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July 10, 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: First Five-year Review Report for the Naval Submarine Base-New London in Groton, CT

Dear Mr. Evans:

EPA reviewed the *First Five-year Review Report for CERCLA Sites at Naval Submarine Base-New London Groton, Connecticut* dated June 2001 in light of the following guidance documents: *Structure and Components of Five-Year Reviews*, May 23, 1991 OSWER Directive No. 9355.7-02; *Supplemental Five-year Review Guidance*, July 26, 1994 OSWER Directive No. 9355.702A ; *Second Supplemental Five-year Review Guidance*, Dec. 21, 1995 OSWER Directive No. 9355.7-03A; and, *Close Out Procedures for National Priorities List Sites*, January 2000 OSWER Directive 9320.2-09 A-P, EPA 540-R-98-016. Detailed comments are provided in Attachment A.

The Five-year Review Report should be the basis for the Final Close Out Report for site completion and NPL deletion. The content necessary for the Final Close Out Report should be presented and the format should be similar. Although the format of this Five-year Review Report is generally similar, some necessary information is omitted and too much background information is included. The Five Year Review Report must be revised to ensure that it contains all of the information necessary for the close out report as specified in *Close Out Procedures for National Priorities List Sites*, January 2000 OSWER Directive 9320.2-09 A-P, EPA 540-R-98-016. The following items specified in the Close Out guidance are not consistently included for each site/OU: ROD findings, information on community involvement activities, a discussion of QA/QC procedures for demonstration of cleanup activity, and cost information.

Five-year reviews are intended to evaluate whether the response action *remains* protective of public health and the environment. The focus of the five-year review depends on the original goal of the response action. If protectiveness is being assured through exposure protection (*e.g.*, containment with a cap) and institutional controls, the review should focus on whether the cap remains effective and the controls remain in place. If the response action involved an activity that achieved cleanup standards, the activity should be described and the cleanup standards achieved should be specified. This Five-year review report does not include a section for each site/OU entitled "ROD Findings." In order to determine whether the remedy is functioning as intended in the decision document, the

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findings of the decision document should be clearly presented. The cleanup standards specified in the ROD should be identified - not the remedial action objectives from the FS as is done in some sections of this report.

It is important to present the objectives specified in the ROD because the Five-year review process (1) confirms that the remedy as specified in the ROD and/or remedial design remains effective at protecting human health and the environment (*e.g.*, the remedy is operating and functioning as designed, institutional controls are in place and are protective), and (2) evaluates whether cleanup levels or actions remain protective of human health and the environment.

The analysis of newly promulgated or modified Federal and State environmental laws as potential ARARs or as protectiveness measures as described in the NCP section 300.430(f)(1)(ii)(B)(1) is neither well developed nor focused. Some of these sections appear as mere statements that no new human health ARARS have been promulgated and summaries of the ecological risk assessment conclusions or summaries of the ecological PRG derivation. The ROD for each site identifies the ARARs. These should be evaluated for updates, especially the chemical specific ARARs. The five-year review report should present the Federal and State chemical specific ARARs and identify changes, if any. The five-year review report should state whether standards related to the cleanup levels established by the ROD remain the same. If a change has occurred, then the change should be identified and include an appropriate explanation of how such a change would alter the cleanup level and whether this affects the protectiveness of the remedy.

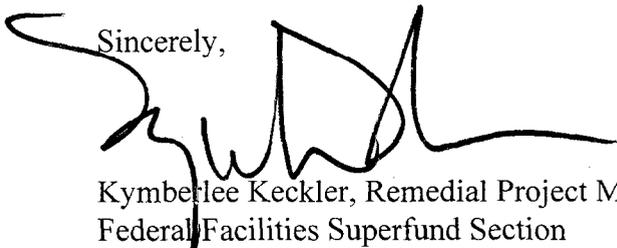
The reference section inappropriately cites the Record of Decisions. The Record of Decision (ROD) is a public document and should be cited as an EPA document with the ROD ID included. For example, the ROD for Area A Downstream Watercourses does not include the ROD ID number EPA/541/R-98/003 and is cited in the document as follows, "B&RE (Brown and Root Environmental)1998c. Record of Decision for Soil and Sediment, Area A Downstream Watercourses/Overbank Disposal Area, Naval Submarine Base-New London, Groton Connecticut, King of Prussia, Pennsylvania. March." Also, the reference citations within the text should be revised to indicate the EPA as the author of the ROD. For example, on page 4-3 the ROD for Area A Downstream Watercourses is cited as "(B&RE 1998c)."

In addition to the site numbers identified in the FFA, the OU numbers identified in records of decision should be specified. For example, the Spent Acid Storage Disposal Area (SASDA) is Site 15 in the FFA but is specified as OU6 in the ROD. Both identifications should be presented in the introduction to the SASDA section.

It is not specified in the document how the public was notified of the five year review. The document should specify how the scope, structure and available components of five-year reviews were explained to the public.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Kimberlee Keckler', written over the typed name and title.

Kimberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Mark Lewis, CTDEP, Hartford, CT
Dick Conant, NSBNL, Groton, CT
David Peterson, USEPA, Boston, MA
Jennifer Stump, Gannett Fleming, Harrisburg, PA

ATTACHMENT A

<u>Page</u>	<u>Comment</u>
§2.0	The CBU Drum Storage Area chapter of the Five Year Review Report should contain all of the information necessary for the close out report as specified in <i>Close Out Procedures for National Priorities List Sites</i> , January 2000 OSWER Directive 9320.2-09 A-P, EPA 540-R-98-016. Two items specified in the Close Out guidance are not included. These are information on community involvement activities specific to this site and a discussion of QA/QC procedures.
p. 2-1, §2.1	The milestone “construction completion” should be identified in the table of events for the CBU Drum Storage Area. Tracking individual operable units/sites will facilitate evaluation of eligibility for the “Construction Completion” List.
p. 2-4, §2.4.3	This section should summarize what, if any, changes have occurred in chemical specific ARARS and relevant standards or measures specified in the decision document. Although the human health statements appear appropriate, the ecological statements are not. For example, the ecological summary includes the following phrase “...so any changes in the screening values would not impact the decisions to remediate the site...” This phrase is inappropriate because the remedial decision was not based on ecological screening values. The five-year review report should state whether standards related to the cleanup levels established by the ROD remain the same. If a change has occurred, then the change should be identified along with appropriate explanation of how such a change would alter the cleanup level and whether this affects the protectiveness of the remedy. The ecological risk assessment conclusion summary is not needed in this section since it is provided in Section 2.2 and Section 2.5 specifies that the surface soil exposure pathway has been eliminated.
p. 2-6, §2.7	The CBU Drum Storage Area should be recommended for site completion status.
p. 3-1, §3.1	Section 3 states that Area A Landfill and Area A Wetland are reviewed independently within the section. Section 3.1 only presents the history and site chronology for Area A Landfill. A table should also be presented for Area A Wetland.
	Please evaluate whether the milestone “construction completion” is appropriate for Area A Landfill. If appropriate, this milestone should be

included in the site chronology table. Tracking individual operable units/sites will facilitate evaluating eligibility for the "Construction Completion" List.

p. 3-3, §3.2.1

The Phase II RI conclusions described in this section are not consistent with the conclusions found in the 1997 RI. The Phase II RI Baseline Human Health Risk Assessment concludes that the human health threat is owing entirely to the presence of PCBs at the site.

p. 3-4, §3.2.1

The text states that "... the Area A Landfill is currently being monitored under a long-term groundwater monitoring program...." In the recent exchange regarding the annual monitoring report, a number of issues regarding the monitoring program were raised, and a need for further discussion was acknowledged. Specific issues include: 1) the appropriateness of currently designated "background" wells; 2) the adequacy of the current analyte list to support characterization of redox conditions; 3) the development of a working conceptual model for the sources, transport pathways, and geochemical controls on mobility of inorganics for the site. This discussion is still needed. Clearly, meaningful assessment of the protectiveness of the remedy depends, in part, upon availability of the most relevant data.

It appears to be in Navy's best interest, to better characterize redox conditions and the conceptual model for sources, transport and geochemical controls on mobility. The arsenic may be present in the "ambient" materials (*e.g.*, the dredged spoil in Area A Landfill), and the reducing conditions may prevail naturally (although possibly enhanced somewhat by the landfills), therefore leading to elevated arsenic. If this is the case, elevated arsenic will be encountered possibly for more than 30 years, and no amount of remediation and/or monitoring will significantly alter the arsenic concentrations. Therefore, it seems that the monitoring program should be enhanced to develop and support a conceptual model for sources, transport, and geochemical controls on mobility. This would assist decision-making regarding scaling down monitoring frequency and the analyte lists to focus on the important items.

p. 3-13, §3.4.3

The document states, "There have been no changes in ARARs or site-specific action levels for groundwater" While the MCL for arsenic in groundwater remains at 0.05 mg/L, this standard is currently under federal review. Although the current five-year review is not affected by this issue, it should be noted that a change in the MCL for arsenic may be forthcoming, and may impact decisions regarding the Area A Landfill. This ongoing debate is of particular significance for this site, in that arsenic in groundwater appears to be one of the principal remaining issues in the assessment of long-term impacts.

- p. 3-13, §3.5 The document concludes, "...Institutional controls associated with the Area A Landfill are being implemented" This statement should be qualified to the extent that access restrictions apparently are not in place. (On page 3-3, §3.5, the text notes, "...Access by military personnel to most of the site is unrestricted...." In contradiction to this, however, on page 3-6, §3.3.1, the summary of the selected remedy states, "...Access to contaminated areas of the site was to be limited via perimeter fencing and institutional controls....") This contradiction is recognized in the five-year review (e.g., page 3-10, §3.4.1: "...There are no access restrictions on the site...." This failure to implement one component of the remedy should be acknowledged here in section 3.5, as well. Additionally, the cracks in the asphalt and flora growing through the asphalt should be revealed and plans for remediating it listed.
- p. 3-14, §3.5 The text notes under "Opportunities for Optimization" the potential for reduction in frequency and analytes. While these items have merit and should be discussed, the optimization must also consider a re-assessment of monitoring well coverage (e.g., designation of "background" wells) and possible areas of expansion of the analyte list in response to findings to date (e.g., the need to focus monitoring on persistent exceedances of inorganics, particularly arsenic, and the concomitant need to characterize redox conditions thoroughly).
- p. 4-1, §4.0 Community involvement activities specific to this site should be identified in the text or within the event chronology. For example, a public meeting was held in July 1997 but this community involvement is not specified in the text, nor is the public hearing that was held in August 1997.
- p. 4-1, §4.1 The milestone "construction completion" should be identified in the table of events. The text should be evaluated to ensure that all information needed for final close out, site completion are provided. Information necessary for the close out report is specified in *Close Out Procedures for National Priorities List Sites*, January 2000 OSWER Directive 9320.2-09 A-P, EPA 540-R-98-016. The three following items specified in the Close Out guidance are not included: community involvement activities specific to this site, a discussion of QA/QC procedures, and cost expenditures.
- p. 4-3, §4.2.1 The first paragraph lists DDT, DDD, and DDE. DDT should be included on the abbreviation list. For consistency, dichlorodiphenyltrichloroethane should be included.
- p. 4-12, §4.4.3 This section should summarize what, if any, changes have occurred in chemical specific ARARs and relevant standards specified in the decision

document. These ARARs should be listed. The ecological risk assessment summary and PRG derivation summary are not needed in this section.

- p. 5-1, §5.1 The milestone “construction completion” should be identified in the table of events. This site should be evaluated to ensure that all information needed for final close out and site completion are provided. Information necessary for the close out report is specified in *Close Out Procedures for National Priorities List Sites*, January 2000 OSWER Directive 9320.2-09 A-P, EPA 540-R-98-016. Three items specified in the Close out guidance are not included (*i.e.*, community involvement activities specific to this site, a discussion of QA/QC procedures, and cost expenditures).
- p. 6-1, §6.0 Community involvement activities specific to this site should be identified in the text or within the event chronology. For example, a public meeting and public hearing were held in September 1997 but this community involvement is not specified in the text.
- p. 6-2, §6.2 The second sentence describes current activities at the DRMO. The word “actions” should be “auctions.”
- p. 6-9, §6.4.2.2 The summary of the Year 1 Annual Report, as well as that for Year 2 (page 6-11), discuss trend analyses for inorganics. This assessment would be more meaningful if similar analyses were made for redox indicators (*e.g.*, dissolved oxygen, oxidation-reduction potential, reduced iron measured in the field in conjunction with routine groundwater sampling).
- p. 6-11, §6.4.2.2 The second bullet notes a lack of maintenance on some monitoring wells and sampling equipment. Are these wells among those included in the active long-term monitoring program? Please clarify in text. This will allow the reader to assess the importance of the needed “maintenance and/or repair.”
- p. 6-12, §6.4.3 This section should summarize what, if any, changes have occurred in chemical specific ARARs and relevant standards or measures specified in the decision document. The ecological risk assessment summary is not needed in this section. The remedial action eliminated the surface soil exposure pathway. The groundwater to surface water exposure pathway remains; therefore, any changes in ARARs associated with ecological exposure to surface water should be identified in this section. The text should identify the Connecticut Remediation Standards specified in the Interim ROD and state whether the standards have changed.

The MCL for arsenic in groundwater is under consideration for change, this potential change should be identified.

- p. 6-14, §6.5 An area of possible settlement was observed during the site inspection. This is a possible early indication of potential remedy failure. Therefore, the statement that no indications of remedy failure were noted during the inspection is not appropriate.
- p. 7-1, §7.2 The acreage of the torpedo shops Site 7 is not provided in the background description. This acreage information should be provided.
- p. 7-7, §7.8 Since a remedy has not been selected for the torpedo shops, the protectiveness statement should include a summary of the human health and ecological risk assessment findings as to whether there is unacceptable risk. Also any access restrictions that are currently in place should be discussed.
- p. 8-1, §8.1 The milestone “construction completion” should be identified in the table of events for Goss Cove Landfill. The text should be evaluated to ensure that all information needed for final close out, site completion are provided. Information necessary for the close out report is specified in *Close Out Procedures for National Priorities List Sites*, January 2000 OSWER Directive 9320.2-09 A-P, EPA 540-R-98-016. The following three items specified in the Close Out guidance are not included: community involvement activities specific to this site, a discussion of QA/QC procedures, and cost expenditures.
- p. 8-11, §8.4.3 This section should summarize what, if any, changes have occurred in chemical specific ARARs and relevant standards or measures specified in the decision document. Since the remedial action is a containment action, the surface soil exposure pathway has been eliminated. Therefore, the discussion of ecological risk terrestrial screening values is not needed here. This section should list the ARARs specified in the ROD. The text should identify the Connecticut Remediation Standards specified in the ROD and state whether the standards have changed.
- p. 9-1, §9.1 Completion of the Post Removal Action Report should be added to the event chronology. Also, OT-5 should be evaluated to see if it has achieved the milestone “construction completion.” If so, this milestone should be identified in the table of events.
- p. 10-4, §10.4 The five-year review findings for each Lower Subbase site should describe the cleaning and repair of the storm sewer systems that have occurred since the RI. These activities were recommended for each zone in the Lower Subbase RI. Sections 18 and 24 mention that these activities were performed but no details are provided.

- p. 13-1, §13.1 The OBDANE site should be evaluated to see if it has achieved the milestone “construction completion.” If so, this milestone should be identified in the table of events. The text should be evaluated to ensure that all information needed for final close out and site completion are provided. Information necessary for the close out report is specified in *Close Out Procedures for National Priorities List Sites*, January 2000 OSWER Directive 9320.2-09 A-P, EPA 540-R-98-016.
- p. 13-5, §13.4.3 The five-year review report should state whether standards related to the cleanup levels established for the removal action remain the same. If a change has occurred, then the change should be identified along with appropriate explanation of how such a change would alter the cleanup level and whether this calls into question the protectiveness of the remedy. The ecological risk summary and discussion of ecological screening values are not needed in this section.
- p. 15-4, §15.4.3 The protectiveness statement in section 15.4.3 is inconsistent with that provided in section 15.8. The second sentence provides the needed information. Therefore the first sentence including the protectiveness statement should be deleted.
- §18 & §24 The text does not adequately characterize the ecological risk. Based on the zone-specific ecological risk assessments for Zones 4 and 7, potential risks to benthic organisms were low to moderate. Also, the results of the historic toxicity tests from sediments collected near Piers 17 (Zone 4) and 33 (Zone 5) were of concern. EPA understands that these areas have been dredged, but the current nature and extent of any residual contaminants are unknown. During the RI/FS process, the Navy provided a weight of evidence table for each of the Zones along the Thames River summarizing the existing data and the magnitude of ecological risk that can be made from the measures of exposures and effects (measurement endpoints). For the majority of Zones, with the exception of Zones 4 and 7, the magnitude of risk is low. However, the results of sediment chemistry and native blue mussel samples reflect a moderate potential ecological risk for Zone 4. The results of sediment toxicity testing, benthic community analysis and bioaccumulation testing support the conclusion of a moderate potential ecological risk. The ecological risk summary text should be revised.
- p. 20-2, §20.0 A discussion of the noncarcinogenic hazard indices that were calculated as part of the Lower Subase Phase II Remedial Investigation report is not included. According to the Phase II Report, the HI for the construction worker exceeded one. Please review and include this information.

p. 21-2, §21.0 Please include a summary of the HHRA that was conducted as part of the 1999 Lower Subbase RI. The baseline human health risk assessment indicated that there are minimal risks to human receptors from Zone 5 of the Lower Subbase.

p. 22-2, §22.0 Please summarize the HHRA that was conducted for the Central Paint Accumulation Area as part of the 1999 Lower Subbase RI. The baseline human health risk assessment indicated that there are minimal risks to human receptors and the hypothetical future resident (RME scenario) exceeds the CTDEP risk level.

p. 25-1, §25.0 Please provide a table listing the sites where a No Further Action ROD is recommended. Also, another table summarizing deficiencies identified during the five-year review and recommended actions to correct the deficiencies would be helpful.

Appendix A There is not a picture of site 9 OT-5 included in the pictures. Please indicate whether site 9 is visible within the Site 23 photograph. If so, revise the caption accordingly and revise the text on page 9-4 referring the reader to Appendix A for a photo of site 9.