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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

June 11, 2001

Mark Evans, Remedial Project Manager
U.S. Department of the Navy
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway
Code 1823, Mail Stop 82
Lester, PA 19113-2090

Re: Responses to USEPA Comments on the Draft Basewide Groundwater Operable Unit Remedial Investigation Report

Dear Mr. Evans:

EPA reviewed the *Draft Final Remedial Investigation Report* dated February 2001 and the *Response to Comments* dated May 16, 2001 for adequacy, technical sufficiency, and compliance with the work plan, applicable regulations, EPA guidance, and generally accepted practice. Overall, the responses are adequate and appropriate. However, a few unresolved issues are discussed in the evaluation of general and specific comments. Detailed comments are provided in Attachment A.

1. The Comment asked for a more integrated approach to base wide groundwater. Navy's Response provides some cogent arguments for the more site-specific approach taken in the RI. From the standpoint of characterization of groundwater flow, controls on transport, and the nature and extent of groundwater contamination, however, there are reasons to develop the interconnections of individual sites to a greater extent. In particular, many of the sites of concern cannot be isolated entirely from adjacent areas hydrologically. While there does not appear to be extensive "cross-contamination" from one area to another, this general issue is a valid concern, and should be addressed by the Basewide Groundwater OU RI. For example, what conclusions can be drawn from the Basewide RI with regard to impacts of the Area A Landfill on the Area A Wetland? Similarly, what evaluation can be made of the potential transport pathway owing to recharge of groundwater from the Area A Wetland and subsequent discharge to the Area A Downstream Watercourses? What is the potential for transport from the Fuel Farm toward Goss Cove Landfill?

   One way that these concerns could be addressed is to add a section to the discussion for each local site that considers explicitly potential "cross-contamination" from upgradient areas and the potential impact on downgradient sites. For example, Section 6 summarizes results for the Area A Downstream Watercourses. An additional sub-section under

section 6.5 (Contaminant Fate and Transport) or under section 6.7 (Summary and Recommendations) would be a logical place to discuss potential upgradient sources that could contribute contaminants to Site 3 groundwater (*e.g.*, Area A Landfill and Wetland, Area A Weapons Center, Torpedo Shops) and downgradient areas that might be impacted by groundwater that exits the site (*e.g.*, the southern portion of the DRMO?). A brief discussion could include a review of any data that might suggest upgradient sources (*e.g.*, is there a "conceptual model" for the occurrence of TCE and its degradation products at 2DMW16S,D?), and assess the likelihood of downgradient impacts. Such a discussion should be developed for each site where the potential for "cross-contamination" of adjacent sites is possible. These issues will be particularly important when designing a long-term monitoring plan for base wide groundwater.

3. EPA questioned the need to adjust CTDEP direct contact values (RSRs) for noncarcinogenic chemicals by a factor 0.1 to account for possible additive effects to target organs. The Navy disagreed indicating that CTDEP does not require this adjustment. However, the cited CTDEP reference does not address the use of the direct contact values as screening criteria for selecting chemicals of potential concern in a risk assessment. The RSRs values are derived using risk-based calculations based on a Hazard Quotient = 1.0 and therefore do not take into consideration the potential additive effects to target organs. The derivation is very similar to that used for RBCs and PRGs that are also based on a target HQ = 1.0 and that require adjustment by a factor 0.1 to account for possible additive effects to target organs during screening for COPC selection in the risk assessment process.

   While the CTDEP values are derived using similar risk-based calculations, the intended use is quite different than that of the Region 9 PRGs or Region 3 RBCs. The PRGs and RBCs are intended to be used as screening values to determine COPCs for quantitative evaluation in the risk assessment. The RSRs are intended to serve as potential cleanup goal in a remedial effort. The Navy is correct that it would not be appropriate to adjust these cleanup values if they were used in the intended manner. However, if these values are used as screening tools for COPC selection in a risk assessment, then adjustments to account for additivity is necessary.

   Use of the RSRs as screening criteria for selecting COPCs in the risk assessment is not appropriate. Recognizing the need to address CTDEP concerns in conjunction with the EPA concerns at the site, I recommend that comparisons to CTDEP criteria be done outside the context of the risk assessment, perhaps in the nature and extent section.

5. This comment reiterated EPA Region 1 guidance prohibiting COPC elimination based on comparison to background concentrations. I recognize that the Navy provided a qualitative evaluation in the uncertainty analysis for chemicals that were eliminated based on background. However, consistent with Navy & EPA policy, chemicals should first be

compared to risk-based screening criteria (*i.e.*, benchmarks) in the determination of COPCs to be carried forward in the quantitative risk assessment.

19. The Comment noted several areas where groundwater contamination apparently is not fully characterized or well understood, and that require further investigation. Navy's Response acknowledges these data gaps, and states that they will be addressed. The exception is the issue of PCE at a Goss Cove Landfill monitoring well; Navy states that this is clearly attributable to an off-site source (*i.e.*, Fusconi Dry Cleaners). EPA maintains that the connection between the dry-cleaner source and the discovery of PCE and degradation products at 8MW2D is not supported in the RI. If the data supporting this interpretation are elsewhere, they should be cited in the RI and the arguments summarized. Standing alone, the observation of the chlorinated ethenes at the downgradient well, the lack of demonstrated continuity with the purported upgradient source, and the apparent downward vertical gradient at 8MW2S,D, leave open the possibility of a more local source. If there are ongoing investigations into the dry-cleaner plume, these issues should be addressed within that study in order to demonstrate that the plume is fully delineated and its downgradient impacts are understood (*see also* Specific Comments 145 and 150).

I look forward to working with you and the Connecticut Department of Environmental Protection to cleanup the groundwater resources at the Naval Submarine Base. Please do not hesitate to contact me at (617) 918-1385 should you have any questions.

Sincerely,

Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Mark Lewis, CTDEP, Hartford, CT
Dick Conant, NSBNL, Groton, CT
Jennifer Stump, Gannett Fleming, Harrisburg, PA

ATTACHMENT A

Evaluation of Specific Comments

10. The original Comment questioned the establishment of appropriate "background" levels for inorganics, that are often quite sensitive to the groundwater geochemistry, and, in turn, to the local hydrogeochemical environment. The Response offers some fairly cogent arguments in support of a single, base wide background, with an emphasis on similarity across geographic subregions (Northern, Central, and Southern regions of the base), and the apparent normality of the data sets. The suggestion was to consider different hydrogeochemical environments, and it is not clear that the geographical regions treated correspond to predominant geological, hydrological, or geochemical settings. (There may be a rough coincidence, in that the Central region is perhaps dominated by elevated recharge areas and shallow bedrock, while the Northern region contains more extensive wetlands and valley fill, *etc.*) I agree that the lack of inflections in the probability plots suggest samples from a single population. However, the background data might be reviewed for a bias toward certain environments. For example, are wells screened in valley fill (either natural or dredged spoil), in what appear to be predominantly reducing groundwater, represented in the background data set in the same proportion that such wells are included in the characterization of potentially contaminated sites?

72. The omitted data from 3MW12D is welcome. This well is important in the event that groundwater that descends from the Area A Wetland should discharge upward into the deep overburden in this area. Again, this could help address potential interconnections between sites.

73. The expanded discussion of the three inorganics of particular concern at the Area A Wetland (As, Ba, and Hg) is welcome. The new text indicates that "... pH and redox conditions will have little effect ..." However, the barium may be redox sensitive indirectly if it is associated with iron oxyhydroxides on aquifer solids. In this case, the dissolution of the iron oxyhydroxides is highly sensitive to the redox conditions, and the dissolution, in turn, would have a strong influence on barium concentrations.

74. The plot of Ba versus As is attached. It would be worthwhile to seek correlations between iron and arsenic (and, of course, if that is present, there will be a correlation of iron and barium) in both groundwater and in solid phases (if soils analyses are available). Such a correlation would support the conceptual model for barium and arsenic associated with iron oxyhydroxides, and released to solution by reductive dissolution of the oxides.

85. The Response explains that 2DMW11D was destroyed, and therefore not sampled for the BGOURI. Navy states that the well will not be re-installed. This represents a loss, in that the only comparable coverage of the deeper system in the area just downgradient of the

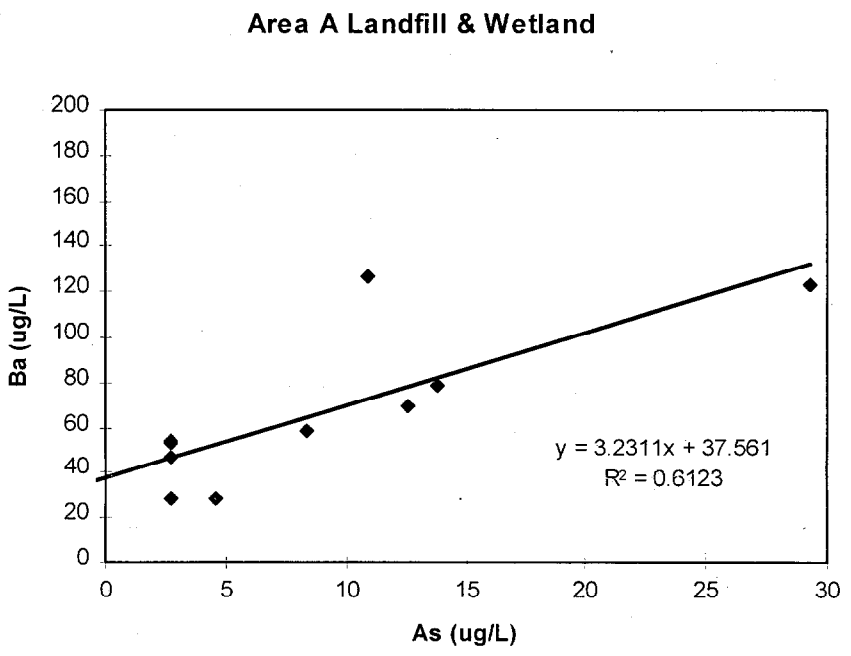
Area A Wetland is 3MW12S, northwest of 2DMW11D. The RI might review historic analyses from 2DMW11D in order to conclude that it need not be replaced.

88. The Response disagreed indicating that Table 9.4 in Appendix C.5 is the corresponding table for Table 6-10. The Navy response indicates that Table 6-10 includes the total risks for Site 2. However, Table 6-10 includes the total risks for Sites 3 and 14. The total risks presented in Table 6-10 and Table 9.4 for Site 3 (Appendix C.5) agree. However, there is a discrepancy in the inhalation risk for vinyl chloride between Table 9.4 and Table 10.4 for Site 3 (Appendix C.5). This leads to a discrepancy in the total risk numbers between the three tables. It appears that the inhalation risk for vinyl chloride is correctly presented in Table 10.4. The errors occur in Tables 9.4 and 6-10. Please investigate and correct as necessary.

115. The EPA comment regarding Table 7-7 questioned apparent discrepancies in the retention process for soil COPCs. Navy agreed and indicated that Table 7-7 would be corrected. However, corrections to Tables 7-5 and 7-6 may also be warranted. Please correct all affected tables.

123. The Comment asked about wells downgradient of the Area A Weapons Center that were not included in the RI sampling for Site 20. The Response explains that these wells were installed as part of the Area A Wetland investigation. This situation illuminates the need to integrate the Basewide Groundwater OU across sites, so that useful interconnections are exploited fully in characterization and in developing a full understanding of potential upgradient sources of contamination and potential downgradient impacts for each site.

126. A response was not provided for this comment. Please address the following comment regarding page 8-14, Section 8.6.3. The ICR listed in the text for the adult resident's exposure to groundwater does not correspond to the value provided in Table 8-8. Please verify that the correct value is listed in the text of the document. The HI for adult residents for the RME scenario also conflicts with the value listed in Table 8-8. Please verify that the appropriate values are stated in the text of the document.


Area A Landfill & Wetland
Ba (ug/L)
As (ug/L)
y = 3.2311x + 37.561
R² = 0.6123
0
20
40
60
80
100
120
140
160
180
200
0
5
10
15
20
25
30