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U S NAVY RESPONSES TO U S EPA REGION I COMMENTS TO DRAFT PROPOSED PLAN  
FOR REMEDIAL ACTION OPERABLE UNIT 9 (OU9) SITE 16 NCBC DAVISVILLE RI  
8/17/2012  
U S NAVY

**ENCLOSURE 1**

**Navy Response to United States Environmental Protection Agency (USEPA)  
Region 1  
Comments on the Navy's Draft Proposed Plan (Dated June 2012) for  
Remedial Action at OU9 IRP Site 16 at  
The Former Davisville Naval Construction Battalion Center (NCBC), Rhode Island  
(USEPA Region 1 Correspondence Dated July 3, 2012)**

August 17, 2012

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Comments on the Navy's Draft Proposed Plan (Dated June 2012) for  
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The Former Davisville Naval Construction Battalion Center (NCBC), Rhode Island  
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**EPA General Comments**

**EPA General Comment No. 1:** The Proposed Plan has recommended the implementation of Remedial Alternative G-2 (MNA, LUCs, and Five-Year Review) to address groundwater contamination at Site 16. Remedial Alternative G-2 relies primarily on monitored natural attenuation (MNA). However, this remedial alternative does not directly remediate the source of the chlorinated VOC plume located beneath and adjacent to the former Building 41 (see General Comment No. 2). Moreover, the timeframe for groundwater restoration for this alternative is 300 years. This timeframe is not reasonable when compared with the active remedial alternatives that have been evaluated in the FS (see General Comment No. 3). Accordingly, Remedial Alternative G-2 does not meet EPA guidance and policy and is not suitable for selection as a final remedy for groundwater contamination at Site 16 since there are other feasible alternatives that will reduce the toxicity, mobility, and volume of contamination and will clean up the groundwater source area in a reasonable time frame.

**Navy Response to EPA General Comment No. 1:** As stated in the draft Proposed Plan for Site 16, Remedial Alternative G-2 (MNA, LUCs, and Five Year Review) was recommended by the Navy because:

- *Human health and the environment will be adequately protected through the implementation of LUCs and MNA.*
- *The current/future land use at Site 16 is industrial/commercial and is not conducive to use of the underlying groundwater for public water supply; the groundwater underlying Site 16 is not currently used as a water supply source.*
- *The groundwater quality in the area of its current discharge to Allen Harbor does not adversely impact human or ecological receptors in the harbor.*
- *Groundwater restoration via active remediation would not be accomplished in less than 50 to 100 years, even under the most aggressive treatment alternatives.*
- *Due to existing contaminant types and aquifer conditions, the active treatment of groundwater could achieve, at best, only partial restoration (using treatment alternatives and associated timeframes as presented in Table 4 of the PP). Consequently, active remediation of groundwater is considered minimally cost-effective.*

While the Navy concurs, in principle, with the EPA goal to "restore groundwater to its beneficial uses within a reasonable timeframe" whenever possible/practicable, the Navy strongly believes that the factors listed above must be considered when making necessary, site-specific risk management decisions for Site 16. The Navy's consideration of these factors has caused the Navy to conclude that active remediation of the groundwater underlying Site 16 as proposed in the current alternatives will be minimally cost effective, is not necessary to protect human health and the environment, and will have significant adverse impacts on current commercial operations at Site 16 for several years. It is noted in the preamble to the NCP (FR vol. 55, No. 46, page 8734) that, "Natural Attenuation is generally recommended only when active restoration is not practicable, cost effective or warranted because of site-specific conditions (e.g., Class III ground waters or ground water which is unlikely to

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be use in the foreseeable future and therefore can be remediated over an extended period of time)". Based on a review of the NCP and EPA guidance documents (summarized in a Navy technical memorandum previously submitted August 24, 2009 and included herein as Attachment A), the EPA has also considered the factors listed above worthy of consideration in the past. While the referenced EPA guidance may now be considered somewhat dated, the guidance does recommend a realistic approach to restoration decision-making for a site; a consideration of cost/benefit is clearly encouraged (again, please see Attachment A.)

It should also be noted that the Facility's Comprehensive Reuse Plan did not contemplate that the groundwater underlying NCBC Davisville be used for drinking water purposes and doing so now could be construed as a change in reuse. Additionally, the Facility's Final Environmental Impact Report suggested only non-potable use of the groundwater underlying NCBC Davisville (e.g., use for industrial or fire-fighting purposes).

Also, with regard to the implied "requirement" to "reduce the toxicity, mobility, and volume of contamination", the NCP has a stated *preference* for such remedies, not a *requirement* for such remedies.

**EPA General Comment No. 2:** As indicated in EPA's June 19, 2012 letter to the Navy, the presence of residual DNAPL is suspected beneath and adjacent to the former Building 41. While the Navy's previous investigations at the site have failed to identify levels of soil and groundwater contamination indicative of residual DNAPL, it is well established that identifying and delineating areas of residual DNAPL remaining in the subsurface, particularly in an older release area, is generally difficult and frequently not possible using a reasonable investigation approach. The likely release of DNAPL has previously been acknowledged in the Navy's Remedial Investigation (RI) and Feasibility Study (FS) reports. Moreover, the nature of the source (release from a TCE still), the longevity of the release, and the architecture of the plume strongly suggest the presence of residual DNAPL beneath and adjacent to the former Building 41. Accordingly, the area beneath and adjacent to the former Building 41 must be considered a source area, a principal threat waste, and to be responsible for the continuing and longstanding plume emanating from this area toward Allen Harbor and Narragansett Bay. Active remediation of such a source area is required under the NCP as part of a groundwater remedy in order to reduce the toxicity, mobility, and volume of the plume.

***Navy Response to EPA General Comment No. 2:***

The Navy is encouraged by the EPA's new conclusion that past releases in the general former Building 41 area contributed significantly to the volatile organic chemical (VOC) plume underlying Site 16. Based on some of the previous remedial investigation/feasibility (RI/FS) comments received from the EPA, the Agency did not always consider the area a significant source area (i.e., other sources were suggested as the primary source of the VOC plume underlying Site 16 [e.g., the upgradient NIKE site, VOC migration from the NCA via a downward-dipping silt layer]). Further, in many EPA comments, EPA appeared to assume that any release in the general Building 41 area was minor in impact and also limited to only the shallow and intermediate zones. This was an on-going concern to the Navy because it appeared that the EPA's conceptual site model (CSM) for Site 16 was not in agreement with the Navy's CSM for Site 16. Based on EPA's current conclusions, it appears that EPA has significantly changed their CSM regarding the primary source of VOC contamination at Site 16. The Navy believes that consensus regarding this particular aspect of the CSM will facilitate progress regarding risk-management decision making for Site 16.

Regarding the presence/absence of residual dense non-aqueous phase liquid (DNAPL) at Site 16, the Navy received unsolicited correspondence on the Draft Final Feasibility Study dated June 4, 2012 where EPA expressly provides that NAPL is not suspected at this site and therefore, in accordance with EPA MNA guidance, a source area is not present. The June 4 correspondence was also submitted for the express purpose "to provide further clarity to the FS or in the ROD/RD documents." This is, ironically, in direct contrast to EPA correspondence dated June 19<sup>th</sup> stating the complete opposite position. A position that has not been substantiated with any new data that was not available when the June 4<sup>th</sup> letter was submitted. While the Navy has also been concerned about the potential presence of DNAPL at Site 16 and designed its 2007 and 2010 field investigations, in part, to

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address whether DNAPL was present, DNAPL was not detected during either investigation. Consequently, while DNAPL may or may not have been released at Site 16, there is no evidence (based on actual data) that any DNAPL (let alone significant DNAPL) is still present in the vadose zone soils or aquifer that continues to act as a residual source. All information collected to date suggests that the contamination released has migrated into the deeper intermediate and deep overburden zones and is present dominantly in the dissolved phase within the aquifer and sorbed onto the aquifer materials. Thus, the groundwater alternatives presented in the Feasibility Study for Site 16 were designed to address a dissolved-phase contaminant plume (with sorbed component), not DNAPL. The estimated costs for groundwater remediation would likely increase if treatment for DNAPL was to be incorporated into groundwater alternatives.

The comment that DNAPL may be present and, thus, may present a "principal threat waste" is also troubling to the Navy because the EPA's correspondence of June 4, 2012 stated that all previous EPA comments offered on the Feasibility Study had been addressed. Consequently, the Navy considers the Feasibility Study Report for Site 16 (April 30, 2012) a final document. Interjecting the potential need to treat for DNAPL at this stage of the CERCLA process for Site 16 (the Proposed Plan has been issued) is not timely (the issue should have been raised in actual comments on the Feasibility Study if the EPA believed that DNAPL is a significant concern at Site 16) and is not based on actual data available for the Site (the suggestion appears to be speculative only). Based on the currently available data, the Feasibility Study for Site 16 will not be updated to assume that significant amounts of DNAPL are present at Site 16.

Furthermore, the EPA has made repeated assertions that the cost estimates developed by Navy in the FS were overstating remedial costs. These costs estimates were developed to adequately and successfully treat the dissolved plume and contaminant mass sorbed to aquifer material, and *not DNAPL*. Had the EPA suggested the presence of DNAPL in a timely manner, alternatives could have been developed to treat for DNAPL; the remedial costs for each alternative would certainly increase versus those currently presented in the PP.

**EPA General Comment No. 3:** The FS report has identified a number of active remedial alternatives that appear feasible for addressing the source area beneath and adjacent to the former Building 41 and/or the groundwater contamination emanating from this area. All of these alternatives provide remedial timeframes substantially less than the 300 years predicted for natural attenuation alone. Of particular note are remedial alternatives G-3A and G-6, which provide remedial time frames of 75 to 100 years and 50 years, respectively. Thus, the FS report has identified a number of feasible, active remedies to address groundwater contamination at the site that provide a much more reasonable remedial timeframe than the 300 years predicted for the Navy's recommended alternative. Based on the demonstrated feasibility and remediation timeframes predicted in the FS report, the Proposed Plan should recommend the inclusion of one of the active remedial alternatives evaluated in the FS in conjunction with MNA.

***Navy Response to EPA General Comment No. 3:***

Please see Navy responses to EPA General Comments No. 1 and 2. Also, please note that while shorter remedial times are predicted for Alternatives G-3A and G-6, these alternatives will be more difficult to implement and will significantly disrupt the commercial operation at Site 16 and cast a pall over the entire site that detracts future business on the concern that even risk free, productive uses could be disrupted in the future. Alternative G-2 has fewer challenges and disruption. Please also note that all three alternatives are protective of human health and the environment primarily through the construct of Land Use Controls (LUCs).

Also, as noted above, the Navy does not suspect DNAPL at Site 16 and the existing alternatives in the FS do not need to be updated. The presence of DNAPL is not evidenced by the available data.

**EPA General Comment No. 4:** In its June 4, 2012 letter regarding the Navy's May 2012 FS report, EPA transmitted additional comments intended to provide further clarity to the FS or in the ROD/RD documents. The Navy has not responded to these comments. Regardless, the clarifications provided in these comments should

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be fully considered in the development of the Proposed Plan.

***Navy Response to EPA General Comment No. 4:***

The Navy acknowledges receipt of EPA correspondence dated June 4, 2012. While the Navy does not plan to formally respond to these comments, the comments will become part of the Administrative Record for Site 16 and will be considered in the development of the Proposed Plan (PP) and Record of Decision (ROD) for Site 16.

**EPA General Comment No. 5:** While the specifics of the groundwater monitoring program will be determined in the long-term monitoring plan (LTMP) developed during the implementation of the remedy ultimately selected for Site 16, the LTMP will need to include groundwater monitoring in the North Central Area (NCA) to evaluate performance of the cover and upgradient source control/MNA and to monitor risk in the near-shore environment.

***Navy Response to EPA General Comment No. 5:***

Agree that long-term monitoring will be required and the specifics of the groundwater monitoring program will be determined in the long-term monitoring plan (LTMP) developed during the implementation of the remedy selected for Site 16.

**Specific Comments**

**EPA Specific Comment No. 6:** Page 1, 3<sup>rd</sup> bullet in "Scroll" The text states "implementation of land use controls to prevent access to soil and groundwater." However, EPA suggests the language be changed to indicate "implementation of land use controls to prevent exposure to contaminants in soil and groundwater." This revision also addresses the issue of vapor intrusion.

***Navy Response to EPA Specific Comment No. 6:***

Agree.

**EPA Specific Comment No. 7:** Page 1, See previous EPA FS comments about the need for riprapping along the shoreline to protect the cover area. If the riprap extends below the high, high tide line it will encroach into land under the jurisdiction of Section 404 of the federal Clean Water Act (which would need to be cited as a Location-specific ARAR). If that is the case, the first page of the Proposed Plan should include a solicitation for public comment regarding a determination by the Navy that the chosen alternative that includes the riprap is the "Least Environmentally Damaging Practicable Alternative" under Section 404 of the CWA.

***Navy Response to EPA Specific Comment No. 7:***

The Navy does not anticipate the need to extend the riprap into the harbor such that the action will be subject to CWA 404.

**EPA Specific Comment No. 8:** Page 2, 1<sup>st</sup> co. In the second paragraph refer the public to the FS, as well as the RI.

***Navy Response to EPA Specific Comment No. 8:***

Agree.

**EPA Specific Comment No. 9:** Page 2, The text describing the VOC plume underlying Site 16 should be revised to indicate VOC contamination is present in soil and groundwater.

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***Navy Response to EPA Specific Comment No. 9:***

Agree. However, please note that the referenced VOC contamination in soils is primarily a saturated soil zone issue. As detailed in the Phase III Remedial Investigation (RI) report, limited VOC contamination has been detected in the vadose zone soils at Site 16.

**EPA Specific Comment No. 10:** Figure 1, The Site 16 Investigation Area should be outlined in a separate color to differentiate it from the blue and purple lines.

***Navy Response to EPA Specific Comment No. 10:***

Agree. The purple line on Figure 1 will be adjusted to reflect the general outline of the Site 16 Investigation Area only.

**EPA Specific Comment No. 11:** Page 3, Figure 1, The subareas of the Site 16 Investigation Area should be labeled in the Figure (they are delineated in the Figure, but not labeled).

***Navy Response to EPA Specific Comment No. 11:***

The "purple" line in Figure 1 was intended to outline the Site 16 investigation Area only (not specific Site 16 sub-areas). The figure will be corrected accordingly.

**EPA Specific Comment No. 12:** Figure 2, The legend should indicate that the TCE Plume Boundary represents a groundwater plume, such as re wording to, "TCE Groundwater Plume Boundary".

***Navy Response to EPA Specific Comment No. 12:***

Agree.

**EPA Specific Comment No. 13:** Figure 2: The Site 16 boundary presented in Figure 1 should be depicted on Figure 2.

***Navy Response to EPA Specific Comment No. 13:***

Agree to update the Site 16 boundary in the figures. However, please note that the Site 16 boundary/area of investigation has actually changed several times over the years of investigation and has expanded as the Navy's understanding of the VOC plume has increased.

**EPA Specific Comment No. 14:** Page 3, Figure 2: The marina area should be delineated as a separate area from the undeveloped area (it is developed and has different cleanup standards).

***Navy Response to EPA Specific Comment No. 14:***

Agree. A new figure will be added to the Proposed Plan indicating the location of the Marina Area.

**EPA Specific Comment No. 15:** Page 4, 1<sup>st</sup> col. In the third paragraph, the text needs to discuss that the current and future use of the marina area is recreational.

***Navy Response to EPA Specific Comment No. 15:***

Agree. The text under "What are the current and future land uses at the site?" will be adjusted accordingly. However, for purposes of clarity, it should be noted that the marina portion of Site 16 (i.e., the actual land area

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associated with Site 16) is very limited in size and is comprised of a small strip of land at the southern border of Allen Harbor and the land area immediately east and south of Bldg E-107. A sign at the entrance to the marina states that it is "private". Part of the land area is paved. Most recently, part of the land area immediately south of Bldg E-107 has been fenced in by the Yacht Club and is used stage equipment. While there is one picnic table in evidence in the immediate vicinity of Bldg E-107 and the general Allen Harbor marina area is a very attractive and well used area for boating, the land area actually associated with/abutting Site 16 appears to be primarily used for boat maintenance activities.

**EPA Specific Comment No. 16:** Page 4,7<sup>th</sup> Paragraph, The description of VOC contamination in soil should clarify the depth interval where benzene was detected instead of using the term "shallow" without a depth interval. Same with subsurface soil.

***Navy Response to EPA Specific Comment No. 16:***

Agree.

**EPA Specific Comment No. 17:** Page 4, Site Background, Under the subsection "*What are the results of the environmental investigations?*" the following changes are recommended to make the section consistent with the FS.

- a) This section does not discuss pesticides, the presence of metals in groundwater, or findings for sediments. This section should be revised appropriately.
- b) ¶ 5, 1<sup>st</sup> sentence: For completeness, please include as PAH examples both carcinogenic and non-carcinogenic PAHs as identified in the FS. Examples could include benzo(a)pyrene and naphthalene, respectively.
- c) No Item "c" presented in comment letter.
- d) ¶ 5, 1<sup>st</sup> sentence: For completeness, the discussion should indicate that PAHs were also detected in soils outside the NCA.
- e) ¶ 6: This statement should note that the background conditions referred to are background conditions at the entire Davisville Site and not a site-16 specific background study. As noted in the FS page 2-11, "However, a site specific background soil data set has not been developed for Site 16, so site-specific background soil values cannot be considered in the development of PRGs. However, a limited amount of background soil data does exist for the former Davisville facility." There is no background study data for site 16; the FS (and RI) used a general background qualitatively for the entire Davisville facility.
- f) ¶ 6: For completeness, the discussion should also mention that metals were detected in groundwater.
- g) ¶ 6: The discussion of the results for soil should also note that dioxins/furans were detected in site soils.

***Navy Response to EPA Specific Comment No. 17:***

- a) Agree.
- b) Agree.
- c) No item "c" presented in comment letter.
- d) Agree.
- e) Agree. However, please note that the Navy's facility-wide background studies for both groundwater and soils were originally intended to provide background datasets for *all* NCBC site investigations (regardless of site location). Per past EPA comments, the facility-wide background groundwater dataset was accepted for use in human health risk assessment; however, the facility-wide background soil dataset was not. While the current Navy personnel and contractors were not involved in the development of the facility-wide background soil dataset, our review of that soil background dataset indicates that rejection of the dataset was probably not warranted. The chemical concentrations presented in the background soils

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dataset are actually very conservative (concentrations biased low) when compared to other state and regional background levels.

- f) Agree.
- g) Agree.

**EPA Specific Comment No. 18:** Page 4, right column: In the subsection entitled "Scope and Role of the Site 16 Response Action" there is a paragraph beginning with "Risk assessments are being prepared..." please explain, for clarity to the public, how Study Areas 01 and 04 and Sites 02 and 03 are related to Site 16 and why these risk assessments are being mentioned here.

***Navy Response to EPA Specific Comment No. 18:***

Agree. The referenced text is intended to provide the reader with an overview of the status of *all* sites at NCBC Davisville. Study Areas 01/04 and Sites 02/03 are particularly relevant as they abut the Site 16 area.

**EPA Specific Comment No. 19:** Page 5, right column: The first paragraph in the right column indicates that the concentrations of dioxins/furans do not exceed the current EPA Clean-Up Level for soils (1 ppb). This clean-up level is no longer operative. The current clean-up levels are 50 ppt TEQ for residential soil and 664 ppt TEQ for commercial/industrial soil (<http://epa.gov/superfund/health/contaminants/dioxin/dioxinsoil.html>). Please revise this statement and clarify whether concentrations in soil exceed the residential or commercial/industrial clean-up level. This discussion should include why dioxins/furans are not contaminants of concern (since they are not listed on Table 1 soil cleanup levels).

***Navy Response to EPA Specific Comment No. 19:***

Agree. The referenced text will be updated to reflect the most recent toxicity information available the dioxins/furans (i.e., the recently published oral Reference Dose for 2,3,7,8-TCDD). However, please note the referenced "clean-up levels" for dioxins/furans (50 ppt TEQ for residential soil and 664 ppt TEQ for commercial/industrial soil) are not actually "clean-up levels". They are non-cancer-risk-based screening levels/preliminary remediation goals which are typically used as a starting point when developing final remedial goals for a site. (The EPA guidance indicates that they may be altered based on the use of site-specific exposure factors.) Regardless, the Navy agrees that the EPA 1 ppb clean-up level is no longer "operative". Consequently, the dioxins/furans will be added to the list of COCs for the Site 16 soils and the remedial goals will be added to Table 1 of the Proposed Plan:

Please note that given the soil alternative recommended in the Proposed Plan, the referenced change in toxicity information (and, thus, clean-up goals for soils) does not impact the risk management decisions for soils at Site 16. All locations exceeding the preliminary remedial goals presented above are located in within the North Central Area (NCA) at Site 16. The text throughout the PP will be updated to reflect the fact that dioxins/furans are COCs and to also reflect remedial goals that are based on the most currently available toxicity criteria for 2,3,7,8-TCDD.

**EPA Specific Comment No. 20:** Page 5, Specify soil depth interval for PAH risk (second column, first paragraph).

***Navy Response to EPA Specific Comment No. 20:***

Agree. The referenced subsurface soils are "vadose zone" soils (i.e., soils within the 2 to 10 foot bgs interval).

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**EPA Specific Comment No. 21:** Page 5, Summary of Results for Site 16 Human Health and Eco Risk Assessments, The Proposed Plan (2<sup>nd</sup> column, 1<sup>st</sup> paragraph) refers to Clean-Up Levels for dioxins/furans and states that concentrations in site soils are below these levels. As noted in the EPA comments, the Clean-Up Levels referenced in the Proposed Plan are no longer valid and the Levels referenced in EPA's February 17, 2012 document "*Reanalysis of Key Issues Related to Dioxin Toxicity and Response to NAS Comments, Volume 1*" should be used. The new Levels for commercial/industrial and residential use are based on an Oral Reference Dose of 7E-10 mg/kg-day.

***Navy Response to EPA Specific Comment No. 21:***

Agree. Please see Navy response to EPA Specific Comment No. 19.

**EPA Specific Comment No. 22:** Page 5, Summary of Results for Site 16 Human Health and Eco Risk Assessments, Although pesticides at the site may not be attributable to site activities (as noted in the FS), pesticides are inconsistently referenced in the Human Health and Ecological Risk Assessment sections in the Proposed Plan. For example, there is no mention of pesticides in the human health risk assessment sections, but pesticides are discussed in the Ecological Risk Assessment sections. Please revise this inconsistency to avoid reader confusion in the Proposed Plan.

***Navy Response to EPA Specific Comment No. 22:***

Agree. For purposes of clarification, pesticides were chemicals of *potential* concern (COPCs) in both human health and ecological risk assessment. However, they are not selected as chemicals of concern (to be further evaluated in the Feasibility Study) in either assessment.

**EPA Specific Comment No. 23:** Page 5, Summary of Results for Site 16 Human Health and Eco Risk Assessments, In the 4<sup>th</sup> bullet in the second column, please specify the chemical(s) that exceed EPA and RIDEM acceptable levels.

***Navy Response to EPA Specific Comment No. 23:***

Agree. The chemicals of concern for the sediments (assuming the sediments were to be routinely exposed) are the carcinogenic PAHs and arsenic.

**EPA Specific Comment No. 24:** Page 5, Summary of Results for Site 16 Human Health and Eco Risk Assessments, The fourth bullet in the second column (groundwater) should include an example of carcinogenic PAHs in addition to the two non-carcinogenic PAHs (naphthalene and 2-methylnaphthalene) that are currently used as examples of PAHs. In the third sentence, it appears the word "metals" should be in bold not followed by a comma. Also, the last sentence in this bullet should note that the Proposed Plan is referring to site-specific background concentrations.

***Navy Response to EPA Specific Comment No. 24:***

We assume the reviewer is actually referring to the second bullet in the second column. Agree, except that the word "metals" should not be bolded and we will check with the technical editor regarding the correct placement of the comma. As indicated at the bottom of page 1, ***Bolded Terms Throughout This Proposed Plan are Explained in the Glossary of Terms on Pages 14 and 15.*** The word "metals" is not (and need not be) defined in the glossary. Also, regarding background, the text is referring to either NCBC facility-wide *or* site-specific (i.e., upgradient) background levels.

**EPA Specific Comment No. 25:** Pages 5-6, Ecological Risk, Steps 1, 2 and 3, The text states that COPCs evaluated in the ecological risk assessment included metals (e.g., lead), pesticides, dioxins/furans, and PAHs,

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with PAHs being the predominant COPCs in surface soil and sediment. However, the FS (page 1-28) states that “no chemicals were retained as COPCs for terrestrial vegetation, soil invertebrates, herbivorous birds and mammals, or vermivorous birds or mammals.” It would appear that it may not be appropriate to reference COPCs in soil in the Proposed Plan. Please revise as appropriate the chemicals identified as COPCs. It may be more appropriate to quote the RI section 7.6, “**7.6 ECOLOGICAL RISK SUMMARY AND CONCLUSIONS** A SLERA was performed for the North Central area (i.e., undeveloped area) of Site 16. Several chemicals were retained as COPCs as a result of the initial screening of surface soil. These chemicals were further evaluated as a part of the Step 3a refinement, the first step of the BERA. After a review of alternate toxicity information (based on soil invertebrates and plants) for the initial COPCs was conducted, COPC concentrations were compared to the alternate toxicity information. No chemicals were retained as COPCs for plants or soil invertebrates. The chemicals initially selected as COPCs for risks to wildlife were also further evaluated in Step 3a using conservative and less conservative exposure assumptions. No chemicals were retained as COPCs for wildlife.”

***Navy Response to EPA Specific Comment No. 25:***

Agree. The text listing the COPCs will be deleted. The recommended text will be incorporated into the current version of the PP narrative.

**EPA Specific Comment No. 26:** Page 6, 1<sup>st</sup> col., At the end of the third bullet add: “that consume contaminated fish or aquatic invertebrates.”

***Navy Response to EPA Specific Comment No. 26:***

Agree.

**EPA Specific Comment No. 27:** Page 5-6, Summary of Results for Site 16 Human Health and Eco Risk Assessments: The discussion of pesticides and PAHs in sediment in the Proposed Plan is unclear and appears to be inconsistent with the FS. The FS human health and ecological risk assessments ultimately discount the risk from PAHs and pesticides in Allen Harbor sediments because it was concluded that Site 16 was not the source of these compounds (FS pages 1-20, 1-27, 1-28).

***Navy Response to EPA Specific Comment No. 27:***

Agree. The text will be revised to further emphasize the fact that Site 16 source areas did not contribute significantly to the PAH and pesticide concentrations detected in the Allen Harbor sediments.

**EPA Specific Comment No. 28:** Page 6, 1<sup>st</sup> full paragraph beginning “Similar to...”: The Proposed Plan includes a discussion of pesticides in the Ecological Risk Assessment but the Human Health Risk Assessment does not. Please explain the inconsistent mention of pesticides between the ERA and HHRA sections in the Proposed Plan.

***Navy Response to EPA Specific Comment No. 28:***

Acknowledged. Please also see Navy Response to EPA Specific Comment No. 22.

**EPA Specific Comment No. 29:** Page 6, Step 3- Risk Characterization: The Ecological Risk Assessment in the Proposed Plan states that “COPCs evaluated in the ecological risk assessment included metals (e.g., lead), pesticides, dioxins/furans, and PAHs, with PAHs being the predominant COPCs in surface soil and sediment.” Please reconcile the FS and the Proposed Plan as to why pesticides and PAHs are included in the list of COPCs evaluated in the Ecological Risk Assessment discussion in the Proposed Plan.

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***Navy Response to EPA Specific Comment No. 29:***

Acknowledged. Please also see Navy Response to EPA Specific Comment No. 22.

**EPA Specific Comment No. 30:** Page 6, Step 3- Risk Characterization: Please reconcile the FS and the Proposed Plan as to why the Proposed Plan includes the statement that there are "...limited site-related risks...to benthic organisms living in the sediments of Allen Harbor." Please see the following discussion from the RI, §7.2.3.

Sediment

Aquatic ecological receptors, such as fish, benthic invertebrates, reptiles, and amphibians, can be exposed to sediment contamination through direct contact and incidental sediment ingestion. Terrestrial wildlife may also be exposed to the sediment, although to a lesser degree through direct contact and incidental sediment ingestion. Terrestrial vertebrates, such as piscivorous wildlife, may be exposed to contaminated sediment through ingestion of aquatic prey (i.e., fish). However, according to the Phase II Screening Level Ecological Risk Assessment (EA, November 2004), risks to populations of wildlife receptors exposed to sediment in Allen Harbor adjacent to the Site were determined to be not likely. Therefore, these receptors were not further evaluated in this risk assessment as outlined in the Phase III QAPP for IRP Site 16 (TtNUS, 2007).

Surface Water

Aquatic ecological receptors, such as fish, benthic invertebrates, reptiles, and amphibians, can be exposed to surface water contamination through direct contact and surface water ingestion. Terrestrial wildlife may also be exposed to the surface water through direct contact and surface water ingestion. However, according to the Screening Level Ecological Risk Assessment (EA, August 2004), risks to populations of ecological receptors exposed to seep water adjacent to the Site are not significant based on the lack of risk from sediment samples collected near the seep locations. Therefore, these receptors were not further evaluated in this risk assessment.

***Navy Response to EPA Specific Comment No. 30:***

The word "limited" is used in the text because, realistically, it is not possible to state that *absolutely none* of the PAHs detected in the sediments of Allen Harbor are a consequence of past activities at Site 16. (The EPA has objected to such statements in the past.) However, the environmental forensics studies conducted at Site 16 have concluded other non-site related sources predominate. For example, the concluding paragraph of the Executive Summary of the referenced 2004 Phase II SLERA document reads as follows:

"In summary, the Allen Harbor sediment samples exhibited localized impacts from dock pilings and roadway runoff. There was no evidence suggesting that the PAH impacts to Allen Harbor sediments were attributable to historic activities represented by the Site 16 Source Areas. Chemical concentrations in the harbor are homogeneous, indicating the absence of a point source, yet at higher concentrations than the reference areas because of the restricted flow of water into and out of the harbor and higher marine traffic and industrial use in Allen Harbor relative to the reference areas. Risks to food web receptors were acceptable, and finally, benthic organisms have a slight potential of risk from exposure to PAHs and pesticides."

Please note that the text of the PP is aligned with the text presented at the end of Section 1 the FS for Site 16.

**EPA Specific Comment No. 31:** Remedial Action Objectives, Page 6, The Proposed Plan groundwater RAO No. 2 continues to be "verify that groundwater discharging to Allen Harbor and Narragansett Bay contains to pose

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no unacceptable risks.” This RAO was not modified as requested in EPA’ Comment 12 on the FS to relate this RAO to the performance standards. Add, “and are not above AWQCs.”

***Navy Response to EPA Specific Comment No. 31:***

The RAOs were established early in the FS process. The RAOs listed in the PP are those presented in the FS and should not be altered significantly from the wording previously provided in that document. Changing the wording of an RAO at this stage may not be consistent with the scope of the alternatives.

Also, water quality criteria can be included/evaluated as part of the development of target values presented in the long-term monitoring plan.

**EPA Specific Comment No. 32:** Remedial Action Objectives, Page 6 Groundwater RAO No 1 should include restoration of the aquifer to beneficial use. Please change the RAO to read, “Restore the aquifer outside of the wma so as to prevent human exposure to groundwater containing contaminants above ARARs.”

***Navy Response to EPA Specific Comment No. 32:***

The RAOs were established early in the FS process. The RAOs listed in the PP are those presented in the FS and should not be altered significantly from the wording previously provided in that document. Changing the wording of an RAO at this stage may not be consistent with the scope of the alternatives. Therefore, the inclusion of “restoration of the aquifer to beneficial use” will not be included as an RAO.

**EPA Specific Comment No. 33:** Remedial Action Objectives, Page 6, Groundwater RAO No. 3 should include both current buildings and newly constructed buildings.

***Navy Response to EPA Specific Comment No. 33:***

Agree. The RAO will be revised to “buildings”. Because shallow groundwater contamination occurs at only a few locations, the potential impact of groundwater via vapor intrusion on existing buildings is very low.

**EPA Specific Comment No. 34:** Remedial Action Objectives, Page 6, No additional soil-specific RAO was included to address unrestricted use of the marina area as requested in EPA Comment 14 on the FS.

***Navy Response to EPA Specific Comment No. 34:***

The RAOs were established early in the FS process. The RAOs listed in the PP are those presented in the FS and should not be altered significantly from the wording previously provided in that document.

**EPA Specific Comment No. 35:** Page 6, 2<sup>nd</sup> col., There needs to be a Soil RAO for the marina area (should it be a separate subsection?) to indicate: “Prevent exposure to current and future recreational users of the marina area.”

***Navy Response to EPA Specific Comment No. 35:***

The RAOs were established early in the FS process. The RAOs listed in the PP are those presented in the FS and should not be altered significantly from the wording previously provided in that document. Changing the wording of an RAO at this stage may not be consistent with the scope of the alternatives.

**EPA Specific Comment No. 36:** There needs to be a groundwater RAO to achieve drinking water standards outside of the compliance boundary of the waste management area. Groundwater RAO 1 is temporary outside of the waste management area and a permanent RAO inside of the compliance boundary for the waste

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management area.

***Navy Response to EPA Specific Comment No. 36:***

The RAOs were established early in the FS process. The RAOs listed in the PP are those presented in the FS and should not be altered significantly from the wording previously provided in that document. Changing the wording of an RAO at this stage may not be consistent with the scope of the alternatives.

The WMA should not be referred to in the RAOs because alternatives have not been introduced at this stage of the document. Further, the groundwater quality requirements beneath the WMA are addressed in the ARAR description. (Also refer to the response to Comment No. 32).

**EPA Specific Comment No. 37:** In the tenth paragraph change the cleanup level for dioxin to one using proposed EPA cleanup levels.

***Navy Response to EPA Specific Comment No. 37:***

Agree. Please see response to EPA Specific Comment No. 19.

**EPA Specific Comment No. 38:** Pages 6-7, Alternative S-6, The Proposed Plan states that a “waste management area (wma) would also be established in the area of the cover, where underlying groundwater would not be required to meet remedial goals.” The Proposed Plan should provide further clarification by indicating that groundwater monitoring would be required beneath the mwa to evaluate performance of the cover and upgradient source control/MNA and to monitor risk in the near shore (see General Comment above). The Proposed Plan should further indicate that performance standards for groundwater under the wma are MCLs. Ecological standards will be also be applied at the compliance boundary located immediately downgradient of the wma adjacent to Allen Harbor.

***Navy Response to EPA Specific Comment No. 38:***

Please see response to EPA General Comment No. 5 regarding the need for long-term monitoring. The specifics of the monitoring will be developed when the long-term monitoring plan is prepared. Also, with reference to the statement that “performance standards for groundwater under the wma are MCLs”, please note that the VOC concentrations in the groundwater underlying the NCA clearly exceed MCLs. The Navy’s understanding from previous meetings is that even though the MCLs are exceeded under the WMA, Navy is not required to take an action with respect to groundwater in this area due to MCL exceedances. Additionally, the cover as proposed is not expected to effect infiltration, groundwater quality, or groundwater flow, so monitoring groundwater beneath the cover cannot be used to evaluate performance of the cover.

**EPA Specific Comment No. 39:** Pages 9-10, Soil Alternatives, Within the LUCs for each applicable soil alternative, please also include as appropriate a discussion on a restriction of building design and construction methods or use of vapor intrusion mitigation if buildings are constructed.

***Navy Response to EPA Specific Comment No. 39:***

The text will be revised to note that the LUCs will include requirements for building design and construction methods to mitigate vapor intrusion.

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**EPA Specific Comment No. 40:** Page 7, Table 1, This table should include dioxins/furans.

***Navy Response to EPA Specific Comment No. 40:***

Agree. Based on recent changes to the toxicity criteria for dioxin/furans, these chemicals should be selected as COCs for Site 16 soils.

**EPA Specific Comment No. 41:** Page 7, Table 1, The recreational user cleanup standards needs to be based on the residential, not industrial, standards.

***Navy Response to EPA Specific Comment No. 41:***

Disagree. The recreational user cleanup levels are risk-based numbers calculated based on the methodology presented in the HHRA for Site 16. These levels are presented in Table 2-3A of the FS. While the Navy may elect to remediate soils in the immediate vicinity to RIDEM residential DEC's, the decision to do so would be based on the Navy's desire to allay RIDEM continuing concerns regarding the public's current/future access to/use of this particular area (i.e., should the current/future use be designated as restricted or unrestricted recreational use?) and so that any future excavations would occur in clean fill. Please note that RIDEM has agreed that the Navy does have the option of controlling risk by specifying the types of uses allowed in the referenced area (see RIDEM correspondence dated September 13, 2011). The Navy is not required to remediate this area to residential standards by either the results of the HHRA or by the RIDEM remediation regulations. Please also see Navy response to EPA Specific Comment No. 15.

**EPA Specific Comment No. 42:** Page 7, Table 1 – Indicate the basis for the soil cleanup levels.

***Navy Response to EPA Specific Comment No. 42:***

Agree. The basis of all soil clean-up levels was presented in Tables 2-3A and 2-3B of the FS. A condensed version of that information will be added to Table 1.

**EPA Specific Comment No. 43:** Page 7, Table 1: Please explain in a footnote why there are two cleanup levels for TCE and PCE, for example the cleanup level for TCE is 3.6/20 for industrial or recreational user and 13/0.02 for residential user. It would be useful to identify the basis (i.e. risk, RIDEM standard) for each clean-up level

***Navy Response to EPA Specific Comment No. 43:***

Agree. Direct contact levels (as well as "leachability" based levels) are currently presented.

**EPA Specific Comment No. 44:** Page 8, Table 2, Inside the compliance boundary of a waste management area the table values (MCLs) are Performance Standards (for monitoring to ensure there is no migration beyond the compliance boundary), outside of the compliance boundary they are cleanup standards. See previous comment about aquifer restoration.

***Navy Response to EPA Specific Comment No. 44:***

A note will be added to Table 2 to indicate that these levels are to be met outside the WMA.

**EPA Specific Comment No. 45:** Page 8, Table 2 – Notes reference RIDEM, but RIDEM is not listed in the basis column.

**Navy Response to EPA Specific Comment No. 45:**

The RIDEM acronym is provided because it is used in footnote 1.

**EPA Specific Comment No. 46:** Page 8, Table 2, There are a few inconsistencies between the COCs listed in this table and those listed on page 2-6 of the FS. The following contaminants are listed as COCs for which PRGs will be evaluated on page 2-6 of the FS:

PCE	benzene	cobalt
TCE	naphthalene	chromium
<i>cis</i> -1,2-DCE	antimony	iron
vinyl chloride	arsenic	manganese

Of these COCs, cobalt and manganese are not listed on Table 2 in the Proposed Plan. Please reconcile this difference.

**Navy Response to EPA Specific Comment No. 46:**

The list presented in Table 2 of the PP is the *primary* COCs listed in the FS *and* any chemical present at concentrations greater than MCLs/MCLGs. The list is in agreement with Table 2-4 of the FS, which presents the *final* recommended list of COCs and preliminary remedial goals for groundwater contaminants.

**EPA Specific Comment No. 47:** Page 9, Description of Soil Alternatives. For all of the soil alternatives the descriptions need to state that the marina area is being cleaned up to State residential standards that will allow recreational use. There will not be LUCs in the area to prevent residential use, just to prevent disturbance of the cover that will be installed under all of the alternatives (except S-5 which will remove all contaminated soil above unrestricted use levels). The alternatives need to specify whether the LUC area is restricted to the area with covered soils (the waste management area) or if a larger area where residential use needs to be restricted is present under the alternative. Monitoring also will need to include groundwater monitoring of the covered areas to make sure covered contaminants are not migrating beyond the compliance boundary for the waste management area.

**Navy Response to EPA Specific Comment No. 47:**

This is a multi-part comment.

Disagree with the statement that the Navy is required to meet residential criteria in the Marina area. Please see Navy response to EPA Specific Comment No. 41.

The area where specific LUCs apply will be described in the LUC Remedial Design document. However, LUCs will be provided that restrict residential use, as necessary.

The details of the long-term groundwater monitoring program will be developed during the preparation of the long-term monitoring plan.

**EPA Specific Comment No. 48:** Page 9, Soil Alternatives – Alternative S-2 stated “soil cover and/or cap” while other alternatives mention only soil cover. Explain the difference. Also, explain the difference between “full soil cover” in S-6 and other alternatives that are not considered a “full” cover.

**Navy Response to EPA Specific Comment No. 48:**

A discussion of the differences between cap, soil cover, and full soil cover will be added to the text. A cap refers

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to low permeability material that prevents precipitation from infiltrating through to the contaminated soil below. A soil cover only prevents contact and does not prevent precipitation from passing through. A "full" soil cover extends over all contaminated soil and debris (in the NCA) to maximize the physical barrier to contaminants or potentially contaminated material.

**EPA Specific Comment No. 49:** Page 9 – Alternative S-2 should include limited excavation in the Soil Alternatives title as it does under the Description of Soil Alternatives section.

***Navy Response to EPA Specific Comment No. 49:***

This comment is not clear. The text of the soil alternative title already refers to limited excavation.

**EPA Specific Comment No. 50:** Page 9, left column: The alternative S-2 should include Five-Year Review because contaminants above acceptable risk levels will remain in place.

***Navy Response to EPA Specific Comment No. 50:***

Agree. Although the title of the alternative refers to a Five-Year Review, the text does not. A reference to the Five-Year Review will be added to the text.

**EPA Specific Comment No. 51:** Page 9, Alternative S-5, It is unclear if soil is only excavated down to the water table, will there still be deeper contaminated soil that still would require LUCs to be implemented? In the alternative all soil exceeding unrestricted use levels above and below the water table could be removed – in which case no LUCs would be required.

***Navy Response to EPA Specific Comment No. 51:***

Excavations are to the water table. Contamination below the water table is a groundwater contamination issue and is addressed by the groundwater alternatives.

**EPA Specific Comment No. 52:** Page 10, 1<sup>st</sup> paragraph, Alternative S-6, The term "waste management area" is not defined in this paragraph or in the glossary of terms. Please include a definition of this term in the text and glossary.

***Navy Response to EPA Specific Comment No. 52:***

The definition for waste management area (per NCP regulations) will be added to the glossary, as follows: Waste management area (WMA) – An area where waste is left in place. Per the NCP preamble, groundwater cleanup levels must be attained outside the boundaries of a WMA, but not within the boundaries of a WMA.

**EPA Specific Comment No. 53:** Page 10, Groundwater, The text needs to explain how each alternative will meet groundwater performance standards inside the compliance boundary for any waste management area established through the soil alternative selected and meet groundwater cleanup standards outside of the compliance boundary. Each alternative that includes MNA needs to identify how long it is estimated each alternative will take to achieve groundwater cleanup standards outside of the compliance boundary for the wma. The text should describe how LUCs will be permanent inside of the compliance boundary and temporary outside of the compliance boundary.

***Navy Response to EPA Specific Comment No. 53:***

The information indicating the groundwater criteria within and outside of the WMA, the durations of MNA, and the relative durations of the LUCs (permanent vs temporary) will be added to the text.

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**EPA Specific Comment No. 54:** Page 10 – Description of Groundwater Alternatives, “high concentration areas” should be explained or identified on a figure.

***Navy Response to EPA Specific Comment No. 54:***

A definition of high concentration areas (the area within the 1,000 ug/L TCE concentration contour) will be added to the text.

**EPA Specific Comment No. 55:** Page 10, left column: The Alternative G-2 indicates that LUCs would be implemented to “...restrict the use of groundwater (without treatment)...” This implies that groundwater could be used if it were treated. Therefore, change the text to “...restrict the use of groundwater (without treatment to acceptable risk levels)...” In addition, the implications of the groundwater withdrawal that such LUCs would allow should be considered with regard to drawing contamination from the source area(s).

***Navy Response to EPA Specific Comment No. 55:***

Agree with the first part of the comment. The text will be revised as suggested. Agree with the second part of the comment in that the potential effects of a withdrawal must also be evaluated as part of the LUCs. This LUC will be added to all of the alternatives.

**EPA Specific Comment No. 56:** Page 10, Navy’s Preferred Alternative. The text should state that no remedial action is required for surface water or sediment. As previously noted, the preferred soil alternative needs to describe how the marina area will be remediated to meet residential standards to allow for current and future recreational use. EPA’s position is that the choice of G-2, which is estimated to take 300 years to achieve groundwater cleanup standards, does not meet EPA MNA guidance standards nor the EPA’s expectation that remedial actions will restore the aquifer in a reasonable timeframe. When compared with other feasible remedial alternatives, there are other alternatives that will meet groundwater cleanups standards in a significantly shorter time period. Also, G-2 does not meet the NCP preference to reduce the toxicity, mobility, or volume through treatment of principal threat waste while other feasible alternatives will.

***Navy Response to EPA Specific Comment No. 56:***

The text will state that no remedial action is required for surface water/sediment. Please see response to EPA Specific Comments 15 and 41 regarding remediation of soils near marina to residential standards. Please see response to EPA General Comments Nos. 1 through 3 regarding the Navy recommendation for ground water, Alternative G-2.

**EPA Specific Comment No. 57:** Page 11 – The acronym “ARAR” is not defined in the text or glossary. Please add the definition.

***Navy Response to EPA Specific Comment No. 57:***

Agree.

**EPA Specific Comment No. 58:** Page 12, Table 3, It is unclear why Alternative S-5 is noted as only partially meeting the Implementability criterion.

***Navy Response to EPA Specific Comment No. 58:***

Soil Alternative S-5 is likely to have the most significant impact on the local community (for an extended period of time [e.g., increased truck traffic]) and is the most expensive of the alternatives presented. Thus, the

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implementation of this alternative will definitely be more difficult versus the other alternatives presented.

**EPA Specific Comment No. 59:** Page 13, Table 4, This table indicates that Alternative G-2 meets or exceeds Federal and State ARARs. EPA Comment 47 on the FS questions whether this is the case because this alternative is estimated to take 300 years to achieve ARARs and it does not reduce the toxicity, mobility, or volume of a principal threat waste as required by the NCP. Alternative G-2 does not meet the EPA guidance nor NCP criteria of a cleanup (aquifer restoration) in a reasonable time frame.

***Navy Response to EPA Specific Comment No. 59:***

Please see response to EPA General Comments Nos. 1 through 3.

**EPA Specific Comment No. 60:** Pages 12 and 13, Tables 3 and 4, The implementability criterion appears to be inconsistently applied when comparing the scores of Alternative S-2 and Alternative G-2. In the FS both alternatives are indicated as to be easy to implement but it "May be difficult to apply LUCs to property that has already been transferred." However, Table 3 in the Proposed Plan indicates that Alternative S-2 meets or exceeds the implementability criteria, while Table 4 of the Proposed Plan indicates that Alternative G-2 only partially or potentially meets the implementability criteria. These two implementability descriptions appear virtually identical in the FS, yet the implementability scores in the Proposed Plan are not the same. Navy should provide an explanation for this inconsistency.

***Navy Response to EPA Specific Comment No. 60:***

Acknowledged. Upon further review of Table 5-1 and Table 5-2 in the FS, Table 4 of the PP will be revised such that Alternative G-2 has the "meets or exceeds the criteria" symbol.

**EPA Specific Comment No. 61:** Additional Figure: The Navy should include a figure of the proposed alternative that shows the compliance boundary for the waste management area, the LUC boundary for residential use restriction zone (if it is different from the wma compliance boundary), the boundary of the temporary groundwater restriction LUC, and the marina area that will be subject to residential cleanup standards.

***Navy Response to EPA Specific Comment No. 61:***

Agree to add additional figure(s). Please see response to EPA Specific Comments No. 15 and 41 regarding soil remediation in the vicinity of the marina.

ATTACHMENT A

GROUNDWATER WHITE PAPER

(For purposes of brevity, referenced attachments are not included  
but are available upon request.)

**ATTACHMENT A  
TECHNICAL MEMORANDUM  
PRELIMINARY REMEDIATION GOALS FOR  
GROUNDWATER UNDERLYING SITE 16 AT  
THE FORMER NCBC, DAVISVILLE RHODE ISLAND**

### **Introduction**

The preliminary remediation goals (PRGs) presented for groundwater in the Draft Feasibility Study (FS) for Site 16 at the former Naval Facility Battalion Center (NCBC) are based on the State of Rhode Island Department of Environmental Management (RIDEM) "GB" groundwater standards and risk-based concentrations developed for the vapor intrusion pathway (i.e., the migration of volatile organic chemicals from groundwater to the indoor air of a commercial/industrial building.) These PRGs were selected based on the current RIDEM classification of the groundwater underlying Site 16 as well as several site-specific hydrogeologic and land/groundwater use factors discussed herein.

Based on comments received from Region I of the Environmental Protection Agency (EPA Region I) on the Draft FS for Site 16, the Navy acknowledges that EPA Region I is not in agreement with the PRGs recommended in the Draft FS. Rather the Region proposes Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs), maximum contaminant levels goals (MCLGs), or other drinking water standards/risk-based criteria as PRGs based on the assumption the groundwater may be used as a drinking water source. The EPA Region I comments are based on guidance presented in a recent EPA summary document of the requirements of the National Contingency Plan (NCP) and the fact that RIDEM does not have an approved *Comprehensive State Groundwater Protection Program* (CSGWPP) (USEPA, June 2009). The Region has specifically stated that, according to the *Guidelines for Ground-Water Classification Under the EPA Ground-Water Protection Strategy* (USEPA, 1988), the groundwater underlying Site 16 should be categorized as EPA Class II B groundwater (i.e., groundwater considered potentially usable as a source of drinking water, both from a quality and yield standpoint). However, as detailed in the following narrative, the Navy believes that the EPA position is at variance with: 1) previous EPA statements regarding the groundwater underlying Site 16 (see Attachment A), 2) EPA philosophy expressed in guidance documents for the EPA groundwater programs, and 3) the current RIDEM classification of the groundwater underlying the former NCBC Davisville.

This technical memorandum presents the rationale for Navy's position that the groundwater underlying Site 16 should not be considered a potential drinking water source. Thus, drinking water standards and criteria should not be selected as groundwater PRGs for Site 16. The rationale considered the RIDEM classification and both EPA and Navy guidance and policy documents on the subject.

## **RIDEM Classification of Groundwater Underlying Site 16**

Per the RIDEM Rules and Regulations for Groundwater Quality (March 2005) RIDEM has classified the groundwater resources of Rhode Island using four classes established in Chapter 46-13.1 of the General Laws of Rhode Island, 1956, as amended. The current groundwater classification map (May 2006) is displayed on Figure 1; the formal groundwater classification definitions are provided in Table 1. Per Rule 9 of the regulations, groundwater located beneath highly urbanized/developed areas with dense concentrations of industrial/commercial activity or in the vicinity of landfills may be classified "GB" indicating that the groundwater resource "may not be suitable for public or private drinking water use without treatment due to known or presumed degradation". Approximately 9 percent of the state, including the groundwater resource underlying most of NCBC Davisville, is classified as "GB". The highly developed areas in the vicinity of the City of Providence have also been designated "GB". RIDEM relied on data from known sources of contamination and land use information for the GB delineation. The RIDEM "GB" numerical groundwater standards are designed to control threats to human health based on the potential for contaminants in the groundwater to volatilize and accumulate in indoor air (e.g., a basement). ***There is no State goal to restore groundwater classified GB to drinking water quality. The EPA recommendation to remediate the groundwater underlying Site 16 to drinking water standards is at variance with stated goals and classifications established in State of Rhode Island groundwater regulations.***

## **RIDEM Comprehensive State Groundwater Protection Program (CSGWPP)**

In December 1992, the EPA published the "Final Comprehensive State Ground Water Protection Program Guidance" (EPA 100-R-93-001). The CSGWPP was intended to be a focal point for partnerships between EPA, the States, Native American Tribes, and local governments to achieve a more efficient, coherent, and comprehensive approach to protecting the nation's groundwater resources. CSGWPPs were also viewed as important in implementing EPA's groundwater protection goals and principles. The following excerpts exemplify the EPA philosophy regarding restoration as presented in the guidance document:

**Page 1-2....**

Remediation based on relative use and value of ground water. Although the focus of ground water protection should be on the prevention of contamination, remediation must be pursued as a final option when prevention fails or where contamination already exists. EPA's goal is to remediate all aquifers to meet their designated uses. Given the expense of cleaning up ground water contamination and the need to focus more effort and resources on prevention, EPA and States must take a realistic approach to restoration based on the actual and reasonably expected uses of the resource as well as on social and economic values. EPA, the States, and other federal agencies must work together to ensure consistent approaches to determining clean-up objectives.

**Page 1-11....**

Remediation should be based on differential protection. While prevention of contamination will be promoted to the extent possible, decision-making concerning the appropriate level of remediation will need to be based, in part, on the relative use and value of the contaminated ground water. Clean-up of contaminated ground water is both time and resource intensive. Because of the need to attend to other environmental and societal issues in a time of limited resources, choices will have to be made about where to focus remedial actions and the extent of the remediation to be sought.

**Page B-4....**

For A Reasonably Expected Source of Drinking Water. EPA considers the following factors to be important in evaluating the future use of groundwater...

- Hydrologic characteristics, including water quality and quantity
- Availability and cost of alternative water supplies
- Demographics, including future growth and population patterns
- Remoteness from likely areas of residential or other development
- Land use planning
- Remediation technology for, and practicality of, remediation
- Cost of prevention and remediation
- Inter-jurisdictional considerations

**Part II**

**Page 1-18** With regard to coordination with Superfund...

...Under the CSGWPP approach, current and reasonably expected uses would be determined by a State and would be consistently applied to all State and Federal programs. Where a CSGWPP is in place, the Superfund program may provide flexibility to focus more intensive long-term remedial efforts at sites where ground water is more highly valued by the State and less intensive efforts (i.e., longer restoration time periods) in other areas.

The primary components of a CSGWPP are listed in Table 2. However, per discussions with the EPA Office of Groundwater and Drinking Water, the CSGWPP program is no longer active at the federal level. It was phased out in 1996/1997 because there was no mandatory legislation or funding, and because of the enactment of the 1996 Safe Drinking Water Act (which included mandatory legislation). Section 1429 of the 1996 Safe Drinking Water Act describes a comprehensive ground water program; however, an EPA representative indicates that currently there is no funding for the federal program (see Attachment B). The EPA representative also indicates that the EPA-endorsement of a state program may be done at the regional level

Eleven States (Alabama, Connecticut, Delaware, Georgia, Illinois, Massachusetts, Nevada, New Hampshire, Oklahoma, Vermont, and Wisconsin) have EPA endorsed CSGWPPs as stated in the National Water Quality Inventory, 1998 Report to Congress (USEPA, August 2000). One example of a New England state with an EPA-endorsed CSGWPP is Massachusetts, where the CSGWPP has led to the development of additional groundwater protection programs in the state. Per discussions with the State of Massachusetts Department of Environmental Protection (MassDEP) Groundwater Supply Protection Department, only those sites determined to be drinking water supplies need to meet drinking water standards and other areas would need to meet waste site cleanup standards.

Per discussions with the RIDEM Water Resource Department, the State did begin discussions with the EPA regarding the development of an EPA-endorsed CSGSPP for the State of Rhode Island when the EPA's program was initiated. While the CSGSPP was never completely developed by RIDEM, the RIDEM groundwater protection program appears to have completed many of the CSGSPP strategic activities listed in Table 2. The current RIDEM groundwater protection program was established largely in response to a state law passed in 1985. Subsequently, RIDEM developed the Rhode Island Groundwater Protection Strategy (1989) much of which has been implemented. RIDEM has not formally updated this strategy due to resource constraints and some Agency roles have changed due to the evolution of the State groundwater programs. However, groundwater protection goals are reflected in the State act, and a corresponding classification system and ambient standards have been promulgated in

State groundwater quality regulations. The RIDEM Office of Water Resources does compile and assess information on groundwater quality and periodically reports on groundwater quality conditions.

*The EPA Region I comment that the GB numerical groundwater standards are not acceptable PRGs for Site 16 because RIDEM does not have an approved CSGWPP must be re-considered in light of the fact that this federal program appears to be inactive at this time. The lack of a formal endorsement of the current State program appears to be a function, in part, of resource constraints at both the state and federal level and is not necessarily reflective of the incompleteness or inadequacy of the State program. Perhaps, more importantly, the philosophy presented in the CSGWPP guidance document indicates that risk managers must take into consideration a range of factors when making funding decisions for groundwater restoration. While it may be true that a groundwater resource is suitable in terms of "yield" and could be returned to drinking water standards (assuming unlimited funding was available), these are not the only factors that our society must consider when making remediation decisions.*

### **Navy Classification of Groundwater Resource Underlying Site 16**

The groundwater classification and clean-up guidance presented in the following recent Navy guidance were used in the determination of PRGs for the groundwater underlying Site 16: Evaluation of Site-Specific Criteria for Determining Potability and Cleanup Goals for Impacted Groundwater (Navy, April 2009). The guidance document presents the factors to consider when determining groundwater beneficial uses and, ultimately, the clean-up goals for groundwater (if warranted). The guidance references the aforementioned EPA 1988 Guidelines for Ground Water Classification Under the EPA Groundwater Protection Strategy and EPA 1992 Final Comprehensive State Ground Water Protection Program Guidance. It should be noted that the EPA considers all groundwater to be a potential source of drinking until is demonstrated that it is not reasonably anticipated to be a drinking-water source based on an evaluation of site-specific factors. A groundwater resource that is currently used or has the potential to be used as a drinking water source is designated either Class I or Class II groundwater resource.

In determining whether or not the groundwater resource may reasonably be used as a drinking-water resource, the EPA guidance focuses on the "yield" and "quality" of the groundwater resource. Specifically, the only groundwater resources that are not considered potential drinking water supplies are those "that are saline or otherwise contaminated beyond levels which would allow use for drinking or other beneficial purposes.... These include groundwaters (1) with at total

dissolved solids (TDS) concentration over 10,000 mg/L, or (2) that are so contaminated by naturally occurring conditions, or the effects of broad-scale human activity (i.e., unrelated to a specific activity), that they cannot be cleaned up using treatment methods reasonably employed in public water-supply systems." A groundwater resource that does not have the potential to be used as a drinking water source is designated a Class III groundwater resource.

The site-specific guidance recommended by the Navy to determine the potential beneficial use(s) of groundwater (e.g., the potential use of a resource as a drinking water source) is somewhat broader than the EPA's guidance and includes the following site- and non-site specific factors or characteristics:

- **Department of Defense (DoD) criteria.** Assuming that CVOC contamination in the groundwater underlying Site 16 could be effectively remediated to drinking water standards, a significant portion of the groundwater resource underlying the site would meet the DoD total dissolved standard for a drinking water source for a military facility. However, the groundwater abutting the Allen Harbor shoreline and the Narragansett Bay shoreline is saline and is not suitable as a drinking water supply.
- **Local hydrogeology and the potential for groundwater well development.** The geological and hydrogeological data presented in the Phase III RI document indicate the groundwater resource underlying Site 16 is capable of sustaining a domestic water supply well.
- **The potential for impacted groundwater from the site to contaminate another potable water source.** There are no potable groundwater wells within or downgradient of the CVOC plume or between the edge of the known plume boundary and the Narragansett Bay shoreline. The CVOC groundwater plume discharges to Allen Harbor to the north and Narragansett Bay to the east.
- **Vulnerability of the groundwater to contamination.** Per State of Rhode Island regulations, the groundwater located beneath highly urbanized/developed areas with dense concentrations of industrial/commercial activity or in the vicinity of landfills may be classified "GB" by the State of Rhode Island indicating that the groundwater resource "may not be suitable for public or private drinking water use without treatment due to known or presumed degradation". As noted above, the groundwater resources underlying Site 16 as well as the highly developed areas in the vicinity of the City of Providence have been classified as such by the RIDEM. The Site 16 area has been extensively developed for military purposes in the past and the current/future use is industrial/commercial. The depth to groundwater at Site 16 is very shallow and there are no aquitards impeding the movement of contamination within the overburden system or

between the overburden and bedrock systems. Consequently, the current State classification of the groundwater, the current/anticipated future land use, and the site-specific hydrogeological characteristics indicate that this groundwater resource would be a poor choice as a potable water supply source. The Navy guidance recommends that, "Groundwater that is highly susceptible to contamination generally should not be developed for potable water supply".

- **Ecological vitality of the groundwater.** The geological, hydrogeological, and surface water/sediment data presented in the Phase III RI document indicate the groundwater resource underlying Site 16 does discharge to Allen Harbor to the north and Narragansett Bay to the east. However, the RI surface water and sediment data collected to date indicate that significant CVOC concentrations have not been detected in these resources.
- **Historic use of groundwater.** A public water system has served the NCBC Davisville area since the 1950s. The groundwater resource underlying Site 16 was used for domestic purposes by the Navy.
- **The projected water demands of the area.** Based on recent discussions with the local Quonset Development Corporation (QDC), the existing public water supply system is adequate for current and anticipated future water supply needs.
- **Jurisdictional control/Existing standards and controls for potable water development.** The Navy does currently exercise control over land/groundwater use for the Site 16 area above Davisville Road (leasing restrictions) and the Site 16 area below Davisville Road and east of Allen's Harbor Road (deed/transfer restrictions). However, the results of the RI/FS for Site 16 indicate that CERCLA-type land use controls (LUCs) will be necessary and are planned for Site 16 (as well as downgradient areas) to prevent the future use of the groundwater resource.

It should be noted that the EPA groundwater classification guidelines do not consider many of the factors listed above which are intended to more fully evaluate the actual potential that the groundwater underlying Site 16 would be used as a drinking water supply source. Also, by definition, the RIDEM "GB" classification implies a groundwater resource is not suitable/is unlikely to be suitable as potential drinking water source. Therefore, the groundwater underlying Site 16 may be more appropriately categorized as EPA Class III groundwater. The conclusion is in agreement with EPA statements documented in the Section B of the notes of the 30 March 2004 NCBC Davisville BCT Meeting (Attachment A). Perhaps, more importantly, the public health benefits of expending significant funds to restore to "drinking water quality" a groundwater resource that, by current standards, would be a very poor choice as a drinking water source are limited if any. Consequently, the Navy believes that remediation decisions should be guided by the true risk presented by groundwater contamination at a site and the EPA restoration

philosophy presented in the December 1992 EPA "Final Comprehensive State Ground Water Protection Program Guidance" (EPA 100-R-93-001):

Given the expense of cleaning up ground water contamination and the need to focus more effort and resources on prevention, EPA and States must take a realistic approach to restoration based on the actual and reasonably expected uses of the resource as well as on social and economic values. EPA, the States, and other federal agencies must work together to ensure consistent approaches to determining clean-up objectives.

While this guidance may be viewed as somewhat dated, the guidance does reflect the need to address groundwater restoration decisions in a manner that is protective of public health and the environment and also realistic from a technical and fiscal perspective.

Finally, the Navy does not believe that the recommendations presented herein are necessarily at variance with recent EPA guidance presented in OSWER Directive 9283.1-33: Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration. While that document clearly recommends the use of EPA MCLGs/MCLs/other drinking water standards (as appropriate) for groundwater resources that are current or potential future drinking water sources, the guidance contained therein is careful to caveat that such an approach "generally" applies to sites and should be followed "wherever practicable". The last sentence of footnote 1, page 1 also states that, "any decisions regarding a particular situation will be made based on the statute and the regulations (... referring to the NCP...), and EPA decision-makers retain the discretion to adopt approaches on a case-by-case basis that differ from the guidance where appropriate." This language and the "common sense" EPA restoration philosophy referenced above suggest that the risk managers for Site 16 (Navy, EPA, RIDEM) should carefully evaluate whether it is "practicable" or a wise use of available funding to restore the groundwater resource to drinking water quality. Based on the evaluation presented above, the Navy believes it is not.

### References

Navy. April 2009. Evaluation of Site-Specific Criteria for Determining Potability and Cleanup Goals for Impacted Groundwater.

RIDEM. 1989. Rhode Island Groundwater Protection Strategy.

RIDEM. March 2005. Rules and Regulations for Groundwater Quality. Office of Water Resources.

USEPA. June 1988. Guidelines for Ground-Water Classification Under the EPA Ground-Water Protection Strategy. Office of Groundwater Protection.

USEPA. December 1992. Final Comprehensive State Ground Water Protection Program Guidance. Office of the Administrator. EPA 100-R-93-001.

USEPA. August 2000. National Water Quality Inventory 1998 Report to Congress. Office of Water.

USEPA. June 2009. Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration. Office of Solid Waste and Emergency Response. OSWER Directive 9283/1-33.

**ENCLOSURE 2**

**Navy Response to RIDEM Comments, Dated June 14, 2012  
Former Naval Construction Battalion Center (NCBC)  
NCBC Site 16 Draft Proposed Plan  
Davisville, Rhode Island  
(Submitted 8 June 2012, Dated June 2012)**

**Navy Response to RIDEM Comments, Dated June 14, 2012**  
**Former Naval Construction Battalion Center (NCBC)**  
**NCBC Site 16 Draft Proposed Plan**  
**Davisville, Rhode Island**  
**(Submitted 8 June 2012, Dated June 2012)**

**RIDEM General Comment No. 1:** The Navy is proposing Alternative G-2 (Monitored Natural Attenuation and Land Use Controls) as the preferred groundwater remedial alternative. The Navy estimates that it will take 300 years before remedial action objectives (RAQs) are met. This is an extremely long period of time. To put this in perspective if the Navy were to have implemented this alternative on the day the United States declared its independence from England we would have gone through the Revolutionary War, the War of 1812, Westward Expansion, the Industrial Revolution, the Civil War, the Spanish-American War, World War I, the Great Depression, World War II, the Korean War, the Vietnam War, putting a man on the moon and the Afghan and Iraqi Wars and we would still have more than another half century to go before the remedial action objectives are met for this alternative! RIDEM would find it very difficult to accept this as the preferred remedial alternative due to the time frame which it would take to meet RAOs.

In order for RIDEM to accept a remedial alternative it needs to meet its objectives in a reasonable time frame. Based on the above, the Navy must take a closer look at groundwater alternatives that utilize active remediation of the contamination. Of those active groundwater remediation alternatives evaluated, in the Feasibility Study, the time to complete would be reduced by a factor of at least 2. Depending on the agreed to cleanup standard (MCL or RIDEM GB Groundwater Objectives) RAOs could be met in as little as 25 years based on Navy estimates with active treatment. Please note that RIDEM could accept Monitored Natural Attenuation as a component of an active groundwater treatment alternative.

***Navy Response to RIDEM General Comment No. 1:***

As stated in the draft Proposed Plan for Site 16 and also in the response-to-comments (RTCs) prepared for EPA Region I (also included herein), Remedial Alternative G-2 (MNA, LUCs, and Five Year Review) was recommended by the Navy because:

- *Human health and the environment will be adequately protected through the implementation of LUCs and MNA.*
- *The current/future land use at Site 16 is industrial/commercial and is not conducive to use of the underlying groundwater for public water supply; the groundwater underlying Site 16 is not currently used as a water supply source.*
- *The groundwater quality in the area of its current discharge to Allen Harbor does not adversely impact human or ecological receptors in the harbor.*
- *Groundwater restoration via active remediation would not be accomplished in less than 50 to 100 years, even under the most aggressive treatment alternatives.*
- *Due to existing contaminant types and aquifer conditions, the active treatment of groundwater could achieve, at best, only partial restoration (using treatment alternatives and associated*

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*timeframes as presented in Table 4). Consequently, active remediation of groundwater is considered minimally cost-effective.*

While the Navy concurs, in principle, with the goal to “restore groundwater to its beneficial uses within a reasonable timeframe” whenever possible/practicable, the Navy strongly believes that the factors listed above must be considered when making necessary, site-specific risk management decisions for Site 16. The Navy’s consideration of these factors has caused the Navy to conclude that active remediation of the groundwater underlying Site 16 as proposed in the current alternatives will be minimally cost effective, is not necessary to protect human health and the environment, and will have significant adverse impacts on current commercial operations in the developed portion of Site 16 for several years.

**RIDEM General Comment No. 2:** Similar to the Feasibility Study, the Proposed Plan fails to adequately convey to the reader that there is recreational use of a portion of Site 16 which has different soil cleanup standards than a cleanup for industrial/commercial use. Please revise this document so that the reader can gain a better understanding of activities that are currently, and in the foreseeable future, going to take place at Site 16. This would go a long way to help the public understand why there is limited excavation associated with Alternative S-6.

***Navy Response to RIDEM General Comment 2:***

The text in PP Section “What are the current and future land uses at the site?” will be modified to acknowledge the marina immediately abutting the north central area (NCA) of Site 16 which is used for recreational purposes. However, the area south and east of Bldg E-107 is primarily used to support boat maintenance/usage activities. The area immediately south of Building E-107 is a fenced area for equipment and supplies for boat and grounds maintenance. A portion of the area immediately east is paved with asphalt. A boat fueling station is also located in this general area.

A picnic table has been observed in this area and families certainly use the marina area for recreational boating. However, there are no permanent playgrounds, beaches, or other facilities that would result in receptors being intensively exposed to soils in a manner similar to the exposure experienced under a typical residential land use scenario. Also, the boats are removed from the marina (some appear to be staged on the northern side of Bldg E-107 during the cold weather months) further limiting human activities (and, thus, the potential for exposure) in the Bldg E-107 area.

Please also see Navy response to RIDEM Specific Comment No. 8.

**RIDEM Comment No. 3: Page 2, Column 1, Introduction, Paragraph 3, Sentence 1** – Please change “The Navy and EPA encourage the public...” to “The Navy, EPA and RIDEM encourage the public...”.

***Navy Response to RIDEM Comment No. 3:***

Agree.

**RIDEM Comment No. 4: Page 4, Column 1, Site Background, Paragraph 3, Last Sentence** – This sentence states that the anticipated future use of Site 16 is commercial/industrial. Please revise to note the recreational use of a portion of the site.

***Navy Response to RIDEM Comment No. 4:***

Agree. Please also see Navy response to RIDEM General Comment No. 2.

**RIDEM Comment No. 5: Page 3, Column 1, Introduction, Paragraph 5, Last Sentence** – The sentence mentions the maximum concentration of contaminants detected. It would be helpful to mention the accepted standard so the reader can gain an appreciation of how contaminated the groundwater is.

***Navy Response to RIDEM Comment No. 5:***

Agree. A sentence will be added stating that the current SDWA MCL for trichloroethene is 5 µg/L.

[The text that the comment refers to is on page 4.]

**RIDEM Comment No. 6: Page 5, Column 1, Expressing Estimated Human Health Risks** – Please revise the carcinogens risk statement to say that the values are the probability of having *one additional* case of cancer over the normal background rather than a probability of a 1 in 10,000, 100,000 or 1,000,000 chance of developing cancer.

***Navy Response to RIDEM Comment No. 6:***

Disagree. The wording presented is standard risk assessment/CERCLA-type language. The explanation that a cancer risk of 1E-04 (for example) is the same as a 1 in 10,000 probability of developing cancer is added to assist in the layman's understanding of risk assessment results.

**RIDEM Comment No. 7: Page 5, Column 2, Groundwater, Bullet 2** – In the section of this paragraph that lists potential risks (PAHs, metals, etc.) please include TPH since it exceeds both RIDEM GA and GB groundwater objectives.

***Navy Response to RIDEM Comment No. 7:***

A review of the November 2011 version of the RIDEM Remediation Regulations indicates that there are no GA/GB groundwater objectives for TPH.

However, the text of the Proposed Plan will be amended to note the presence of TPH in the soils at Site 16 (a footnote will be added to Table 1, Soil Cleanup Levels). Elevated TPH concentrations are generally located at the same locations as elevated PAH concentrations. Thus, remediation of the PAHs will also generally remediate the TPH. No RAOs were developed for TPH contamination in soil since CERCLA does not have jurisdiction for TPH. TPH will be addressed separately under State authority.

**RIDEM Comment No. 8: Page 7, Table 1 (Soil Cleanup Levels)** – Please change the heading in column 2 from “Industrial or Recreational User” to “Industrial User” and “Residential User” to “Residential and Recreational User”. Recreational Direct Exposure Criteria are the same as Residential Direct Exposure Criteria. The public could construe that recreational standards are the same as industrial/commercial standards.

***Navy Response to RIDEM Comment No. 8:***

The Navy does not agree with the statement that Recreational DEC's are the same as Residential DEC's. While the Navy can elect to remediate soils in the immediate vicinity of Bldg E-107 to RIDEM Residential DEC's, it should be noted that the RIDEM remediation regulations (Section 3.3.9) state that:

Industrial/Commercial Activity shall mean any activity related to the commercial production, distribution, manufacture or sale of goods or services, or any other activity which is not a traditional Residential Activity as defined by this Section **including activities related to outdoor recreational areas with restrictions in place to limit potential exposure. (bolding added).**

The language in the later part of this definition implies that remediation to “RIDEM Residential DEC's” is not an automatic requirement for all sites potentially used for recreational purposes. Rather the potential exposure at some sites (and, thus, risk) may be limited by land use restrictions and, as acknowledged in

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previous RIDEM comments/responses on the Site 16 FS (please see RIDEM correspondence dated September 13, 2011), the Navy could elect this approach at Site 16.

Per recent Navy correspondence of August 10, 2012, the Navy can elect to mitigate potential risk immediately adjacent to the marina by excavating soil above the water table and replacing it with soil that meets RIDEM residential criteria. This would mitigate the need for a soil management plan for potential future excavations above the water table immediately adjacent to the marina. Land-use controls (LUCs)/environmental land use restrictions (ELUR) may still be required for soil below the water table immediately adjacent to the marina (and elsewhere).

Please note that the remedial levels presented in the "Industrial or Recreational User" column in Table 1 are the *lower* of these two values (i.e., the lower of the remedial levels for the industrial worker or the recreational user) presented in Tables 2-3a and 2-3b of the FS for Site 16. A footnote will be added to the table explaining this for the reader. All of the risk-based remedial goals presented in the referenced FS tables were calculated based on risk assessment methodology presented in the Phase III Remedial Investigation report.

Please also see Navy response to RIDEM General Comment No. 2.

**RIDEM Comment No. 9: Page 8, Table 2 (Groundwater Cleanup Levels)** – In column 2 please change "Residential User" to "Groundwater Criteria". Groundwater standards are not based solely on land use. Neither USEPA nor RIDEM have residential or industrial/commercial groundwater standards.

***Navy Response to RIDEM Comment No. 9:***

Agree. The column heading will be changed to "Groundwater Criteria".

**RIDEM Comment No. 10: Pages 9 and 10, Description of Soil Alternatives, Alternative S-6** – Please include a sentence to explain that the excavation of soil near Building E-107 is to allow for the existing and continued use of this property for recreational use associated with the marina. This is necessary so the public can understand this aspect of the remedial alternative.

***Navy Response to RIDEM Comment No. 10:***

Agree. However, please see Navy response to RIDEM Specific Comment No. 8.

**RIDEM Comment No. 11: Page 10, Column 2, Preferred Alternative, Soil Alternative S-6** – See Comment No. 10, above.

***Navy Response to RIDEM Comment No. 11:***

Agree. However, please see Navy response to RIDEM Specific Comment No. 8.

**RIDEM Comment No. 12: Page 12, Table 3, Evaluation of Soil Alternatives** – For Item 4 (Reduces Mobility, Toxicity and Volume) all alternatives are rated as not meeting criteria. Alternatives S-3, S-4 and S-6 (though not stated) involve some form of excavation of contaminated soil. Therefore a full circle which means the alternative partially or potentially meets criteria should be shown for these alternatives. Alternative S-5 is complete excavation of contaminated soils which according to the Table legend means that it meets or exceeds criteria. Please make changes as appropriate.

***Navy Response to RIDEM Comment No. 12:***

Disagree. The subject of this criterion – Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment – is "treatment". Therefore, because Alternatives S-2, S-3, S-4, and S-5 do not

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include treatment, they do not meet the criterion. Cost assumptions in the FS were that the excavated soil would be placed in a landfill and not subject to treatment. No changes will be made to Table 3 based on this comment.

**RIDEM General Comment No. 13:** These comments are based on a satisfactory response by the Navy of RIDEM's 5 June 2012 comments on the Feasibility Study submitted by the Navy on 2 May 2012 for NCBC IR Site 16 (Creosote Dip Tank and Old Fire Fighting Training Area).

***Navy Response to RIDEM General Comment No. 13:***

The Navy acknowledges receipt of RIDEM correspondence dated June 5, 2012. While the Navy does not plan to formally respond to these comments, the comments will become part of the Administrative Record for Site 16 and will be considered in the continued development of the Proposed Plan (PP) and Record of Decision (ROD) for Site 16.