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NAWC WARMINSTER
5090.3a

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

DEC 29 1992

Mr. Orlando Monaco
Naval Facilities Engineering Command
Northern Division, Mailstop #82
Environmental Contracts Branch
10 Industrial Highway
Lester, Pennsylvania 19113

Re: Naval Air Warfare (Development) Center (NAWC) - Warminster, Pennsylvania

Dear Mr. Monaco:

Please find below EPA comments on the Phase II RI Report on the subject site as it relates to Operable Unit One (OU-1). The scope of OU-1 in this case is as proposed in a letter from EPA to the Navy dated December 14, 1992.

EXECUTIVE SUMMARY

p. ES-1: Introduction and Purpose

Please insert the following language: "In addition to meeting the objectives of the Navy's Installation Restoration Program, the purpose of the RI is to meet the requirements of CERCLA. As such, the RI should investigate the nature and extent of contamination associated with all hazardous substance releases at the facility which are not regulated and not being investigated under the authority of the Clean Water Act, Clean Air Act, the Resource Conservation and Recovery Act and/or other federal law."

p. ES-1: Scope and Objectives

The second sentence in the section should read as follows: "The areas of concern identified to date at NAWC Warminster are..."

The next to last sentence in this section should read as follows: "The main focus of the RI for NAWC Warminster to date has been to determine groundwater impacts from the eight inactive waste sites identified above, particularly the location..."

p. ES-2: Facility History and Description

Third paragraph, fourth sentence should read as follows: "Any hazardous substance releases from the eight sites identified to date and/or from other unidentified sites potentially affect the Stockton Formation aquifer..."

p. ES-2: General Field Activities

First sentence should read as follows: "To date, NAWC Warminster has been addressed in two long-term remedial phases."

p. ES-4: Physical Characteristics - Sites 1, 2 and 3

Delete fifth paragraph.

p. ES-5: Nature and Extent of Contamination - Sites 1, 2 and 3

Fourth paragraph down, delete the following sentence: "Beyond that, however, no identifiable pattern of metal contamination in groundwater was observed."

p. ES-6: Risk Assessment - Sites 1, 2 and 3

This section should summarize all risks to human health and the environment which exceeded the acceptable range for toxicity and carcinogenicity. In addition, this section should indicate where health-based ARARs (e.g. MCLs) have been exceeded.

p. ES-6: Conclusions - Sites 1, 2 and 3

The first paragraph should read as follows: " Additional investigation should be performed to better define the nature and extent of ground water, surface water and sediment contamination in this area. The tasks should include:"

The first bullet should read as follows: "Additional monitoring wells as needed to define the upgradient and downgradient extent of Site-related ground water contamination in overburden, shallow bedrock and deep bedrock."

The third bullet should read: "Research and/or generate production information and construction details for offsite wells, including the Wagner & Sons, Aztec and Warminster Township Municipal Authority Well No. 26 well, and onsite production wells."

The fourth bullet should read: "Generation and/or analysis of water level (and production) data for all onsite wells, including both monitoring and production wells."

The sixth bullet should read: "Modeling to estimate future ground water concentrations in the shallow bedrock aquifer should be performed utilizing soil data to be generated by additional soil sampling."

A seventh bullet should read: "An expeditious additional well survey work must be conducted as needed to identify residential and other well users potentially at risk due to releases from the site. Offsite well sampling must be performed as needed based on the results of the survey."

(Note: Comments on Conclusions of the Executive Summary are also applicable to Section 4.8.2.)

The comments above reflect EPA's conclusion that contaminated ground water underlying and adjacent to NADC property west of Jacksonville Road may be due sources/releases which have not been identified at this time. Additional potential source areas must be investigated in subsequent RI work. Comments on the nature of these additional investigations shall be provided by the EPA to the Navy by January 4, 1993.

p. 2-1: Section 2.1.1 - Local Well Inventory

The well survey must be extended to at least one mile north of Sites 1, 2 and 3. As noted above, this survey must be conducted in the short-term to identify whether well users in the area of concern are at an unacceptable risk. The results of the survey and/or sampling need not necessarily be incorporated into the final RI for OU-1. The EPA would like to discuss this task with the Navy further during our planned meeting of January 9, 1993.

p. 2-8: Section 2.1.3 - Fracture Trace Analysis

Second paragraph: Include the final maps showing fracture traces, lineaments, and/or joint traces identified and field-verified in the report.

p. 2-11: Section 2.1.8.1 - Phase I RI Investigation

The rationale for installing each monitoring well during Phase I should be summarized in tabular form in the FS to help estimate the location/nature of wells to be installed during the OU-1 RD/RA.

p. 2-12: Section 2.1.8.2 - Phase II RI Investigation

The rationale for installing each monitoring wells during Phase II should also be summarized in tabular form as part of the FS.

p. 2-35: Table 2-6

Future work should include analysis of the redox status of groundwater to assess the fate of metals.

p. 4-1: Secs. 4.1 and 4.1.3

The former section says ground water flow is to the north, while the latter section says flow **may** be to north. Please reconcile.

p. 4-3: Sec 4.2.1

TCE concentrations ranged from 2.8 to 78 **ug/kg**.

The section says ground water flow "may be to the east". This is inconsistent with Section 4.1. Please reconcile.

p. 4-8: Fig. 4-5

EPA to clarify

The FS should include ~~a~~ separate maps indicating the location of wells installed prior to Phase I, all wells installed through Phase I and all wells installed through Phase II. This comment and comments on Sections 2.1.8.1 and 2.1.8.2 should be part of the process of estimating the location and nature of monitoring wells to be installed as part of the RD/RA for OU-1.

p. 4-15: Section 4.4.3.1 - Shallow Bedrock Aquifer

The limitations of Figure 4-11 should be identified in light of the hydrogeologic nature of the shallow bedrock aquifer.

p. 4-23: Section 4.4.3.3 - Results of Long-Term Water Level Study

Include a figure indicating the location of the Wagner & Sons, Aztec and WMTA Well No.26 wells as precisely as possible given available information. (Note: Figure 8-1 is inadequate.)

Include all available records on water levels and/or production of onsite production wells and other monitoring wells during the pump tests performed. A map of all onsite production wells (both

readily accessible data to be included.

used and unused) should be provided.

p. 4-28: Section 4.4.3.4 - Aquifer Pumping Test

The drawdown curves for all other wells should also be provided. Based on the water level variations observed in different monitoring wells, it appears the aquifer is highly heterogeneous. Given this is the case, the report should acknowledge the limitations associated with calculating K, T and S.

p. 4-37: Section 4.5 - Nature and Extent of Contamination

The sample ID's in Appendix K do not match the well numbers shown in the figures in Chapter 4 and elsewhere in the RI. Provide a key in the final report to correlate Appendix K data with the report. (This comment applies to all sections of the report for all media.)

p. 4-45: Section 4.5.4 - Groundwater

Fifth paragraph in this section: Delete the sentence, "There does not appear to be an identifiable plume of metals contamination..."

Eighth paragraph in this section: Clarify the location of the "jet fuel storage area" and provide more information about this potential source of contamination.

While contaminant levels in onsite production wells may not be due to releases from Sites 1, 2 and/or 3 (or any other currently identified "site"), **all** available data on contaminant levels in these production wells should be provided and summarized in tabular form in the RI. This data should include Attachment 1 (along with an onsite production well location map). The source of the data in Attachment 1 and the date(s) of the sample collection/analysis should be provided. The RI should also include all other information on these wells which may potentially be used for assessing the nature and extent of ground water contamination associated with the facility, assessing remedial alternatives and designing the Remedial Action for OU-1 or subsequent Operable Units.

p. 4-57 to 4-60: Figures 4-24 to 4-28

All of these figures should be qualified with the following statement: "Due to the dilution of certain samples, the detection limits for the substance of concern at certain sample locations

was well above the contract-required detection limit and/or above MCLs/healthrisk-based levels. Therefore, the figure may not accurately represent all areas where substance levels of concern exist."

p. 4-80: Section 4.7.1 - Data Evaluation

EPA to clarify

The methodology utilized for estimating the future concentration of substances in groundwater due to the release of these substances from soil is inadequate. Please consult with the EPA prior to selecting an alternative method for developing these "future ground water concentrations". Note: This issue need not be resolved prior to finalizing the RI for OU-1.

p. 4-97: Sec. 4.7.3.1

Under Groundwater, delete the first sentence, "Groundwater beneath Sites 1, 2 and 3 is not currently used for drinking water purposes." (Groundwater below Sites 1, 2 and 3 could potentially be migrating to WTMA Well No. 26.)

p. 4-177: Recommended Remedial Action Objectives

Second full paragraph under <u>Potential Remedial Action Objectives</u> (with sentence that starts, "Since the deeper aquifers..."): While the deep bedrock aquifer within a several mile radius of NADC often contains elevated levels of VOCs, it is misleading to describe this contamination as "regional". The contamination of the deep bedrock aquifer is due to hazardous substance releases from discrete sources. These releases have produced "areas" of deep bedrock contamination which are not necessarily continuous or "regional" in nature. For example, during a particular sampling event, TCE levels in NADC deep bedrock production wells SW-1 and SW-2 were found to contain up to 147 and 293 ug/l TCE respectively, while NADC deep bedrock production wells SW-6 through SW-10 were all found to contain less than 4 ug/l TCE (see Attachment 1, Table 1-6 of unspecified date). Based on this data and other data presented in the subject report, the EPA has determined the deep bedrock aquifer tapped by NADC production wells SW-1 and SW-2 is likely to have been contaminated by releases from the NADC property west of Jacksonville Road.

The volume of contaminated ground water to be addressed by the Navy under OU-1 (see letter from the EPA to the Navy dated December 14, 1992) must include not only overburden and shallow bedrock aquifers contaminated by hazardous substance releases from NADC property, but deep bedrock aquifers contaminated by such releases as well. Therefore, restoration of deep bedrock

aquifers contaminated by NADC to protective levels **is** a primary remedial action objective of OU-1. This objective is consistent with the fourth of the listed Potential Remedial Action Objectives, "restore contaminated groundwater for future use by reducing contaminant concentrations within the contaminated aquifer to levels that are safe to drink".

Given that all ground water underlying and adjacent to current NADC property may potentially be used for drinking water purposes in the future, the EPA also concurs with the remedial action objective which calls for the protection of uncontaminated ground water for current and future use by reducing contaminant concentrations within the affected aquifer or by minimizing the migration of contaminants to adjacent or deeper aquifers.

Please find below comments on the Risk Assessment as it relates to Operable Unit One:

1) EPA Region III recommends the use of filtered monitoring well sample results to assess the risk from exposure to inorganic contamaints in water used for domestic purposes. This should be noted in the report.

clarify, but don't re-do, New calculations will be done with 95% UCL

2) The 95% UCL is calculated using a one-sided t-statistic (not a two-sided). Please recalculate the 95% UCL using a one-sided t-statistic at alpha= 0.05.

3) Exposure point concentrations for groundwater exposure risk should be based on contaminant levels at the center of the "plume". Please see the Attachment 2, entitled "Exposure Point Concentrations in Ground Water" and recalculate the exposure point contaminant levels for groundwater using this guidance.

4) All dermal risk assessments in the report should be qualified to reflect the fact that EPA's Dermal Risk Assessment Guidance has not been finalized at this time. The resulting uncertainty in the calculating risks should be discussed in the Uncertainty Section of the Risk Assessment.

5) Note that literature values for soil absorption factors for volatiles and semivolatiles are as high as 25% and 10% (Ryan et al, 1983), respectively. Also note that the Draft Dermal Guidance does not recommend that a quantitative dermal risk assessment for PAHs be performed because of the wide range of absorption factors presented in the literature. Therefore, it is recommended that a dermal risk assessment not be presented for PAHs.

6) The following parameters should be refined in the "Foster and Chrostowski Shower Model":

- Inhalation Rate: 20 cubic meters (not 15 cubic meters)
- Shower volume: 2.94 cubic meters (the volume of the shower stall and not the volume of the bathroom (12 cubic meters) should be used)
- Temperature: 318 K, not 293 K

7) See Attachment 3 for revised ARAR, carcinogencity and toxicity criteria.

8) It is stated in the uncertainty analysis that when HIs were greater than 1.0, "further assessment was done to determine whether this was due to a single chemical or a combination of chemicals, and whether the combinations of chemicals affected the same target organs." Where is the assessment in the report? (See p-168) Please provide if not in the report.

9) Unfiltered monitoring wells samples should not be compared with filtered monitoring well samples to assess relative risk.

10) The Risk Assessment should summarize where a representative or maximum ground water concentrations exceed MCLs or MCLGs.

Should the Navy determine that addressing a particular comment above could constitute a significant time constraint, please contact the EPA to discuss the comment further.

In addition to providing the comments above, the EPA would like to take this opportunity to respond to an undated letter from the Navy received by telefax on December 24, 1992 (see Attachment 4). The subject letter indicates "the Navy supports the USEPA request to address groundwater at NAWC (or NADC) as an operable unit..." and that "we will include, as a minimum, groundwater contamination at Sites #1, 2 and 3 as OU-1, but may expand this to include groundwater contamaintion at Sites #5, 6, and 7."

As stated in our letter of December 14, 1992, the EPA requests OU-1 "should include, at a minimum, **any** ground water containing such levels (those exceeding ARARs or health-based criteria for drinking water) **due to any releases on current NADC property west of Jacksonville Road."** This includes ground water which may have been contaminated by an unknown source within the area of concern. Based on data presented in the Draft Phase II RI report, the RA for OU-1 must address, at a minimum, (1)

contaminated ground water underlying the general area of Sites 1, 2 and 3 (e.g. Well C), ground water tapped by the Wagner & Sons well, and ground water which hydraulically links these two areas and (2) contaminated ground water in the deep bedrock aquifer tapped by NADC Production Wells SW-1 and SW-2. In addition, the remedy must, at a minimum, initiate the restoration of the shallow bedrock aquifer in the vicinity of Sites 1, 2 and 3. In any case where restoration cannot be initiated due to lack of adequate data, the remedy must include the work necessary to obtain such data, followed by the restoration determined to be necessary based on the data generated. In addition, the RA for OU-1 must include any investigations necessary to determine whether releases from the facility are likely to have contaminated WTMA Well No.26 and any other investigations necessary to fully identify the nature and extent of groundwater contaminated by releases from the NAWC property west of Jacksonville Road. Where possible, the subject investigations and those outlined under "Executive Summary - Conclusions" should be initiated/performed prior to the Remedial Design or Remedial Action.

With regard to the remedy to be selected for OU-1, our letter of December 14, 1992 suggested the remedy could be "interim" in nature. We have enclosed an EPA memo dated October 10, 1990 and entitled "Suggested ROD Language for Various Ground Water Remedial Options" for your information in this regard (see Attachment 5). At this time, the EPA recommends the FS for OU-1 evaluate alternatives for a remedy with "Contingency Measures/Goals" or for an "Interim Action". These approaches are described in Attachment 5.

As noted in the Navy letter faxed on December 24, 1992, serious consideration should be given to expanding OU-1 to include ground water contaminated due to releases from the vicinity of Sites 5, 6 and 7.

As discussed in the EPA letter of December 14, 1992, the "EPA requests the Navy prepare a Focused FS" which "should contain the functional equivalent of an RI for OU-1, which in turn should include relevant portions of the Phase II RI report." In this context, the Focused FS should contain a description of the nature and extent of the groundwater contamination of concern (i.e. an RI component), a risk assessment for the groundwater of concern and a "focused" FS which evaluates only the most reasonable remedial alternatives in detail. We plan to provide the Navy comments with regard to "focusing the FS" as part of EPA comments on the Draft Initial Screening of Technologies and Process Options report.

At this time, we agree with your proposal to meet on January 8, 1993 to discuss OU-1 and the remaining sites. If possible, the

EPA may prefer to meet earlier that week if possible. Please call me upon your receipt of this letter to discuss this possibility. In addition, should the Navy disagree with any of the comments above, please provide a brief written summary of the points of disagreement as soon as possible and prior to our meeting the week of January 4, 1992.

Should you have any questions regarding the above, please call me at 215-597-0549.

Sincerely,

Darius Ostrauskas
Remedial Project Manager

cc: Ben Mykijewycz
Hank Sokolowski
David Kennedy, PA DER
Frank Kurdziel, NAWC