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

REPLY TO ATTENTION OF:

General Federal Facilities Section (3HW72)

FEDERAL EXPRESS
TELEFACSIMILE

January 6, 1994

Department of the Navy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway
Mail Stop #82
Lester, PA 19113-2090

Attn: James L. Colter (Code 1821/JLC)
Remedial Project Manager

Re: Evaluation of Remedial Alternatives
Navy Fuel Farm, Naval Air Station Willow Grove
Horsham Township, PA

Dear Mr. Colter:

I have reviewed the draft *Evaluation of Remedial Alternatives for Soil Piles* report, dated October 21, 1993 and prepared by EA Engineering, Science, and Technology, Inc. ("EA") on behalf of the Northern Division, Naval Facilities Engineering Command ("NORTHDIV"). The U.S. Environmental Protection Agency ("EPA" or "Agency") received this document on October 28, 1993. Review comments on the draft report are enclosed for your information (*Attachment One*).

EPA appreciates the fact that the Agency has been accorded an opportunity to review this remedial alternatives evaluation and looks forward to a continued working relationship with NORTHDIV regarding future environmental activities at Naval Air Station ("NAS") Willow Grove.

If you have any questions or wish to further discuss these comments, please do not hesitate to contact me at (215) 597-3161.

Sincerely,

Drew Lausch
Remedial Project Manager

Attachments

cc w/enclosure (attachment one):

Ben Mykijewycz (EPA)
Marcie Goldberg (PADER)
LCDR Eric Milner (NAS)
Hal Dusen (ARF)

DRAFT EVALUATION OF REMEDIAL ALTERNATIVES
NAVY FUEL FARM SOIL PILES
NAVAL AIR STATION WILLOW GROVE
HORSHAM TOWNSHIP, PA

GENERAL COMMENTS

1. It is conceivable that contamination present at the Navy Fuel Farm is not attributable solely to petroleum products. This statement is based on EPA's cursory review of summary analytical data for soil and ground water samples presented in the final report entitled, *Site Inspection Studies at NAS Willow Grove -Volume I* (EA, May 1990). In order to illustrate this point, selected portions of narrative have been repeated verbatim, followed by Agency comments:

   a. "Seven TCL VOC were detected in soil samples from the fuel farm. Acetone and methylene chloride were detected in several samples, but in this instance are probably due to lab contamination..." [Section 4.10.3.1, page 4-140]

      EPA agrees that acetone and methylene chloride are commonly associated with laboratory contamination. However, none of the reported analytes in soil samples, including acetone and methylene chloride, are followed by a data qualifier that would indicate the presence of suspected laboratory contamination. Furthermore, 2-butanone (methyl ethyl ketone or MEK) and 4-methyl-2-pentanone (methyl isobutyl ketone or MIBK) were also detected in soil samples. NORTHDIV should provide the rationale supporting the assertion of laboratory contamination.

   b. "Methyl ethyl ketone (MEK, a.k.a. 2-butanone) and TCE were also detected in samples from well NFFW-7 during the second and third rounds, respectively." [Section 4.10.3.2, page 4-140]

      During the September 1989 sampling event, high levels of acetone were reported in ground water samples collected from NFFW-1, NFFW-2, NFFW-5 and NFFW-7, while MEK was also reported in NFFW-5 and NFFW-7 (duplicate only). When these wells were re-sampled in December 1989, MEK and methylene chloride were reported in NFFW-5 and trichloroethylene was reported in NFFW-7 (duplicate only). Since the reported concentrations of acetone and methylene chloride are rather high and are not accompanied by data qualifier codes, it would appear as though these compounds could **not** be attributed to the presence of laboratory contamination.

c. "Trace levels of chlorinated hydrocarbons were detected in the NFFW-3 sample. Neither of the two compounds involved was detected in the sample of source water used in drilling these wells (Table 3-1). However, these compounds have been detected in samples from the source water supply wells (Earth Data, Inc. 1985)." [Section 4.10.3.2, page 4-141]

During the June 1989 sampling event, trace levels of 1,1,1-trichloroethane was reported in ground water samples collected from NFFW-1 and NFFW-3, while 1,1-dichloroethane was reported only in NFFW-3. EPA presumes that the phrase "source water supply wells" refers to wells used as the NAS Willow Grove potable water supply source. Although the Agency realizes that the presence of such compounds in NAS Willow Grove supply wells has been documented in past reports, it does not appear as though water from these wells was used as a supply source for drilling the NFFW-series monitoring wells. Therefore, it would not be possible to account for the presence of chlorinated (or non-chlorinated) VOCs due to a contaminated drilling water source. It should be noted that acetone and methylene chloride were also reported, but results for these compounds were followed by the data qualifier, "UJ". Although "UJ" has not been defined, such a code under EPA's Contract Laboratory Program represents an instance where an organic analyte is not detected, but where the quantitation limit may be inaccurate or imprecise. Without additional documentation, EPA is uncertain whether the "UJ" code is employed in a similar capacity by NORTHDIV.

2. The objective of the previous comment was to discuss the potential for releases of compounds other than those derived from petroleum products. Acetone and chlorinated hydrocarbons would not be expected to represent the breakdown products of petroleum. Although not typically associated with petroleum, NORTHDIV should indicate whether MEK and MIBK represent components of petroleum products stored at the Navy Fuel Farm. Based upon information presented in the previous investigation, the Waste Oil Tank may represent a possible source of compounds that are unrelated to petroleum. Although it may not be relevant to the remediation of soil/concrete piles, it would be advisable if NORTHDIV addressed this issue during the vacuum enhanced free-product recovery and air sparging pilot study at the Navy Fuel Farm.

3. EPA is would like to inform NORTHDIV of another technology, termed as "passive volatilization", that might be considered for treating volatile organic compounds ("VOCs") including, but not limited to, compounds detected in soil at the Navy

Fuel Farm. For your information, "passive volatilization" has been proposed for use in remediating VOC-contaminated soil at another Federal Facility in Pennsylvania. This technology is similar to the soil venting process described in Section 2.3.5. At NORTHDIV's request, EPA would be pleased to discuss "passive volatilization" technology in greater detail.

4. On-site treatment alternatives may result in potential VOC emissions to the atmosphere, which could require treatment in accordance with the Commonwealth of Pennsylvania Department of Environmental Resources ("PADER") Bureau of Air Quality regulations. Specific questions regarding emission control requirements should be directed to PADER. EPA is also providing additional information concerning emission control requirements that have been employed by the Agency at Superfund Sites and may also be useful at the Navy Fuel Farm (*Attachment Two*).

5. It is apparent that NORTHDIV intends to fully consider PADER's input with respect to developing a sampling analytical program and acquiring the necessary permits for conducting a response action. EPA is curious whether there exists significant interest on behalf of the nearby community with respect to the soil pile remediation project. Input from PADER and the community could be addressed through the Technical Review Committee.

6. As part of the remedy selection process at Superfund sites, EPA identifies and screens candidate treatment technologies, develops potential remedial alternatives and performs a detailed analysis of alternatives. This approach is outlined in the National Contingency Plan ("NCP"). When investigations are not being conducted at a National Priorities List ("NPL") site and/or are not subject to Superfund regulations, it may still be advantageous to consider a remedy selection process similar to the aforementioned approach. While it may not be necessary or advisable to conduct this evaluation in the level of detail typically undertaken at Superfund sites, the important point is that NORTHDIV should clearly illustrate the decision-making process and rationale for selecting the appropriate response action.

SPECIFIC COMMENTS

S ction 1.1 (page 1-1, second paragraph)

Generally speaking, EPA concurs with the conditional statements and preliminary recommendations offered by NORTHDIV. The Agency has discussed issues such as the scope of future soil sampling and analysis in subsequent portions of these comments.

Section 1.2 (page 1-1, first paragraph)

The section concerning site history would be more complete if NORTHDIV included discussion concerning the following structures that are (or were) located at the Navy Fuel Farm:

1. The Waste Oil Tank and Underground Diesel Fuel Tank were both situated near Building 119. Based on information provided in the draft *Interim Report on Investigations at the Navy Fuel Farm, NAS Willow Grove, November 1990 - July 1991*, (EA, September 1991), the Waste Oil Tank was removed in 1990 and the Underground Diesel Fuel Tank was still in place. According to the draft *Report of Interim Site Investigations Navy Fuel Farm - Willow Grove NAS* (EA, July 1993), the Underground Diesel Fuel Tank had been removed sometime during 1991-1992. NORTHDIV should indicate when these tanks were removed from service.

2. The Waste Oil Tank has been described both as an "underground waste oil [storage] tank" (EA, May 1990 and EA September 1991) and as a "500-gallon above ground waste oil tank" (EA, July 1993). In light of this inconsistency, please state whether this structure was an underground storage tank ("UST") or an above ground tank.

3. NORTHDIV should also discuss the man-made structure located northeast of the soil piles and concrete pile, which has been depicted on plan view maps as a drainage holding pool (EA, May 1990), catchment basin (EA, September 1991) and sump/catchment basin (EA, July 1993). Please discuss the purpose of this structure and indicate whether it still exists.

4. Finally, NORTHDIV should also discuss another structure located south of the soil piles and concrete pile, which has been consistently described in previous reports as a "dry well". Please discuss the purpose of this structure and indicate whether it still exists.

5. As appropriate, tanks and man-made structures should be clearly depicted on either Figure 1-2 or Figure 1-3.

Section 1.2 (page 1-2, second paragraph)

It appears as though samples from the "clean" soil pile were analyzed only for total petroleum hydrocarbons ("TPH"). NORTHDIV should verify whether this was the case. NORTHDIV should also indicate whether samples were collected from the "contaminated" soil and "contaminated" concrete stockpiles; if so, please provide the suite of analytical parameters.

Section 1.2 (page 1-2, third paragraph)

Based on information provided in this paragraph, it is possible that compounds other than benzene, ethylbenzene, toluene and xylene ("BTEX") may be present in stockpiles of "clean" soil, "contaminated" soil and "contaminated" concrete. Since this would appear to be consistent with the findings of previous investigations at the Navy Fuel Farm, it may be prudent if NORTHDIV considered expanding the proposed suite of analytical parameters (see Table 4-1). The extent of modification to this list would depend on the types of compounds present at the other source(s). In any event, NORTHDIV should document the rationale used to select the final list of parameters in the sampling and analysis plan.

Section 1.3 (page 1-2, first paragraph)

The following discussion is intended to provide additional information with respect to petroleum-contaminated media/debris at NAS Willow Grove:

Petroleum Impacted Media and Debris: USTs

1. Generally speaking, NORTHDIV has accurately summarized the regulatory status of petroleum-contaminated media and debris, which exceed specified Toxicity Characteristic Leaching Procedure ("TCLP") levels, with respect to federal Resource Conservation and Recovery Act ("RCRA") Subtitle C regulations. However, the discussion presented by NORTHDIV actually refers to a **temporary** deferral regarding the applicability of the Toxicity Characteristics ("TC") rule to petroleum-contaminated media and debris generated as part of UST Corrective Actions (RCRA Subtitle I). Furthermore, this deferral was **specifically limited to** hazardous waste codes D018 through D043.

2. On February 12, 1993 (see Federal Register Vol. 58, No. 28), EPA **proposed** a final action that would **exempt** petroleum-contaminated media and debris generated as part of UST Corrective Actions from RCRA Subtitle C Hazardous Waste Regulations; specifically, waste codes D018 through D043. Although this is a proposed regulation, EPA had planned to issue a **final** rule sometime in December 1993. Due to the time period that has elapsed since the regulation was proposed, it is possible that the final rule may differ from the February 12th proposal.

3. NORTHDIV should revise the existing narrative to incorporate relevant portions of the aforementioned discussion. It is also suggested that NORTHDIV thoroughly review the February 13, 1993 Federal Register and contact appropriate EPA staff to determine whether the final rule has been issued and to verify applicability with respect to NAS Willow Grove.

Petroleum Impacted Media and Debris: non-USTs

1. With respect to "non-UST petroleum product contaminated m dia and debris", NORTHDIV has referenced the proper Federal Register citation. Please note that the EPA is **proposing** to **suspend** the TC rule for petroleum-contaminated media and debris generated from sources **other than** RCRA Subtitle I-regulated USTs. This suspension would only apply to waste codes D018 through D043 **or a specified subset of these wastes.** The proposed duration of this suspension would be three years, which would allow the Agency to collect additional information prior to rendering a final decision.

2. NORTHDIV is advised that there exist several key provisions regarding this proposed suspension, which are paraphrased as follows: (1) the TC rule would **only** be suspended at facilities subject to a site-specific enforcement order or other written approval from the State; (2) media and debris must be contaminated **solely** with petroleum product; (3) EPA has solicited comments regarding whether this suspension should be limited to a maximum quantity of petroleum product released and (4) EPA has solicited comments on whether the scope of this suspension should be limited only to those TC constituents that are known to be indigenous to petroleum product. Although this only represented a **proposed** suspension of the TC rule, EPA had planned to issue a **final** rule sometime in December 1993. Please note that this proposal may also change based on EPA's response to public comments.

3. As previously stated, it will be necessary to revise the existing narrative to incorporate relevant portions of the aforementioned discussion. NORTHDIV should also thoroughly review the December 24, 1992 Federal Register and contact appropriate EPA staff to determine the status of the final rule. Given the provisions outlined in this proposed rule, it is especially crucial that NORTHDIV determine the extent to which the suspension would apply to NAS Willow Grove.

Section 1.3 (page 1-3, second paragraph)

Comments offered with respect to petroleum-contaminated soil would also apply to petroleum-contaminated concrete debris.

S ction 2.2 (page 2-1, first paragraph)

The following comments are offered with respect to the statement, "Because these soil piles have been excavated, treatment to Level A or B is feasible.":

1. In line with previous comments, NORTHDIV should consult with PADER regarding the applicability of the regulations governing

virgin fuel contaminated soil, especially in light of the potential presence of compounds that are not related to petroleum.

2. It would appear as though one or more of the treatment/disposal options presented in Table 2-2 would be capable of achieving Level A or B standards for BTEX compounds, as well as other VOCs that may be present in soil. However, since PADER's regulations concerning virgin fuel contaminated soil discuss only BTEX compounds, it might also be necessary to consider cleanup levels for other VOCs detected in previous investigations.

Section 2.3.2 (page 2-3, first paragraph)

EPA presumes that the term "total RCRA metals" pertains to metals listed in 40 CFR Part 261.24, Table 1. This comment also applies to other portions of the document. Clarification is requested.

Section 2.3.5 (page 2-7, second paragraph, third bullet)

The following comments are offered with respect to the statement, "Onsite treatment method which is favored by PADER and EPA, therefore quick regulatory approval is likely.":

1. Although EPA generally favors the use of waste treatment, which is a statutory preference under Superfund and the NCP, selection of a remedial alternative would be dependent on site-specific conditions. Moreover, the same statement can be made with respect to other treatment technologies discussed in this document. For additional information, NORTHDIV is referred to the discussion of "program expectations" outlined in § 300.430(a)(1)(iii) of the NCP. This comment also applies to other portions of the document.

2. EPA believes that it would be premature to state that "quick regulatory approval" is predicated on use of a **treatment** technology. As previously stated, ultimate selection of a remedial alternative would depend on a full consideration of site-specific conditions.

3. NORTHDIV should discuss the issue of on-site versus off-site treatment with PADER, since PADER or even the nearby community may express a preference regarding whether treatment should be performed on-site or off-site.

4. To the extent that resource constraints permit, EPA will work with NORTHDIV during remediation of soil piles. However, please note that NAS Willow Grove has not yet been placed on the NPL and the response actions contemplated at the Navy Fuel

Farm **may** not be within the scope of Superfund. Therefore, the term "regulatory approval" would not be suitable in the case of EPA.

Section 2.3.8 (page 2-11, second paragraph)

NORTHDIV should address the following comments with respect to the definition of "clean fill":

1. Apparently, NORTHDIV has assumed that treated soil can be used as "clean fill". This would appear to be consistent with PADER's policy regarding disposition of virgin fuel-contaminated soil if the soil already exhibited, or was treated to achieve, Level A and (perhaps) Level B standards. However, it should be noted that Section 5, "Definition and Terms", in the referenced policy states that, "Virgin fuels do not include blended fuels containing used oil or other waste materials." NORTHDIV is urged to discuss this matter with PADER to confirm that the "clean fill" assumption is accurate.

2. The term, "clean fill", is also defined in PADER's Municipal Waste Management Regulations and Residual Waste Management Regulations under Pa. Codes 271.1 and 287.1, respectively. Based on EPA's experience with another Superfund project in Pennsylvania, it may be difficult to classify a treated medium as "clean fill". In line with the previous EPA comment, NORTHDIV should contact PADER to confirm that definition of "clean fill" used in Municipal and Residual Waste Management Regulations would not apply to the Navy Fuel Farm.

3. The aforementioned issue would also apply to the other remedial alternatives that involve placement of treated soil on-site.

Section 2.4 (page 2-15)

"Non-hazardous" concrete (i.e., not subject to federal RCRA Subtitle C regulations) may still require management under either PADER's Municipal Waste Management Regulations or Residual Waste Management Regulations. Ultimate disposition of the concrete would depend on the results of analytical testing and, in all likelihood, PADER's classification of the concrete as either a municipal or residual waste. NORTHDIV should consult with PADER regarding development of an appropriate sampling and analysis plan prior to selecting the disposal option for concrete.

Section 3.1 (page 3-1 first paragraph)

NORTHDIV appears confident that, "All of the options are able to remediate the soil to Level A or B criteria for subsequent use on-site as clean fill." Utilizing Level A or Level B soil as

"clean fill" is a fundamental assumption. It would also appear that the capability of a particular technology to remediate Level C soil to acceptable levels is a significant consideration, as is the actual volume of Level C that would require treatment. Both the capability of technology to achieve specified cleanup levels and volume of soil to be treated, among other factors, would affect the cost of a particular remedial alternative.

NORTHDIV states that, "Cost and the Navy's preference become the deciding factors in selecting a treatment/disposal option". EPA agrees that cost would be one of the factors to consider during selection of an appropriate treatment/disposal option. However, in line with a previous EPA comment, it would also seem important to consider a remedial alternative in light of other factors such as overall protection of human health and the environment, compliance regulatory requirements, long-term effectiveness and permanence, reduction of contaminant toxicity, mobility and volume, short-term effectiveness and implementability, as well as state/community acceptance. To some extent, NORTHDIV has discussed these criteria in this section and in Section 2.3.

Section 3.1 (page 3-2, "Recommendations")

It does not appear as though NORTHDIV has made a final determination regarding selection of a remedial alternative. Apparently, there would appear to exist an outstanding issue involving economies of scale; in other words, the potential cost savings that could result if soil pile remediation were combined with other remediation projects at the Navy Fuel Farm.

However, NORTHDIV appears to have formulated preliminary conclusions regarding many of the options listed in Table 2-2. Some options appear to have been judged less favorably on the basis of excessive costs (i.e., off-site thermal treatment, landfarming and slurry phase bioremediation) or the potential for future liability (i.e., landfilling). Other options such as on-site thermal treatment, which EPA presumes to represent the low-temperature process, and on-site asphalt batching, might be considered by NORTHDIV if soil volume were sufficiently high (i.e., 10,000 tons). Finally, since soil washing and vitrification are not discussed, EPA presumes that NORTHDIV views these options least favorably.

Certain options appear to have been retained for serious consideration. Off-site asphalt batching seems to represent the remedial alternative of choice in the absence of significant cost savings resulting from combining soil pile remediation with other response actions. Although NORTHDIV does not specify whether the hot mix or cold mix process would be used, both processes would offer an advantage of recycling contaminated soil for beneficial use. Soil venting and bioventing appear to be NORTHDIV's choices

if on-site remediation were performed. EPA believes that fraction of heavier petroleum hydrocarbons in soil and the potential presence of non-BTEX compounds, which will influence the effectiveness of these options, should be considered. Both options offer advantages of removing (i.e., soil venting) and degrading (i.e. bioventing) contaminants in soil.

NORTHDIV should consider the possibility of combining soil pile remediation with other remediation efforts at the Navy Fuel Farm. Depending on whether this approach is taken, certain treatment/disposal options could become more (or less) attractive.

Section 3.2 (page 3-2)

Refer to EPA's comment regarding Section 2.4 (page 2-15).

Table 3-1

EPA concurs with NORTHDIV's use of a summary table for treatment/disposal options, which allows the reader to more easily review pertinent information associated with each option. However, it appears as though NORTHDIV has not included a complete breakdown of each option. For instance, there exists no differentiation with respect to asphalt batching (i.e., hot versus cold mix, on-site versus off-site) and thermal treatment (i.e., high-temperature versus low-temperature, on-site versus off-site). Each option should include information concerning cost, advantages and disadvantages, to the extent that such details are available.

Section 4.1 (page 4-1, first paragraph)

It appears as though NORTHDIV intends to employ a "phased" approach with respect to soil sampling, with the initial phase performed in accordance with PADER guidance on cleanup of virgin fuel contaminated soil. If this it is acceptable to PADER, EPA would not object to this strategy. EPA concurs with the proposed method of collecting discrete soil samples for BTEX analysis; if necessary, the same approach should be employed for other VOCs.

Section 4.1 (page 4-1, second paragraph)

In addition to the verbal description of soil piles sampling, it is suggested that NORTHDIV include a figure or schematic that depicts the proposed soil pile sampling stations. NORTHDIV should also include a reference to Table 4-1.

Section 4.1 (page 4-1, third paragraph)

NORTHDIV will need to verify that additional sampling of Level A or Level B soil is not required and that this soil could be utilized as on-site fill material. Issues involving additional

sampling and/or ultimate disposition of soil could significantly affect costs of a remedial alternative.

Section 4.1 (page 4-2, first paragraph)

The necessity of expanding the scope of sample collection and analysis beyond that proposed in Table 4-1 requires additional discussion with PADER. EPA agrees that the nature/extent of such sampling would be best determined after receiving results from the initial phase of sampling. The Agency also agrees that the actual scope of supplemental sampling would be contingent upon the treatment and/or disposal option selected.

Section 4.2 (page 4-2)

Please refer to EPA's comment regarding Section 2.4 (page 2-15). Additionally, NORTHDIV should discuss the strategy for collecting samples from the contaminated concrete. Based on information presented in Table 4-1, it appears as though a single composite will be prepared from several samples. Please verify whether this is the case and specify the number of samples that would be composited.

Table 4-1

NORTHDIV should clearly indicate that this table corresponds only to the initial phase of sampling.

R ferences

It may be necessary to include the following references in the revised version of this document:

1. Federal Register Vol. 58, No. 28, dated February 12, 1993, as well as any recently-published Federal Register citations concerning both petroleum-contaminated and non-UST petroleum product contaminated media and debris, if available.

2. *Interim Report on Investigations at the Navy Fuel Farm, NAS Willow Grove, November 1990 - July 1991*, (EA, September 1991)

3. *Cleaning Up Fuel-Contaminated Soil - PADER Fact Sheet*, dated May 1992

4. *Ground Water Protection Criteria for Virgin Fuel Contaminated Soil - Technical Background Document*, dated October 11, 1991

Appendix A

Only results from TPH analysis of the "clean" soil pile have been included. NORTHDIV should also include the entire list of analytical results for the three stockpiles, if available.