STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
DIVISION OF SITE REMEDIATION
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U.S. Department of the Navy
Northern Division
Naval Facilities Engineering Command
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RE: Response to comments on Derecktor Shipyard Ecological Risk Assessment, Naval Education and Training Center, Newport, Rhode Island

The Division has reviewed the Navy's response to comments on the Ecological Risk Assessment for Derecktor Shipyard. Attached are responses to comments which require additional attention. This office recommends that a meeting or conference call be held concerning these remaining comments in order to expedite their resolution. If you have any questions concerning the above, please contact me at (401) 277-2797.

Sincerely,

Paul Kulpa

Paul Kulpa, Project Manager
Office of Waste Management

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Evaluation of Response to Comments on the Draft Derecktor Shipyard Marine Ecological Risk Assessment Report

1. General Comment

The findings of the ecological risk assessment indicate that the levels of contaminants in the sediments at the site are significant. However, due to site conditions the document concludes that a number of these contaminants are not bioavailable and therefore do not pose a significant threat to the environment. In addition, the lack of endangered species results in low to moderate risk. This conclusion is based upon the premise that present site conditions at the site will prevail and non endangered species do not require the same degree of protection. Low bioavailablity requires the assumption that the break water north of the site will be maintained, thereby continuing this area as a deposition zone, and the site will remain inactive. Neither of these conditions may hold true. As you are aware this site has been considered for redevelopment. In addition, use of the site as a shipyard or use of the piers for large vessels will significantly change conditions at the site. Amongst other things it will allow the contaminants to become bioavailable. This change in conditions will affect the conclusions drawn in the ecological risk assessment. Since redevelopment of this area is likely, the ecological risk assessment should consider this scenario.

Response 1

The Division noted that most risk assessments evaluate likely or probably scenarios, for example human health risk assessment may examine a residential scenario for land which is currently used by industry. Accordingly, the Division indicated that probably future use scenarios, such as ship yard or increased boat traffic should be examined in this ecological risk assessment. The Navy has indicated that per the EAR meeting alternative future use scenarios will be evaluated in the feasibility study. This Office agreed to this proposal as it has the potential to cost effectively, expedite remedial actions at the site, (for example, if the current ERA supports dredging the entire site, it would not be cost effective to perform another ERA which would generate the same endpoint). Please be advised however, that since this ERA only evaluated current conditions it cannot be used to support a NFA recommendation since it has not examine probable scenarios. A NFA recommendation will have to be supported by a full ERA which will be performed, as agreed, during the FS. In addition, since a portion of the ERA will be performed during the FS the review times for these documents may be, if necessary, extended as they represent essentially two separate submittals.

2. General Comment

Clarification is requested on the overall risk characterization of the report. At a will be number of stations certain test parameters were high yet the stations received an overall low risk ranking. Therefore, a section should be added which potential to discuss how the overall risk for the sampling station was determined. Specifically, the section should include a discussion of the following;be more expedites and cost effective, (for example, if the current ERA results in the entire discuss whether the different test received the same weight, (that is whether chemical data was considered more important than tissue data or shipyard being the results of field observations etc), justification for weighing the different test equally or differently, etc.. Finally, the report should include an the same brief discussion of each sampling station and the rationale for the overall risk assigned to that station. This would clarify what appear to be apparent conditions, it cannot discrepancies in the risk ranking, that is locations with high relative risk for certain parameters were given a overall low risk ranking. that concerns relating to rating, such nonbioaccumulation of measured PAHs, TBT issues, etc should be addressed

Response 2

The Navy has indicated that the current ERA may under evaluate tissue impacts due to the lack. of analysis for PAH metabolites. The Navy has not indicated whether this lack of analysis will affect the overall risk ranking, (for example, will stations with elevated PAH chemistry results in the sediments and low levels in the tissue remain the same, or will the tissue ranking for these stations be increased in order to compensate for the lack of metabolite analysis). In addition, the report has indicated that additional sampling will be conducted for P450 activity. The report should indicate whether the ranking for the stations will change if elevated levels of PAHs are observed in the sediment and P450 is found to be activated. Conversely, if no organisms are found will the ranking be changed if there are elevated levels of PAHs in the sediments.

4. General Comment

The report includes a brief description of each of the test parameters. Where appropriate the report should list the known false positive or negatives associated with each of these parameters.

Response 4

The Navy has indicated that they will provide information concerning false positives and negatives associated with toxicity test. The Divisions request was not limited to toxicity test; accordingly this information should be provided for all test.

5. General Comment

The Division recommends adding a figure which includes a number of key parameters. This would allow the reader to compare the results of the various tests. The Division has created a figure which includes eight parameters for the surface sediment and core samples.

Response 5

The Navy has indicated that they will create a figure which contains all of the results of the measure endpoints. The Division agrees that such a figure would be helpful in summarizing the result of the ecological risk assessment. This figure, however, would fall short in its ability to convey specific, important, technical information. Therefore, the Division recommends creating a figure which contains the necessary physical information, ie sediment type, flow rates, DO, etc. as well as the actual results for key parameters, ie elevated chemical results, bioassay/tissue results etc. The Division has created a figure which contains all of this information and has submitted it to the Navy. The Division is willing to work with the Navy in the drafting of a new figure.

17. Section 1.5, Risk Characterization
Page 1-22 top, last sentence

Attributing the high Cu levels in inshore organisms to the Newport WWTF is not acceptable interpretation because Fig.6.1-11 clearly shows that the sediment Cu source is localized and greatest close to shore (Sta. 27-32) and not from an outer cove source.

Response 17

The Navy has failed to address the Division's comment. The Division noted that the highest levels of sediment copper contamination were observed in the vicinity of the site and not at the stations near the Newport WWTF. Therefore it would be inappropriate to attribute the high levels of copper in the organisms to the wastewater facility since the is a definite localized site related source of copper contamination. The Division reiterates its original comment.

"High Cu tissue residues found in lobsters from specific sampling areas may suggest that freshwater sources from outfalls near Station DSY 25, as well as from the Newport WWTF near Stations DSY -38 and 39 could be a source of copper to these regions, given that sediment concentrations were at or below reference sediment copper concentrations".

The above seems to contain a typographical error in that it states that the high levels of copper observed in the tissue were a result of the Newport WWTF; yet the levels of copper observed in the sediments were less than or equal to control. It is unclear how the discharge from the Newport WWTF resulted in negligible copper contamination in the sediment, (concentration was less than or equal to the control) yet this resulted in elevated lobster tissue concentration. Please explain.

> "There does exist uncertainty in this exposure assumption, however, given that lobsters are mobile species such that the primary chemical exposure may not necessarily have occurred at this sample location.

Current research indicates that lobsters exhibit two types of behavior, one in which the individual is mobile and the other in which the individual is not. Therefore, the above should be modified as follows; The mobility behavior of lobsters has not been completely studied. Current research suggest that lobsters exhibit two types of behavior, one in which the individual is mobile and the other in which the individual is not. Therefore, there does exist uncertainty in this exposure assumption, however, given that the degree of mobility in lobsters is not certain such that the primary chemical exposure may not necessarily have occurred at this sample location.

18. Section 1.5, Risk Characterization
Page 1-25, Benthic Comm. Structure

> Does the organic carbon level at these stations reflect the hypothesis of organic enrichment? Also, organic enrichment is not necessarily from sewage discharge, but may be from a local source such as illegal toilet plumbing into storm drains as well as storm water runoff itself. Please acknowledge these other possibilities.

Response 18

... illegal toilet plumbing into the storm drains in the vicinity of the site....The Navy has modified

The above should be modified as follows:
... illegal toilet plumbing into the storm drains in the vicinity of the site, or historic releases when the site was active....

19. Section 1.7, Risk Summary and Uncertainty
Page 1-27

> As noted above, several of the "weights of evidence" such as CBRs for PAHs and the lack of HI for TBT tend to bias these results to dilute the potential risk from these important COCs. Later chapters suggest that levels are significantly above reference values (e.g., p.6-7 TBT in mussels >2x ref *at most stations*. Yet later

conclusions suggest metals may drive risk at some stations although metal residue levels were often less than the TBT results. PAH and TBT risks need to be better included in the weighing process since they appear to be weighted too low under the present effort.

Response 19a

The Division has noted that the lack of PAH metabolite analysis would bring into question the analysis of PAHs in tissue samples. The Navy has stated that significant exposure to PAHs would make the lack of PAH metabolite analysis in tissue inconsequential. The Navy should indicate whether ecological stress can occur at levels lower than "significant exposure" needed to produce concentrations of PAHs in the tissue of organisms . Please note, that at other sites ecological stress due to PAH exposure has been observed in organisms with no or low PAH tissue residue (PAH metabolite levels were high in these organisms). Finally, the Division requests a copy of the quoted reference.

21. Section 1.7, Risk Summary and Uncertainty
Page 1-29 bottom

As noted previously, if hypoxia is the local driver for sta 40 & 41 why is sta.41 96% sand? One would expect very high SOD/ Organic Carbon in such sediments in order to drive what appears to be a substantial and continuing stressor at these stations. Also, as noted above, the nutrient source is likely to be much more local and related to the storm drains v. offshore discharge source.

Response 21

The Navy's response does not address the redox conditions at the sample locations which do not appear to be driven by episodic events of stagnant circulation. Therefore, it may not be appropriate to use low DO to explain conditions observed at certain sampling stations.

24. Section 4.3.3.1, Sediments
Page 4-20, Paragraph 2.

This section of the report appears to state that normalization to aluminum is carried out to account for lithogenic effects with respect to grain size, that is normalization should reduce the influence to grain size. This discussion needs to be expanded. Specifically, for the metals of concern the report should indicate whether grain size normalization will inappropriately reduce the levels of metals which were anthropogenic introduced. In addition, the report should note whether this normalization is for dried weight samples and the ramifications of performing this procedure.

Response 24

The Navy has indicated that the text will be revised to include a discussion of normalization for dried weight samples. The modified text presented in response to the comment does not include this discussion. Accordingly, the text should be modified to include a discussion of dry weight samples. In addition, the Division reiterates its concern that the normalization carried out at the site for grain size using dry weight samples at the same time normalizing for aluminum may have been inappropriate. The Division request a photocopy of any references in support of this procedure.

26. Section 5.3, Biological Field Investigations
Whole Section

This section of the report deals with the biotic condition analysis conducted at the site. In addition to listing the different species found at the sampling locations the report should note which species are pollution tolerant and intolerant. Furthermore, the report should include a narrative which discusses whether the organisms found at a particular sampling station was composed of primarily pollution tolerant or intolerant species and the importance of these observations..

Response 26

The Navy has indicated that the report will be modified to note that the commonly use pollution tolerant indicator species were not observed at he site. Discussions of pollution tolerant indicator species must be limited to the contaminants of concern. That is, it would not be appropriate to use a species which is tolerant or intolerant to eutrophication in area where metals or organics are the contaminants of concern. Therefore, the report should note whether any of the species observed at the site were tolerant or intolerant to the contaminants of concern, (metals/organics) and should be accordingly labeled. If information of this nature is not available it should be clearly stated and the report should not draw any conclusion concerning the tolerance/intolerance of the observed species.

27. Section 5.3, Biological Field Investigations
Whole Section

The section of the report compares the number and type of species found at the different sampling stations to that found at the reference stations. Comparisons of this nature are normally carried out using Shannon Weiner Diversity Analysis or other similar analysis. The report should be modified accordingly.

Response 27

The Navy response has centered on the Shannon Weiner Diversity index. This Division comment noted that "Shannon Weiner Diversity Analysis or other similar analysis". Therefore, the Navy should expand their response to include other similar analysis. Please be advise that these assessments are commonly carried out in the freshwater environment. Therefore, the report should include a discussion which fully justifies the Navy's position concerning the diversity indexes limitations. In addition, the Division request a photocopy of all references in support of this position.

28. Section 6.1.2, Elutriate Contaminants
Page 6-5.

This and other sections of the risk assessment includes the results from a series of dilutions from the elutriate test. The report should note the significance of the dilutions. In addition, the risk assessment should note whether the concentrations representing 100% elutriate is in fact a dilution in itself.

Response 28

The Navy has indicated that a discussion of the environmental significance of dilutions will be discussed in the text. It is assumed that this discussion will clearly state whether the 100% elutriate is essentially a dilution since it represents a 4 to 1 mixture of water to sediment.

30. Section 6.5.1.2, Sand Bottom Communities
Page 6-35, Top

The Division questions the position that a dominant mat of *A. abdita* is an indicator of low pollution impacts ("Pollution sensitive sp."). Dr. Gene Gallagher of U.MA. Bos. indicated at a 1995 MASS BAYS conference that Chesapeake Bay Project results show that when >70% of total species in the benthic community consist of *A. abdita*, this is an indication of a *degraded* environment being colonized by a highly opportunistic species that can rapidly colonize an area following disruptions. The high fecal results are suggestive of a storm drain related source of problems since offshore discharge of the Newport WWTF is chlorinated and has very low fecal count.

Response 30

The Division has noted that opportunistic pollution intolerant species have been found in contaminated environments. The Navy has indicated that they will note this observation with respect to eutrophic condition. Unless the research clearly indicates that this recolonization is only possible under eutrophic conditions, the Navy should not limit this occurrence to

eutrophication.

31. Section 8.0, References,
Page 8-19, third references

Tracey G.A. and D.J. Hansen, 1996.
The report indicates that the above was found in Achieves of Environmental Contamination and Toxicology 1996, Contribution N0. 1641 US EPA-ERLIN,30(4). The report should note whether this citation as well as any other citation if from peer review literature or approved EPA guidance

Response 31

The Navy has made the necessary corrections to the citation which was used as an example in the comment. It is assumed that these corrections will be made, as requested, to all of the citations in the report.