Cove. It does not represent what area may be impacted within the entire Cove area.

> **Response 16:** The area encompassed by these four samples is approximately one acre in size, which is a small percentage of the overall Pier Area. It was identified as the area with the highest potential impacts based upon the available data, as presented in the ERA.

Comment 17: Page D-23, Section D.6 – The uncertainties need to address how each uncertainty impacts the interpretation of the data. In addition, the duplicate analyses bullet needs to adequately address when the non-detected concentrations (presumably the detection limits) exceeds the detected concentration.

> **Response 17:** These issues are already addressed in the uncertainty section. No changes to the document were made.

Comment 18: The document has not presented sufficient evidence that the depressed DO is a natural condition at the site and that chemicals clearly related to the acknowledged CERCLA release are not significant stressors impacting the health of the benthic community. It is also not clear if the other acknowledged sources of contamination or impacts (i.e., "non-CERCLA" PAHs, stormwater, etc.) to the cove were properly addressed, whether or not the contaminant loading from the CERCLA release would prevent the establishment of a healthy benthic community. In light of all of these considerations, a "no action" alternative does not appear to be supported.

> **Response 18:** Section 5.3.2.2 "Conclusions" has been re-titled "Risk Evaluation". Section 6.0 has been re-titled "SWMU 7b Conclusions" and revised to read:

"Concentrations of COCs in sediment do not exceed human health screening criteria, so no further investigation or action for the protection of human health from exposure to sediment is warranted at the site. Ecological risks in the Connector Channel and Cove Area are not unacceptable, so no further action is warranted for these areas for the protection of the environment. The available data suggest that some impacts to the benthic community are occurring in portions of the Pier Area. The northeast corner of the Pier Area (sample locations LW07-M1, LW07-SD301, LW07-SD403, and LW07-SD404) consistently had the highest COC concentrations outside of the area affected by the MILCON action and also consistently had the highest concentrations of ABM. The potentially affected area is relatively small (about one acre) relative to the size of the Desert Cove system and non-site-related physical factors (particularly bottom DO) were most strongly correlated with the values of the benthic metrics. The existing benthic community in this area was frequently within the range of values found in the Channel for many (7 of 10) of the metrics (including total density, density of pollution sensitive taxa, and number of taxa). Whether or not the magnitude of the impacts, as determined by this evaluation, in the Pier Area meets the threshold of acceptability is a risk management decision."

Comparable changes were also made to Attachment D.

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