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NWS EARLE
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278

19 AUG 1992

Gerald F. Hoover
Naval Facilities Engineering Command
10 Industrial Highway
Code 1821, Mail Stop 82
Lester, PA 19113-2090

Re: NWS Earle Draft RI Report

Dear Mr. Hoover:

This is a follow-up to my letter dated August 11, 1992 regarding the above referenced subject. The U.S. Environmental Protection Agency (EPA) has completed the review of the remainder of the RI Report (§1-5), dated March 1992 and all of (§6-8), dated May 1, 1992.

After the U.S. Navy has had an opportunity to review and respond to these comments, a meeting will be held at either EPA's New York or Edison offices to discuss them.

If you have any questions concerning this matter, please contact me at 212-264-6609.

Sincerely yours,

Paul G. Ingrisano

Paul G. Ingrisano
Project Manager
Federal Facilities Section

Enclosure

cc: CPT W. M. Migrala, Jr., NWS Earle
LCDR J. P. Dell, NWS Earle
J. Freudenberg, DEPE
R. Johnson, Weston

Attachment 1

Groundwater (§ 7-8)

1. Screening of remedial alternatives appears pre-mature at the site due especially to the extensive blank sample contamination discussed in our earlier comments. Until a representative sampling data is evaluated, potential contaminants of concern cannot be identified with any degree of certainty. EPA recommends that alternatives be re-evaluated depending on the results of additional comprehensive sampling.

2. The N.W.S. Earle sites are all located within the boundaries of the New Jersey Coastal Plain Sole Source Aquifer, a groundwater protective designation conferred by Section 1424(e) of the Safe Drinking Water Act. Groundwater at the sites is therefore classified as at least Class IIA Current Source of Drinking Water. Consequently, MCLs are Applicable or Relevant and Appropriate Requirements (ARARs). SDWA is both a chemical and location specific ARAR.

3. Location Specific ARARs shown in Table 7-2 on page 7-4 should include the Safe Drinking Water Act (SDWA).

4. Table 7-5 requires the following changes.

Contaminant	federal MCL (ug/l)	MCLG (ug/l)
cis-1,2- Dichloroethylene	70	70
trans-1,2-Dichloroethylene	100	100

5. Final rules have been published in the Federal Register for contaminants flagged with the "b" qualifier in Table 7-5. These values are therefore promulgated.

6. Non-zero MCLGs are ARARs in areas where groundwater is classified as a current or potential source of drinking water. The "a" footnote in Table 7-5 should be changed accordingly.

7. Table 8-1 should expand Biological treatment to anaerobic biological treatment (eg. methanogenesis).

8. Column leaching tests are presented in the final paragraph on page 8-24 of Section 8.2.15 In Situ Volatilization. Column leaching tests are also valuable for estimating cleanup times and for assessing the potential of pulse pumping for site remediation. Contaminant partitioning between pore water and aquifer material is the major factor controlling the duration of pump-and-treat operations. Subsequent to extraction of the first few pore volumes, contaminant concentrations will likely attenuate, perhaps to analytical non-detect values. However, cessation of the extraction operation will reduce groundwater flow

velocities, and will favor equilibrium partitioning between adsorbed contaminants and groundwater. Contaminant concentrations in groundwater will likely increase substantially after pumping has been discontinued. Even approaching the aquifer restoration remedial objective will almost assuredly require an extended period of pumping - far beyond that projected for removal of contaminated groundwater.

Pulse pumping - a scenario which utilizes the enhanced mass transfer of contaminants from the adsorbed phase to the aqueous phase after pumping has ceased - should be evaluated in design as an operational methodology. Utilization of this scenario has the potential of decreasing capital and operating costs since maintenance of hydraulic loadings during operation can be maintained by sequential pumping in discrete contaminated zones. Combinations of column and batch desorption studies utilizing samples of representative aquifer material from the site and background groundwater are the most useful methodologies for estimating the duration of remedial activities as well as simulating and optimizing pulse pumping operations. The Earle site may be ideal for utilization of the pulse pumping scenario. Performance of these studies is warranted as early in the remedy evaluation process as possible.

9. The potential presence of separate phase dense non-aqueous phase liquids (DNAPLs) may complicate remediation at the site. DNAPLs, such as PCE, DCE, and TCE, may pool on confining layers or in areas where the relative hydraulic conductivity decreases. DNAPL can migrate as a separate phase along the slope of relatively low hydraulic conductivity layers and therefore, potentially, in a different direction than groundwater flow. Also, DNAPL can penetrate into deeper aquifer zones via gaps or cracks in confining beds. All of these issues are at the technical forefront of contaminant hydrogeology and groundwater remediation, and are the subject of recent EPA technical reports and guidance.

<u>Biological Technical Assistance Group</u> (§ 6-8)

1. As discussed in the BTAG's earlier comments for Sections 1-5, the sampling program for these sites was inadequate to provide the data for a risk assessment. The inconsistency in the analyses chosen for samples, the number of samples collected, and the media chosen for sampling make it inappropriate to assume that the ecological risks for these sites have been adequately characterized.

2. In Section 6, the risk assessment inappropriately dismissed certain sites from consideration, as well as specific exposure

routes for areas which were considered. Several landfill sites were not reviewed for ecological risk because they were "covered" (e.g., Site 4). However, Section 4 of the document repeatedly states that "cover material was thin to nonexistent, and ranged in thickness from 0 to 0.5 feet" (e.g., pg. 4-29) for most of these same landfills. The lack of an adequate cover, combined with the fact that the cover that was present consisted of "loose sand" (pg. 6-176), makes it inappropriate to dismiss these sites on the basis that covering material was isolating site related contaminants from the ecological system. All sites should be evaluated for risk for at least one species if a determination of no ecological risk is to be considered appropriate.

3. There was no attempt to investigate the risk present to the environment from the surface water systems. The collection of appropriate data, and an analysis of that data as to the risks presented to terrestrial and aquatic receptors would be appropriate. Another example of an inappropriately dismissed exposure pathway was the paved or graveled areas. Many species of avifauna indigenous to NWS Earle regularly ingest grit typical of such areas. This creates an exposure pathway which should have been discussed in the document. Food chains and/or bioaccumulation are also pathways that were not considered, but that are appropriate to the determination of the ecological risks. The risks posed to the higher levels of a site's trophic structure should also be reviewed.

4. No risks to sensitive habitat systems, such as wetlands, were considered. The delineation of on-site wetlands, or off-site wetlands potentially impacted by migration of contaminants, is appropriate and recommended. As stated in the previous BTAG comments, in order to comply with federal wetland ARARs, the three-parameter method, as outlined in the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" (Federal Interagency Committee for Wetlands Delineation, 1989), should be used to delineate wetlands. Also note that a wetlands assessment and restoration plan will be needed for any wetlands impacted or disturbed by contamination or remedial activities.

5. Knieskern's beakrush (Rhynchospora Knieskernii), apparently documented on Site 11 by the station biologist, is no longer a federally listed candidate species, and is now a federally listed endangered species.

6. The basis for the selection of the Contaminants of Concern listed in Tables 6-1 through 6-19 should be clarified. Explanation of the listing in Table 6-6 of Aroclor 1260 as having a minimum value = 1.60 and a maximum value = 1.60, yet having an arithmetic mean = 0.573 (mg/kg, pg. 6-16) should be provided. Also, clarification of the derivation and use of the safety factors discussed on page 6-209 and in Table 6-103 is recommended.

Air Programs (§ 6-8)

1. It was conservatively assumed for the baseline risk assessment, in a worst case scenario, that the concentrations of inorganics in airborne soil were the same as those in the surface soil. As a result, the total hazard index was above one. EPA suggests that the procedures that were attached to the previous Air Programs review of Sections 1-5 be used to obtain more refined, less conservative, air exposure data for the risk assessment.

2. The potential for organics migrating to the atmosphere should have been determined for the Baseline Risk Assessment. Procedures are attached for determining emission rates and ambient air concentrations of organics. (see Attachment 2).

3. EPA does not have any problems with the identification and screening of technologies. Dust controls will be implemented during excavation activities so that air emissions will be in compliance with the National Ambient Air Quality Standards of the Clean Air Act. If it is decided that in-situ volatilization is the selected remedy for this site, vapor phase carbon treatment of the air stream will be implemented. Volatile organic air emissions from possible air stripping of the groundwater were also identified as a major concern and tests will be performed to determine the required air emissions control.

Resource Conservation and Recovery Act (§ 1-5, 7 & 8)

1. Although the U.S. Navy ceased disposal operations at these sites prior to the enactment of RCRA Subtitle C, Subtitle C standards may be relevant and appropriate at the time of cleanup.

2. No conclusive evidence exists that RCRA hazardous waste was disposed at NWS-Earle. Due to the lack of evidence of disposal of hazardous waste, the RCRA regulatory requirements would not be applicable. However, TCL organic compounds (the most common being the solvents TCE and TCA) were found in the groundwater at NWS-Earle. Since these constituents are similar to RCRA listed spent solvents, they may have originated from RCRA listed solvent and therefore RCRA standards are relevant and appropriate to the remediation of groundwater.

3. Toxicity Characteristic Leachate Procedure (TCLP) testing is used to determine if a solid waste is a RCRA characteristic waste by setting calculated regulatory limits of contaminant concentrations which may not be exceeded. The soils at NWS-Earle exhibit concentrations of heavy metals which far exceed TCLP regulatory limits for leachate generated from solid waste and there is a high probability that, if tested, the soil would exceed TC regulatory levels. EPA believes that although TCLP testing should be considered, it is unnecessary since

contamination of theses soils has been acknowledged and clean-up is being proposed. RCRA standards are relevant and appropriate to remediation of the soil.

4. Technologies being further considered as groundwater remedial alternatives involve no action with monitoring, institutional controls, extraction/removal, and extraction/treatment (air stripping, ion exchange, filtration, electrodialysis, reverse osmosis, etc.). Technologies being further considered as remedial alternatives for soil are no action, institutional controls, excavation and off-site landfilling, excavation and on-site landfilling, containment (capping, surface controls, etc.) and excavation and treatment (physical/chemical, biological, thermal, in situ, pyrolytic).

5. A no-action alternative is inconsistent with 40 CFR 264.101 (RCRA Corrective Action) because it is not protective of human health and the environment.

6. RCRA 40 CFR Part 262 standards are applicable to the off-site treatment/disposal of RCRA hazardous waste; they specify manifesting procedures, transportation and record keeping requirements.

7. The shipment of hazardous waste off-site to a treatment facility should be consistent with OSWER Off-Site Policy Directive Number 9834.11. This directive is intended to ensure that facilities authorized to accept CERCLA waste are in compliance with RCRA operating standards.

8. Part 264 of 40 CFR provides standards which are applicable to the on-site storage of the excavated soils and waste material if storage exceeds ninety (90) days. These standards specify permissible container types and storage area requirements. Part 265, Subparts I and J (container and tank standards) are relevant and may be appropriate if storage of waste on-site is less than 90 days.

9. The analysis of groundwater and soil indicate the presence of RCRA characteristic and listed wastes. The presence of these solvents indicate land ban implications with respect to the selected remedial alternatives for this site. RCRA Land Disposal Restrictions (40 CFR Part 268) are applicable to any waste, or media contaminated with RCRA hazardous waste if placement on land occurs. The soils meet BDAT levels (40 CFR 268, Appendix III) before land placement of contaminated material can occur.

10. RCRA Subpart N landfill standards are applicable to the alternative of capping of soils on-site. Closure and post-closure standards require that the final cover accommodate settling and subsidence to maintain cover integrity and that the final cover have permeability greater or equal to the

permeability of the liner or natural sub-soils present. Landfill closure requires that the closure performance standard of §264.111 be met.

11. Standards specified in 40 CFR 264 Subpart X are applicable to the water treatment system the groundwater treatment system. RCRA Subpart AA standards are relevant and appropriate if air stripping units are used for the treatment of contaminated groundwater. RCRA groundwater monitoring standards identified in 40 CFR Part 264, Subpart F provide groundwater protection standards in those instances where groundwater contamination at a facility exists. MCLs are exceeded for several elements and compounds. In accordance with 40 CFR §264.94, treatment below MCLs should be considered as an objective for remediation. Corrective action monitoring specifications are found at 40 CFR 254.100 and should be used in determining the effectiveness of any remedial activities.

12. If the contaminated soil is stabilized in-situ, RCRA standards do not apply to treatment of the soil, since the soil is not technically a hazardous waste until displaced from its original location. In this instance RCRA Subpart S requirements are relevant to remediation of the contaminated soil since the contaminated areas is similar to a RCRA SWMU. If the soil is displaced and treated ex-situ, Subpart X standards are applicable to the on-site solidification/stabilization process being considered.

13. Subpart O incinerator standards are relevant and appropriate to any remedial action which involves incineration of a RCRA type hazardous waste material. These standards provide for incinerator waste feed analysis, and operating and monitoring requirements of the incinerator. Ash and scrubber water resulting from the incineration of a listed waste is also a listed hazardous waste. The ash resulting from the incineration of other wastes should be tested for TC prior to disposal.

Environmental Impacts (§ 1-8)

1. Coastal Zones: The Coastal Zone Management Act (CZMA, 16 USC 1451) and National Oceanic and Atmospheric Administration (NOAA) Regulations on Federal Consistency with approved Coastal Management Programs (15 CFR 930) may apply for portions of NWSE. If actions considered in the draft RI/FS affect any land or water use or natural resource in the coastal zone, a determination of consistency with New Jersey's Coastal Zone Management Plan may be needed. Consultation on coastal zone issues should be initiated by contacting the New Jersey Department of Environmental Protection and Energy, Division of Coastal Resources, CN 401, Trenton, NJ 08625.

2. Cultural Resources: The National Historic Preservation Act (16 USC 470 et. seq.) is mentioned in the text and included in Table 7-2 as a site-specific ARAR. However, the status of the Stage 1A Cultural Resources Survey is not clearly presented. A Stage 1A Cultural Resources Survey should be conducted as part of the RI/FS process. Based upon the results of the 1A survey, additional work, including a 1B and Stage 2 surveys may be required. The cultural resources work should be coordinated with this office and Nancy L. Zerbe, Administrator, Office of New Jersey Heritage, CN 404, Trenton, NJ 08825.

3. Floodplains: Executive Order 11988 defines floodplains as "lowlands and relatively flat areas adjoining inland and coastal waters." Topography of portions of the NWSE fit this description, as there are numerous creeks and tributaries to the Swimming River, the Shark River and the Manasquan River within the boundaries of NWSE. Additionally, while the Flood Insurance Reference Maps for Monmouth County do not show floodplains zoning for federal properties, some of the 100 year and 500 year floodplains indicated on those maps abut on NWSE and may continue onto NWSE property. While the document states that there are few floodplains in the vicinity of NWSE, a precise delineation of potentially impacted 500 year floodplains still needs to be made. If such floodplains are identified, the potential impacts of proposed remedial actions on those areas must be assessed and avoided, minimized, or mitigated.

4. Wetlands: The topographic quadrangles covering the NWSE show numerous swamps. Moreover, individual site descriptions indicate wetlands in and adjacent to the sites. However, the documents do not provide a comprehensive analysis of potentially impacted wetlands within NWSE. All such wetlands need to be delineated using the Federal Manual for Delineating Jurisdictional Wetlands.

5. Safe Drinking Water Act: NWSE is situated in the recharge zone of the New Jersey Coastal Zone Aquifer, a sole source aquifer subject to the provisions of Section 1424(e) of the Safe Drinking Water Act. MCLs for clean-up must be the more stringent of either Federal Safe Drinking Water Standards and the State of New Jersey standards. These regulations should be considered as chemical specific, site specific and action specific and should be listed in Tables 7-1, 7-2 and 7-3. Additionally, surface water paths of runoff from NWSE sites enter streams which feed drinking water sources. Accordingly, the impacts of the site contamination and discharges from remedial actions to these streams should be evaluated for their impact on drinking water quality.

6. Endangered Species: The Endangered Species Act of 1973 (16 USC 1531-1544) is listed as a site specific ARAR. The document references work that was done by the State concerning the swamp pink (Helonias bullata) which is present in major portions of

Monmouth County. However, the Navy should also consider the findings and recommendations of the US Fish and Wildlife Service's (USFWS) "Swamp Pink Recovery Plan" (see Attachment 3). Additionally, as work proceeds on the selection and implementation of remedial actions, the Navy should continue to coordinate with USFWS through Mr. Clifford G. Day, Field Supervisor, US Fish and Wildlife Service, 927 North Main Street (Bldg. D), Pleasantville, NJ 08232.

7. In a related manner, the National Marine Fisheries Service (NMFS) should be contacted to determine if there are any breeding grounds or habitats for endangered marine species which might be affected by site contamination or remediation activities. Site 7 would appear to be of most interest in this regard. The endangered species consultation with NMFS can be initiated by contacting Douglas Beach, Endangered Species Coordinator, National Marine Fisheries Service, Environmental Assessment Branch, 1 Blackburn Drive, Gloucester, MA 01930.

8. Significant Agricultural Lands: The Farmland Protection Policy Act of 1981 (7 USC 4201, et. seq.) and the USDA Farmland Protection Policy (7 CFR 658) may apply to portions of NWSE. Of particular note in this regard are the cranberry bogs (which appear on the topographic maps) at the headwaters of Yellow Brook and Marsh Bog Brook that may be impacted by Site 19.

9. Reference Section: The ATSDR Toxicological Profile for Chromium, a chemical of concern at NWSE, is not included with the other ATSDR references (pp. R-4 and R-5). Also, on page R-2, an EPA personal communication is cited as coming from Region II, Philadelphia; no individual is referenced. The source of this communication should be identified and the reference corrected.

10. EPA has determined that its CERCLA/SARA remedial process is functionally equivalent with the National Environmental Policy Act (NEPA). To date, the Navy has not made such a determination about its process. Accordingly, the Navy will have to take action to ensure that its RI/FS and subsequent remedial action comply with NEPA.

Baseline Risk Assessment (§ 6)

General comment:

The document is well organized and in many parts procedurally [i.e., Risk Assessment Guidance for Superfund (RAGS)] correct. However, there are a number of technical issues (marked with an *) that seriously impact the legitimacy of the conclusions. Until such time as a clarification as to why the contractor has deviated from EPA guidance/directives, the risk assessment cannot be accepted as the basis for the need to take a remedial action or not, at any of the eleven sites. Several comments previously

made (see the December 6, 1991 letter) were not addressed, which had they been, might render this risk assessment useable. Lastly, whereas the hunter scenario was made out to be a valid one, it has now been dropped from the risk assessment, although the more important and greater contributing residential scenarios have now been included.

Specific comments:

1) page 6-4, Figure 6-1: the text on page 6-3 implies that this figure is a schematic of both the human health baseline risk assessment as well as that of the ecological risk assessment. Though similar to the human health schematic, the ecological process has a few, albeit significant differences. A copy, taken from the 2nd Eco-Update bulletin series (supplementary guidance to RAGS Vol. II) is attached. (see Attachment 4).

No problem

2)* page 6-8, bottom: as was commented on previously in the review of the draft Risk Assessment Protocol, the formula provided for the derivation of the upper 95% confidence limit on the arithmetic mean, appears to be incorrect. The formula used is for data that is normally distributed. RAGS guidance states that the formula for a **lognormal** distribution is to be used. [A copy of the correct formula was attached to the December 6, 1991 letter.] Had the author shown that the data is normally distributed, then the formula used would have been appropriate. However, there is no discussion on this in the document. The author is referred to: Gilbert, R.O., Statistical Methods for Environmental Pollution Monitoring, Van Nostrand Reinhold, New York, N.Y., 1987. The W-test is the statistical method that can be used to determine whether or not a data set is consistent with a normal or lognormal distribution. If the author can provide some relevant insight on the use of this statistic, the calculations may stand up. The assumption at this point is that the formula used was selected because it will tend to produce lower concentrations to be used in the risk calculations.

3)* in the Potential Chemicals of Concern for **Soil** Tables (6-1 through 6-4), the use of the 'H' and 'E' codes is confusing. It's not clear which chemicals, if any, have been excluded from lists. A column in the tables stating the risk-based rationale for the exclusion of any one (e.g., through use of a concentration-toxicity screen), would have simplified the review.

4) page 6-38, middle: the wording is most unusual in stating that "the future use scenario should be more conservative than the current use scenario." This is correct if the meaning is that: specifically for this site, in that a greater number of exposure scenarios are being considered for future residents than for the current workers (and that workers, as a rule, occupy a site for shorter durations than residents), that the greater component of the computed overall site risk is expected to be from the future

land use considerations, i.e., the residential populations projected to be in the site vicinity.

5)* pages 6-37 and 6-43: the document acknowledges its use of groundwater data only from the shallow "water table" aquifer. [Presumably, this relates to the information in Table 2-2 of Volume I of the Phase III I.R.P. RI/FS. There, several different stratigraphic units are listed, with the maximum depth shown as 25 feet. Despite their overlap, none of the units are likely to be the ones from which water would be supplied for future residential drinking supply needs. The data of this aquifer are therefore not suitable for the purposes of evaluating the risk to future residents.] At the same time, the document acknowledges that this aquifer is not likely to be used as a potable supply for future residents, as its yield is low and because of its naturally occurring impurities. Data of the water supplies that would be expected to be tapped into futuristically, should have been used in place of the data that was used. The data on the Raritan-Magothy aquifer system, discussed on page 2-14 of Vol.I, would appear to be relevant in the estimation of future risk, and should have been used!

The groundwater portion of this baseline risk assessment is not acceptable. This is probably the most profound difficulty with the risk assessment.

6) 6-47, 1st paragraph: this site description should include a sentence similar to that found in the first paragraph of Site 5, wherein it clearly says that the potential for human exposure is limited, and therefore risk from 'current' site use is not evaluated'. This is the case for Site 4, but one needs the associated Figure 6-5 (the conceptual site model) to confirm same. Five of the eleven sites are abandoned landfills. Since there is the possibility that not all are adequately covered and/or access-limited, each site's description should address in its text whether or not current site use is a component of the site's risk assessment. Site 3, too, did not clearly state that current site risk would not be evaluated.

7) page 6-63, 3rd paragraph: the standard default assumption is that a resident spends 350 days at home, not 250. This is a typographical error only; the risk equation used, incorporated the '350' figure.

8)* page 6-69, last paragraph - 6-70: although Region II's consultation on dermal pathway issues is referenced, the document nevertheless, considered the effects of dermal exposure to many more chemicals than Region II indicated the Agency is currently prepared to evaluate, based upon the inadequacy of the science at the present time. Although the approach taken may have a valid science base, the author has deviated from the current Agency policy and incorporated chemicals it should not have. The

approach followed is unacceptable; the dermal pathway computations (via soil exposure) would have to be redone, as these will affect the overall assessment of site risk (i.e., it will undoubtedly cause an overestimation of risk simply because more contributors/compounds are now included). The Uncertainty Section of the risk assessment is the area best suited to a discussion of any underestimates or overestimates of site risks. Rather than including the chemicals, there should have been a write-up addressing how these compounds non-inclusion in the risk assessment would have produced a risk assessment that significantly underplays the actual site risk.

9)* page 6-82 to 6-84: EPA's policy on dermal exposure from soils applies to **sediments** as well. Deriving absorption factors for other than the three compounds (PCB's, dioxin, and cadmium) for which Agency presently has such information, is inappropriate and at variance with Agency policy.

10)* pages 6-100 to 6-104: EPA's hierarchy of chemical-specific toxicological information begins with the IRIS database. Secondarily, the Agency uses the HEAST tables. Thirdly, the Environmental Criteria Assessment Office (ECAO) is contacted should information still be lacking. The derivation of chronic RfD's described over these pages, for both the oral and dermal routes, are inconsistent with Agency policy. In the event the above two databases do not provide the necessary toxicity values, a formal request should have been made with ECAO to either provide the values needed, or to be granted the approval to employ the derivation measures (especially cross-pathway ones) that were used in this document. Procedurally, there should first be an estimation of the approximate contribution to the overall risk attributable to each chemical. Requests to ECAO should only be for those chemicals whose inclusion are likely to impact on the overall site risk.

National Oceanic and Atmospheric Administration (§ 1-5)

A. Resource and Habitat Summary

Resources and habitats of the drainages potentially impacted by the site investigated in the RI are summarized below:

1. Manasquan River - Mingamahone Brook and East Branch of Mingamahone Brook

a. American eel, alewife, white perch, and blueback herring are likely present in the upper reaches of the Manasquan River and may migrate to Mingamahone Brook.

b. Migration of fish may have been impacted by the construction of a reservoir located on a tributary and that also takes water

from the Manasquan River. Although suspected, impacts of the reservoir have not been studied.

2. Navesink River

The Navesink River is a tidal embayment. NOAA trust species present in the Navesink River include striped bass, alewife, blueback herring, menhaden, bluefish, American eel, blue crab, and sea lamprey. Resource utilization is believed to be limited to foraging activity with the exception of winter flounder and blue crab spawning.

3. Swimming River - Pine Brook and Hockhockson Brook

a. Hockhockson and Pine Brooks originate within NWS Earle. Hockhockson Brook joins Pine Brook north of the facility. Pine Brook discharges to Swimming River about 2 km below the Swimming River Reservoir. Swimming River is tidally influenced below its confluence with Pine Brook and flows from there about 4 km to the Navesink River.

b. Alewife and blueback herring are known to migrate in Swimming River and have been sampled in Pine Brook. Their presence in Hockhockson Brook is expected.

4. McClees Creek

McClees Creek flows about 5 km to the Navesink River. The creek has not been studied, but is free-flowing and could provide habitat for blueback herring, alewife, American eel, white perch, and blue crab.

B. Site Contaminants/Pathway Descriptions

1. Site 2 - Ordnance Demilitarization Site

a. Trace elements were measured in groundwater at concentrations of concern for the protection of aquatic life in a well downgradient from the site. Chromium was found in elevated concentrations in both sediments and groundwater. Except for areas of chromium contamination, trace elements were not found in soils at concentrations of concern. It is likely that contaminants are being flushed from the soils by precipitation infiltrating the porous sands at the site. The extent of groundwater contamination and discharge point (to surface water) has not been fully delineated. Additional wells northeast of the site and downgradient of Well 7 are needed to determine the extent of groundwater contamination. Surface water and sediment samples should be collected from the headwaters of Pine Brook to supplement Site 2 and Site 5 investigations.

b. As the site is still in use, operations should be changed as necessary to prevent further groundwater contamination and monitoring of groundwater should be continued.

2. Site 3 - Landfill Southwest of "F" Group

Elevated concentrations of DDT and trace elements were found in groundwater. The landfill should be capped with an impervious cover and should have a leachate collection system to prevent further discharge of contaminants. Possible seepages to the swale below the landfill should be investigated.

3. Site 4 - Landfill West of "D" Group

Elevated trace element concentrations were not consistently measured in groundwater samples. The sediments were only moderately enriched in trace elements and PCBs. The extent of the elevated PCB and trace element concentrations in sediments should be delineated and cleaned up to prevent transport of contaminants downstream during major storm events. The landfill should be capped to prevent further contamination in the surface water and groundwater and to prevent leachate seepage. Trace elements and PCBs may have been transported downstream to depositional areas of the brook. Additional sampling in the brook would determine the extent of contamination.

4. Site 5 - Landfill West of Army Barricades

a. Trace elements, particularly chromium were found in groundwater at concentrations of concern. The source of the contamination should be investigated and the extent of the high chromium concentrations in groundwater should be determined. Further groundwater contamination should be prevented by site remediation. Sufficient information should be presented to determine if some of the wastes are below the water table. A possible drainage pathway during major storm events should be investigated. Surface water and sediment samples should be collected from the headwaters of Pine Brook to supplement Site 2 and Site 5 investigations.

b. Section 4.4.1 incorrectly states that the site slopes southwest. It is customary and less confusing to have the site maps oriented with the top to the north.

5. Site 7 - Landfill South of "P" Barricades

a. Groundwater discharge points to the creeks and the extent of groundwater contamination should be determined. The site should be remediated as necessary to prevent further groundwater contamination.

b. Section 4.5.1.3 states that groundwater flows northeast. The figure shows groundwater flows southwest.

6. Site 10 - Scrap Metal Landfill Near Building 589

a. The extent of the elevated trace element concentrations in groundwater should be delineated and groundwater discharge points to surface water should be determined. The source of the elevated chromium concentrations in the upgradient well should be investigated.

b. The site should be remediated as necessary to prevent further groundwater contamination and to contain the trace element contamination in groundwater.

c. The statement in Section 4.6.3 that the elevated trace element concentrations are a function of ambient soil conditions and unfiltered protocol was not supported by the data. Chromium concentrations found in groundwater from areas not impacted by facility contamination are at least 2 orders of magnitude below concentrations found at this site. Wells with high trace element concentrations were consistently elevated.

7. Site 11 - Contract Ordnance Disposal Area

a. From the description of the soils and the high water table at the site, surface water runoff from the site is expected. Possible surface water pathways should be investigated.

b. Trace elements were found in groundwater at concentrations of concern. The wastes at the site were not adequately characterized. Information should be presented to determine the placement of wastes in respect to the water table. Surface and subsurface soil samples should be collected to determine the source of the elevated trace element concentrations. The extent of trace element contamination in groundwater should be determined.

c. A few soil samples should be collected from the burn area and tested for dioxins.

d. Remediation should be conducted as necessary to prevent further contamination of groundwater and discharge of site contaminants in soils and groundwater to surface water.

8. Site 19 - Paint Chip and Sludge Disposal Area Adjacent to Buildings S-34

a. Surface water and sediments from the drainage swale should be tested for DDT and other pesticides.

b. Contaminated soils and sediments should be removed at the site to prevent further groundwater and stream contamination. Groundwater should be remediated to prevent further discharge of contaminants to the stream. The large stone pile should be investigated as a possible source of contamination.

c. High concentrations of trace elements have been discharged to Mingamahone Brook in the past. Surface water and sediment samples should be collected from depositional areas downstream as necessary to determine the extent of contamination.

9. Site 20 - Grit Blasting Disposal Area Adjacent to Bldg. S-34

a. Trace elements and PAHs were found in the drainage ditch at concentrations of concern. Surface water and sediment samples should be collected from the marsh and Hockhockson Brook as the marsh may overflow to the brook during storm events.

b. The waste pile should be removed and disposed of as hazardous waste. Sufficient soil samples should be collected from the site to determine the horizontal and vertical extent of contamination and should be analyzed for trace elements and SVOCs.

c. This site has likely caused groundwater contamination and could be the source of the elevated trace element concentrations found southwest of Site 10. Possible groundwater contamination from the site should be investigated and the extent of the contamination delineated.

d. Section 4.9.3 states that there is no visual or analytical evidence of extensive contamination of soils. Soils were not tested for trace elements or PAHs. The statements to the effect that the contaminant concentrations are low and would not be transported in groundwater are unsupported. Leachability tests are required to determine that the wastes are not a source of contamination.

10. Site 22 - Paint Chip Disposal Area Adjacent to Building D-2

Lead and PAHs exceeded sediment ER-L concentrations in the ditch. Contaminants may have been transported from the site during storm events in the past. Surface water and sediment samples should be collected in the marsh and any discharge point from the marsh to Hockhockson Brook.

11. Site 26 - Explosive "D" Washout Area Adjacent to Bldg. GB-1

a. Trace elements were found in concentrations of concern at the site in groundwater. Contaminated sediments in the depression should be removed to prevent further groundwater contamination.

b. It may have been possible for the depression to overflow from the ditch in the past when the wastewater was discharging. There was not enough information about the topography at the site to determine if a surface water pathway exists.

C. Summary of Site Comments by Drainage Basin

1. Manasquan River - Mingamahone Brook

a. Site 3 - Landfill Southwest of "F" Group

Elevated concentrations of DDT and trace elements were found in groundwater. The landfill should be capped with an impervious cover and should have a leachate collection system to prevent further discharge of contaminants. Possible seepages to the swale below the landfill should be investigated.

b. Site 19 - Paint Chip and Sludge Disposal Area Adjacent to Building S-34

i. Surface water and sediments from the drainage swale should be tested for DDT and other pesticides.

ii. Contaminated soils and sediments should be removed at the site to prevent further groundwater and stream contamination. Groundwater should be remediated to prevent further discharge of contaminants to the stream. The large stone pile should be investigated as a possible source of contamination.

iii. High concentrations of trace elements have been discharged to Mingamahone Brook in the past. Surface water and sediment samples should be collected from depositional areas downstream as necessary to determine the extent of contamination.

c. Site 26 - Explosive "D" Washout Area Adjacent to Bldg. GB-1

i. Trace elements were found in concentrations of concern at the site in groundwater. Contaminated sediments in the depression should be removed to prevent further groundwater contamination.

ii. It may have been possible for the depression to overflow from the ditch in the past when the wastewater was discharging. There was not enough information about the topography at the site to determine if a surface water pathway exists.

2. Navesink River - Hockhockson Brook and Pine Brook (Swimming River)

a. Site 2 - Ordnance Demilitarization Site

i. Trace elements were measured in groundwater at concentrations of concern for the protection of aquatic life in a well

downgradient from the site. Chromium was found in elevated concentrations in both sediments and groundwater. Except for areas of chromium contamination, trace elements were not found in soils at concentrations of concern. It is likely that contaminants are being flushed from the soils by precipitation infiltrating the porous sands at the site. The extent of groundwater contamination and discharge point (to surface water) has not been fully delineated. Additional wells northeast of the site and downgradient of Well 7 are needed to determine the extent of groundwater contamination. Surface water and sediment samples should be collected from the headwaters of Pine Brook to supplement Site 2 and Site 5 investigations.

ii. As the site is still in use, operations should be changed as necessary to prevent further groundwater contamination and monitoring of groundwater should be continued.

b. Site 4 - Landfill West of "D" Group

Elevated trace element concentrations were not consistently measured in groundwater samples. The sediments were only moderately enriched in trace elements and PCBs. The extent of the elevated PCB and trace element concentrations in sediments should be delineated and cleaned-up to prevent transport of contaminants downstream during major storm events. The landfill should be capped to prevent further contamination in the surface water and groundwater and to prevent leachate seepage. Trace elements and PCBs may have been transported downstream to depositional areas of the brook. Additional sampling in the brook would determine the extent of contamination.

c. Site 5 - Landfill West of Army Barricades

i. Trace elements, particularly chromium were found in groundwater at concentrations of concern. The source of the contamination should be investigated and the extent of the high chromium concentrations in groundwater should be determined. Further groundwater contamination should be prevented by site remediation. Sufficient information should be presented to determine if some of the wastes are below the water table. A possible drainage pathway during major storm events should be investigated. Surface water and sediment samples should be collected from the headwaters of Pine Brook to supplement Site 2 and Site 5 investigations.

ii. Section 4.4.1 incorrectly states that the site slopes southwest. It is customary and less confusing to have the site maps oriented with the top to the north.

d. Site 10 - Scrap Metal Landfill Near Building 589

i. The extent of the elevated trace element concentrations in groundwater should be delineated and groundwater discharge points to surface water should be determined. The source of the elevated chromium concentrations in the upgradient well should be investigated.

ii. The site should be remediated as necessary to prevent further groundwater contamination and to contain the trace element contamination in groundwater.

iii. The statement in Section 4.6.3 that the elevated trace element concentrations are a function of ambient soil conditions and unfiltered protocol was not supported by the data. Chromium concentrations found in groundwater from areas not impacted by facility contamination are at least 2 orders of magnitude below concentrations found at this site. Wells with high trace element concentrations were consistently elevated.

e. Site 11 - Contract Ordnance Disposal Area

i. From the description of the soils and the high water table at the site, surface water runoff from the site is expected. Possible surface water pathways should be investigated.

ii. Trace elements were found in groundwater at concentrations of concern. The wastes at the site were not adequately characterized. Information should be presented to determine the placement of wastes in respect to the water table. Surface and subsurface soil samples should be collected to determine the source of the elevated trace element concentrations. The extent of trace element contamination in groundwater should be determined.

iii. A few soil samples should be collected from the burn area and tested for dioxins.

iv. Remediation should be conducted as necessary to prevent further contamination of groundwater and discharge of site contaminants in soils and groundwater to surface water.

f. Site 20 - Grit Blasting Disposal Area Adjacent to Bldg. S-34

i. Trace elements and PAHs were found in the drainage ditch at concentrations of concern. Surface water and sediment samples should be collected from the marsh and Hockhockson Brook as the marsh may overflow to the brook during storm events.

ii. The waste pile should be removed and disposed of as hazardous waste. Sufficient soil samples should be collected

from the site to determine the horizontal and vertical extent of contamination and should be analyzed for trace elements and SVOCs.

iii. This site has likely caused groundwater contamination and could be the source of the elevated trace element concentrations found southwest of Site 10. Possible groundwater contamination from the site should be investigated and the extent of the contamination delineated.

iv. Section 4.9.3 states that there is no visual or analytical evidence of extensive contamination of soils. Soils were not tested for trace elements of PAHs. The statements to the effect that the contaminant concentrations are low and would not be transported in groundwater are unsupported. Leachability tests are required to determine that the wastes are not a source of contamination.

g. Site 22 - Paint Chip Disposal Area Adjacent to Building D-2

Lead and PAHs exceeded sediment ER-L concentrations in the ditch. Contaminants may have been transported from the site during storm events in the past. Surface water and sediment samples should be collected in the marsh and any discharge point from the marsh to Hockhockson Brook.

3. Navesink River - McClees Creek

a. Site 7 - Landfill South of "P" Barricades

i. Groundwater discharge points to the creeks and the extent of groundwater contamination should be determined. The site should be remediated as necessary to prevent further groundwater contamination.

ii. Section 4.5.1.3 states that groundwater flows northeast. The figure shows groundwater flows southwest.

D. General Comments

1. Trace elements are the primary contaminants of concern found at the NWS Earle sites reviewed. Other persistent compounds found at some sites include PAHs and PCBs. Pesticides were only found at concentrations of concern at a few sites, but may be present in areas that have not been investigated.

2. Surface water investigations were limited to the immediate vicinity of the sites and site topography was not shown on the figures.

3. Groundwater investigations were limited to shallow groundwater and did not determine the extent of possible

groundwater plumes. In some cases, there was not enough information to determine if wastes at disposal sites are in contact with the groundwater.

4. Although few sites appeared to have extreme contamination, because of the widespread groundwater contamination in the Hockhockson and Pine Brook drainage basin and the possibility that NOAA resources may be present, additional surface water and sediment sampling of depositional areas in the brooks and Swimming River should be conducted to determine if areas of contamination are present in the streams. This is a recommendation that has been discussed on several occasions and has not been fully resolved.

National Oceanic at Atmospheric Administration (§ 6-8)

1. Risk Assessment

a. Risks to aquatic biota having direct contact with contaminated sediments at the sites (benthic organisms) were evaluated. **Contaminants measured in sediments at Sites 4, 10, and 19 were identified as risks to benthic organisms based on comparison to sediment ER-Ls.**

b. Risks to aquatic organisms from past discharges of persistent compounds that may have been transported downstream were not considered. Risks to aquatic organisms and the degradation of water quality in the streams from groundwater transport of contaminants to downstream habitats were also not considered.

2. Remedial Alternatives

a. New Jersey surface water criteria were considered Applicable or Relevant and Appropriate Environmental and Public Health Requirements (ARARs) for discharge of treatment effluents. Federal water quality criteria will also be considered.

b. A preliminary screening of soils and groundwater remedial technologies was developed for use at NWS Earle. The remedial technologies include both containment and treatment alternatives. Remediation goals and alternatives for individual sites were not included.

3. Comments

a. The assessment of environmental risks did not identify potential hazards from the cumulative effects of contaminants transported from the base via groundwater and surface water on downstream habitats. Contaminants of concern at the sites should be identified based on the potential for groundwater and surface water transport to downstream habitats as well as on-site risks.

b. Specific recommendations for remediation and additional sampling at the individual sites were made previously (March 1992). Additional downstream sampling in Hockhockson and Pine Brooks and Swimming River were also recommended previously to determine the cumulative effects of past and present releases from individual sites at NWS Earle.

c. In summary, NOAA has the same environmental concerns now as were indicated to the Navy on many separate occasions in the past. Although EPA has recognized NOAA's concerns at this site and has attempted to get NOAA's concerns addressed, the Navy continues to ignore NOAA's natural resource trustee informational needs. At this point in time, NOAA has no choice but to notify the U.S. Department of Justice and NOAA's Office of General Counsel that the Navy has not been cooperative in addressing NOAA's trustee concerns.