

7/1/96 - 00493



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
841 Chestnut Building  
Philadelphia, Pennsylvania 19107-4431

Mr. David Forsythe  
Atlantic Division, Code 1822  
Naval Facilities Engineering Command  
Environmental Quality Division  
1510 Gilbert Street  
Norfolk, Virginia 23511-2699

Re: Proposed Remedial Action Plan dated July, 1996  
Q-Area Drum Storage Yard  
Norfolk Naval Base, Virginia

Dear Mr. Forsythe:

EPA Region III has reviewed the draft final **Proposed Remedial Action Plan** for the Q-Area Drum Storage Yard. The public comment period extends from July 15 to August 15, 1996.

EPA provided comments on the Q-Area Drum Storage Yard in a letter dated August 25, 1994 from Mr. Robert Thomson (attached). These comments pointed to certain deficiencies in surface water and sediment sampling and in the ecological risk assessment. The revised draft final RI/FS report (May 1996) was submitted to EPA by Environmental Science & Engineering on June 10, 1996 but did not indicate if these comments were addressed in the report. EPA will review the final RI/FS report and provide comments as necessary.

Specific comments on the Proposed Plan follow.

1. Section 2.2.2 - Nature and Extent of Contamination

The media investigated during the RI/FS include not only soil and ground water but also sediments. Results of sediment sampling have not been included in this discussion.

2. Section 3.0 - Scope and Role of Remedial Action

One purpose of this section of the Proposed Plan is to identify principal threats and how the response action will address the principal threats through site remediation. As this section is written, it is not clear how the ground water poses a threat to human health or the environment, what cleanup levels have been established, how the proposed technology will achieve cleanup levels, and why soil remediation is not necessary. The last two paragraphs discuss the pilot study and the concept of providing a remediation zone prior to ground water discharge. This is unclear

as to the extent of groundwater contamination and may be more appropriately discussed under a description of alternatives.

3. Section 4.0 - Summary of Site Risks

The first paragraph of this section references seven study areas which are not described elsewhere in the Proposed Plan.

4. Section 5.0 - Remediation Goals

The Proposed Plan lists remedial goal objectives for both future worker and future resident scenarios for ground water but does not indicate which of the two criteria will be met. The Proposed Plan does state that the future resident scenario is highly unlikely and the FS identifies remedial goals for the future worker scenario.

5. Section 6.0 - Evaluation of AS/SVE Alternative

This section should be correctly titled Evaluation of Alternatives since all alternative are evaluated. The capital and O&M costs and implementation time associated with each alternative should also be included.

6. Section 6.3 - Compliance with ARARs

The discussion of ARARs in this section is vague. Specific State and Federal ARARs for ground water, surface water, air emissions, etc. should be identified and discussed relative to the alternatives evaluated.

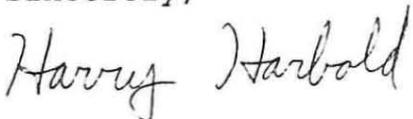
7. Section 6.4 - Long-Term Effectiveness and Permanence

This section should indicate that long-term ground water monitoring will be required as part of the remedy.

8. Section 6.8 - Cost

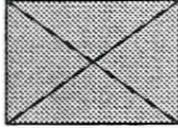
The cost of the preferred alternative should be provided along with any contingency costs rather than include a reference to the FS that the preferred alternative has the highest cost.

Sincerely,



Harry Harbold, P.E.  
Federal Facilities Branch

cc: Dianne Bailey  
Steve Mihalko



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Office of Superfund Direct Dial (215) 597-1110  
Robert Thomson, PE

Mail Code 3HW71

Date: August 25, 1994

Mr. Dave Forsythe  
Atlantic Division, Naval Facilities Engineering Command  
Environmental Quality Division  
Code: 1822  
Building N 26, Room 54  
1510 Gilbert Street  
Norfolk, Virginia 23511-2699

Re: Norfolk Naval Base, Virginia  
Q-Area Storage Yard  
Review of draft *Remedial Investigation/Feasibility Study*

Dear Mr. Forsythe:

As previously requested by Ken Walker, formerly of the Atlantic Division of the Naval Facilities Engineering Command (LANTDIV), please find ecological comments on the Navy's draft *Remedial Investigation/Feasibility Study* report for the Q-Area Storage Yard, located at the Norfolk Naval Base, Norfolk, Virginia as outlined below. The following comments are made on behalf of the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Environmental Protection Agency (EPA):

**General Comments**

1. In many areas the document raises more questions than it answers. The specific comments below will show that this is the case in several parts of the text, but in general surface water and sediment sampling is not of remedial investigation quality in terms of both numbers of samples and location.
2. Remedial alternatives are presented in a very confusing way. As it stands, we (EPA/NOAA) cannot determine which remedial alternative is the preferred nor can we ascertain which alternatives would cause the least ecological harm.

**Specific Comments.**

1. In Section 5.0 and elsewhere, we note that the investigator tied contaminant levels to the Region 3 risk-based concentration (RBC) tables for commercial industrial soils. The comparison of individual chemical concentrations to RBC values on a line by line basis is inappropriate and misleading. It is recommended that, before the baseline risk assessment process begins for the Q-Drum Area Storage Yard, the selection of chemicals of concern be accomplished. The selection of chemicals of concern for soils and groundwater should follow the procedures provided in the enclosed Region III guidance document entitled "*Selection of Contaminants of Concern by Risk-based Screening*" (SCCRBS), utilizing the associated SCCRBS tables developed by using a systemic hazard quotient of 0.1 or a lifetime cancer risk of 10<sup>-6</sup>. Updated RfDs can be obtained from newer versions of Region III's *Risk Based Concentration values* and utilized in the process outlined in the SCCRBS guidance to calculate updated SCCRBS table values for selected chemicals. By utilizing the SCCRBS tables, all chemicals detected which exceed the SCCRBS table values should be retained initially as chemicals of concern and carried forward into the baseline risk assessment process. All chemical concentrations falling below the SCCRBS table values can be eliminated from further concern.

Additionally, the SCCRBS table values listed for soils are generally not protective of ecological resources and should not be used in any determinations of ecological risk, i.e. for the evaluation/screening of sediment chemical concentrations. For the evaluation/screening of sediment, please utilize NOAA *Screening Guidelines*. The table values contained in the NOAA *Screening Guidelines* can be used for the initial identification of chemicals of concern for sediment and surface water much in the same way as the above referenced EPA-Region III SCCRBS tables. For those chemicals not included on the NOAA *Screening Guidelines* tables, default values can be utilized, namely the SCCRBS table values for residential soil.

2. We note that the placement of wells appears to be logical in relation to the gradient. However, we question the wells used for reference as they may be too close to the contaminant areas to serve adequately. The preparer of the draft *Remedial Investigation/Feasibility Study* report (RI/FS) should at least explain why these wells can be regarded as adequate references. Our concern is that the low gradient may allow for upgradient contamination to interfere with the use of these wells as "background". As a result, the use of these wells as controls would be compromised.
3. We note also that the document uses surface water criteria in evaluating the severity of risk. We agree that the use of surface water

criteria is acceptable when carrying out Ecological Risk Assessment, but the use here appears to be inappropriate as VA has developed ground water guidelines which are considered ARARs. These guidelines are designed to be protective of ground water resources vis-a-vis TCE and PCE as well as other VOCs and semi-VOCs. The rule of thumb is to use the more stringent numbers in most cases.

4. We note also that the base proposes to use contaminated ground water for irrigation. This contaminated water may represent a risk pathway to ecological receptors and also may contribute to surface water contamination through the pathway of runoff. In addition, if the contaminants contained in the groundwater are considered "listed" hazardous wastes, other problems may be encountered if the base uses the groundwater for irrigation. NOAA/EPA also believe that metals are a problem with ground water, and the runoff poses a risk pathway for these contaminants as noted above.
5. As far as we can tell, only two sediment samples were analyzed and these were from the storm drainage ditches discharging into the Elizabeth River. These sediments are contaminated with Arsenic, Barium, Chromium, Magnesium, Copper, Iron, Lead and Zinc. Aside from the confusion in the text regarding why the sediments were listed as both moderately and heavily contaminated with barium, we note that the sediment samples in general show exceedances of the Long & Morgan Guidelines for several trace elements and the pesticides Chlordane and homologues of DDT. As far as we can tell only one surface water sample was analyzed during the entire RI. We believe that a real potential exists for contamination from the site to both the Elizabeth River and Willoughby Bay via both the surface water and ground water pathways. This area is located in the general southern Chesapeake Bay environment which is ecologically rich in aquatic/marine life as well as pelagic, shore, and upland birds. Because of these habitat values that are so dependent upon water quality, we do not believe that one sample at one point in time can be used to determine ecological risk. In addition, that single sample was restricted to priority pollutant metals and did not cover any other site-related contaminants. The receiving waters (Elizabeth River, Willoughby Bay and any others that were identified through reconnaissance of the area) should be sampled for TCL/TAL as well as for specific site-related contaminants. The sampling program should include the attached list of basic water quality parameters. The document mentions such as Mason's Creek and Lafayette Pond but does not mention any other streams and ponds that may be located in the area. These should be sampled systematically along with other aquatic systems. At the same time, the investigation should include sampling of the benthic regimes at the same locations, with emphasis upon selecting depositional areas. Finally, a description of the bank and riparian areas should be included for physical and ecological values.
6. Ecological assessment has not received very broad attention and given the levels of metals, TPHs, etc., it is very possible that contamination has moved into the food chain. It is recommended that an effort be made to establish plant and animal tissue/organ levels of contaminants associated with the site. It is noted that several metals that were identified in the document have the ability to bioaccumulate, e.g., cadmium and arsenic. Sampling the ecological receptors should be carefully planned so that organisms most directly exposed to pathways from the site are considered. For example, on page 5-23 DDT homologues are noted as present in sediment samples. It is possible that either sedentary fish or fin fish with small ranges may be available as test organisms. When doing this work it is important to note that different chemical states (e.g. alternate valence states and toxicities for metals) may prevail. We believe the emphasis solely upon human receptors, exposure to the food chain ignores actual impact to ecological receptors.
7. The inadequate level of ecological characterization, media samples, and risk assessment makes it impossible to agree with the conclusion of no impact. This conclusion is based upon intuition and the speculation that impacts are 'unlikely' is not based upon any factual information. Characterization of the aquatic ecosystem would be required as an initial piece of information towards an effort to determine ecological risk potentials. The discharge of runoff to the Elizabeth River and Willoughby Bay alone is sufficient reason for gathering basic ecological information in pursuit of determining potential impacts through risk assessment. We note that the document presumes that concentrations in ground water are diluted and dispersed but, again, no factual information based on sampling and analysis is provided.
8. On page 7-11 and -12 as well as on page 8-3 the toxicity assessment concludes that "the disturbed nature of the site makes it unlikely that important terrestrial receptors currently exist". Since neither an ecological characterization nor risk assessment was done, no factual basis exists for this conclusion. In addition, no list of species is provided to determine what the term 'important' means. On page 7-10 they state that no threatened, sensitive, rare, or endangered species are thought to exist on the site. As stated before, the general environmental setting (i.e., lower Chesapeake Bay) argues against this. But aside from this, we could not find where the document states that appropriate state and federal authorities have been contacted regarding status species. For example, the White Marsh office of the Fish & Wildlife Service is one contact that can supply information on endangered species of the locale.
9. Cleanup criteria for TPH in soil and ground water is not addressed in the remedial plans because no human health criteria exist for this class of contaminant. TPH, on the other hand, are considered to be serious ecological contaminants and should be addressed as part of an Ecological Risk Assessment. Metals levels in sediment also exceed guidelines as do levels of DDT homologues and Chlordane, both of which are greater than NOAA ERM guidelines by several orders of magnitude. The RI failed to clearly establish a source, but implies that an upstream source exists. In light of the topography, this is questioned. Furthermore, the source is likely to be associated with the base, indicating that additional on-base remedial investigation should be carried out to pinpoint the source(s). We suggest that additional investigation should cover such pathways as the storm water system, etc., to locate the source(s).
10. We note that TCLP extraction methods were used in establishing hazardous concentrations of several contaminants. This method is not acceptable for establishing potential availability to ecological receptors.
11. In the same vein, metals, TPH, and chlorinated hydrocarbons, pesticides, and DDT homologues have been identified in the sediment, therefore, work needs to be done to complete the characterization of sediment and considered in the scope of remedial plans.
12. While we usually do not look at the quality assurance plans for RI/FS investigations conducted by the Navy, in this case it would be a good idea for us to have the opportunity to check these plans. It is our concern that the method detection levels and, in fact, the methods themselves might not have been sufficiently sensitive to meet ecological risk criteria.
13. With regard to the FS, we believe that restricting cleanup to soils and ground water is inadequate. The drainage ditch shows high

levels of contamination in sediments and is likely to be of some habitat value as well as a pathway to other areas of ecological value. In addition the contamination in the sediment can act as a long term secondary source of contamination to the ultimate receiving areas, e.g., Elizabeth River.

14. We have many serious concerns with the remediation plans. The alternative ground water and soil remediation are thoroughly discussed, but we cannot see where an actual alternative was selected. One approach involves merely treating the ground water for VOC contamination that could potentially produce a discharge containing other contaminants at concentrations exceeding AWQC (chronic). This water discharged to Willoughby Bay, as in alternative 2, could allow it to both contaminate the bay and contribute to contamination of the sediment.
15. Further confusion exists in regard to Tables 11-6 and 12-1. In Table 11-6, the precipitation/flocculation alternative was eliminated from consideration but is listed in Table 12-1 as an alternative retained for the site. This is confusing to the reviewer. Alternatives 5a and 5b (in-situ thermal treatment) does not reduce metals concentrations and, in fact, appears to allow them to remain as a continuing source of ground water contamination. The capping alternative may pose a threat if for no other reason than an increase in storm pulse volume and energy of surface water drained to the Elizabeth River and Willoughby Bay.

#### Recommendations:

The following recommendations are general in nature because exhaustive details are not possible at this time due to the incomplete nature of the report. The level of effort reported by this document is really only comparable to what we see in a site investigation produced preliminary to listing.

- The Navy should have its contractor complete the characterization of the extent of contamination, including:
  - a.) pinpoint sources of contamination, e.g., Chlordane, DDT homologues, etc.; characterize contamination of environmental media, e.g. surface water and sediment; identify and sample all pathways. (Additional guidance is available, if needed).
- Carry out an ecological characterization by describing the ecosystems and habitats as well as the resident flora and fauna. The sampling and analysis should be designed on a statistical basis.
- Complete an Ecological Risk Assessment using the attached Draft Interim Guidelines.

This concludes EPA's ecological review of the Navy's draft *Remedial Investigation/Feasibility Study* report for the Q-Area Storage Yard, located at the Norfolk Naval Base. If you have any questions or concerns, please feel free to call me at (215) 597-1110.

Sincerely,

Robert Thomson, PE  
VA/WV Superfund Federal Facilities (3HW71)

cc: VDEQ, Federal Facilities Program  
Bob Davis (USEPA, 3HW13)  
Paul Leonard (USEPA, 3HW71)