State of New Jersey
Department of Environmental Protection

Christine Todd Whitman
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Mr. Christopher Kencik
U.S. Army CECOM
ATTN: AMSEL-PE-BR (C.Kencik)
Fort Monmouth, NJ 07703-5024

JUN 21 1995

Dear Mr. Kencik,

Re: Draft Final Site Inspection Report - March 1995
Fort Monmouth BRAC Site
Tinton Falls, Monmouth County

The New Jersey Department of Environmental Protection (NJDEP) has received and reviewed the Draft Final Site Inspection Report dated March 1995 prepared by Earth Tech on behalf of the U.S. Army Environmental Center. Our comments are as follows.

General Comments

1. **Radiation investigation**. Radiological investigations are necessary at the Evans Area due to the consistent use of radioactive isotopes at the research and development facilities. A list of these isotopes has been provided to the NJDEP. At this time, the criteria for these isotopes has not been developed by the NJDEP. The NJDEP encourages the AEC to submit a comprehensive description of sampling and detection techniques. Acceptable residential criteria should be part of such a submission. The NJDEP would accept appropriate, documented background levels as the cleanup criteria. Further, the NJDEP cannot approve of a "No Further Action" for any site which pose potential radiological hazards except as allowed under N.J.S.A. 58:10B-12 et seq. (S-1070).

Site characterization plan

2. **Sediment Criteria**. Throughout the Report, sediment samples are inappropriately compared against soil cleanup criteria. Freshwater sediment sample results should be compared against EPA (1989) Equilibrium Partitioning and NOAA (1990) Biological Effects screening criteria; marine/estuarine sediment sample results should be compared against Long et al. (1995) criteria presently used by NOAA - reference: Long, E.R., MacDonald, D.D., Smith, S.L., and Calder, F.D.1995. Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Environmental Management Vol. 19, No. 1 pp. 81-97.

3. **Delisted AREEs.** The AREE's previously identified, but eliminated based on information provided in previous documents including the Draft Work Plan, should be briefly outlined to inform the reader of what the AREEs were and why/how it was determined that they were not areas requiring further investigation. A table similar to Table 1-1 is sufficient.

4. **Sampling data, analysis and presentation.** In accordance with previously provided recommendations and the Technical Requirements for Site Remediation (N.J.A.C. 7:26E - Tech Regs), data for all of the samples, including depths, detection limits, analysis results, and the corresponding criteria must be furnished in the applicable tables (N.J.A.C. 7:26E-3.10).

5. **Geophysical surveys.** AREE maps should include boundaries of anomalous zones identified through geophysical surveys. In the absence of justification the NJDEP recommends that all anomalies (including those attributed to buried metal) be further investigated to determine their source.

6. **AREE maps.** As required in the Tech Regs, maps should contain ground water flow directions, site boundaries, surface water flow directions, and a clear map which shows all of the ares in relation to each other.

7. **Use restriction.** A Declaration of Environmental Restriction (DER) is required for all areas which exceed the most stringent soil cleanup criteria throughout the soil column. Specifically the requirement that the minimum soil remediation standards for both residential an nonresidential uses for human carcinogens, as categorized by the United States Environmental Protection Agency, will result in an additional cancer risk of one in one million; or, for noncarcinogens, will limit the Hazard Index for any given effect to a value not exceeding one, pursuant to N.J.S.A. 58:10B-12 et seq. (S-1070). These health risk levels are for any particular contaminant and not for the cumulative effects of more than one contaminant at a site. In areas where there are exceedences of Residential soil cleanup criteria, the NJDEP will either require additional sampling or require Fort Monmouth to establish a Declaration of Environmental Restriction (DER). A DER filed with appropriate agencies, legally limits the use of areas which have been determined to be above Residential cleanup criteria. In areas of obvious isolated contaminants (where one contaminant occurs infrequently with minor exceedences), soil averaging **may** be a viable option.

8. **PH analysis.** Justification should be provided for the omission of soil pH analysis of AREEs, particularly those AREEs where stressed vegetation was evident.

9. **Field screening.** In accordance with the Tech Rules, field screening methods may not be used to verify contaminant identity or clean zones. specifically, N.J.A.C. 7:26E-2.1, it is stated that field screening methods shall not be used to verify contaminant identity or clean zones. However, where 10 or more samples are required for initial characterization sampling at an area of concern, field screening methods may be used to document that up to 50 percent of sampling points within

an area of concern are not contaminated. Soil gas surveys limit contaminant detection to volatile organic compounds and do not include screening for inorganic compounds. Deviations from the Tech Rules are apparent throughout the document in areas where soil gas and geophysical surveys were conducted. At a minimum, justification for limited soil sampling frequency and contaminant parameters in these areas is required.

10. **Appendix 16** - Regulatory Agency Comments was omitted from the subject document. A copy of Appendix 16 should be provided for review and to complete the subject report.

11. **Additional Investigations.** All remedial investigations/actions must be conducted in accordance with the Technical Requirements for Site Remediation.

12. **Data Validation.** Since "no further action" determinations are proposed for many AREE, NJDEP recommends that supporting laboratory data for those areas be properly validated. NJDEP policy allows for approved laboratories, the USEPA or the NJDEP to review the laboratory data. If the NJDEP is to conduct data validation, it is advisable that the NJDEP assist in choosing specific site samples.

13. **"Laboratory Contamination".** Most of the sample result interpretations state that methylene chloride or some other substance was detected and determined to be laboratory contamination. Without having tables which provide ALL of the contaminants analyzed accompanied by all of the detection limits, detected concentrations, and state residential criteria, the NJDEP has significant concerns about the dismissing of data simply because the contaminant was evident in the associated blanks.

14. **Certification.** As stated in our March 1994 comments on the Wrok Plan, in accordance with the Tech Regs, N.J.A.C. 7:26E-1.5, the NJDEP requires that all submissions must be certified using the applicable clause with appropriate signitures. Please provide certification in all future documents for which NJDEP review is requested.

SPECIFIC COMMENTS

1. **Executive Summary, page ES-1.**
It is stated in the text that since the future uses of the CWHA and EA properties are uncertain, regulatory screening criteria that are protective of residential exposure were used to be conservative in the selection of sites identified for further action. However, Table ES-3 indicates that exposure potentials were determined based on the assumption that the present EA land use will continue after the property is transferred. These appear to be contradictory statements. The NJDEP requires that areas where contamination is left in place above the residential cleanup criteria (or above the 10^{-6} human health risk criteria) must establish a Declaration of Environmental Restriction

(DER) in order to prevent future uses which may be deleterious to human health and the environment.

2. **Section 1.3: Project Objectives, page 1-11.**
It must be clarified as to whether sediment samples were collected from depositional areas. NJDEP requires that TOC, pH, and grain size be performed for all sediment samples. Since these results are not discussed in the text it is assumed that these analyses were not conducted.

3. **Section 1.4: Data Quality Objectives, page 1-12.**
The text indicates that MDLs for thallium and dibenz(a,h)anthracene are greater than the associated regulatory criteria for some soils. The elevated MDLs should be reported in the AREE sample result summary tables. The tables only include MDLs for detected compounds.

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4. **Section 1.5.1: Comparison of Results with Regulatory Criteria, page 1-18.**
Contrary to what is stated in the text, the NJDEP's soil cleanup criteria for TPH is 10,000 ppm.

5. **Section 3.7: Investigation-Derived Wastes, page 3-8.**
No indication is given in the text as to the volume of waste produced from borehole and monitoring well drill cuttings and whether one composite sample was adequate to properly characterize these wastes as non-hazardous. It should be clarified as to whether investigation-derived wastes were disposed at an offsite disposal **facility** (which accepted the TCLP composite sample) since the text simply indicates these wastes were disposed at an offsite location.

6. **Section 3.7; Land Surveying, page 3-8.**
It is not clear from the text as to how decontamination fluids will be disposed. These issues should be addressed in the text.

7. **Section 4.1.1.1: Soil and Sediment Sampling, page 4-2.**
The text indicates that brass sleeves were used for soil sample collection, however the soil interval sampled is not specified (i.e., six inch interval samples or greater). This information should be provided since the NJDEP requires discrete six inch intervals for soil samples. Also note that the NJDEP requires that soil sampling devices be constructed of stainless steel (or carbon steel for split spoon samplers). However, soil sampling with brass sleeves may actually lead to false positive readings for some metal components of the brass alloy. Those areas where false readings/exceedences are suspected must be resampled with stainless steel split spoon samplers.

8. **Section 4.1.1.1; Soil and Sediment Sampling, page 4-2.**
The depth at which surface soil samples for VOC analysis were collected should be specified in this section.

9. **Section 4.1.1.1: Soil and Sediment Sampling, page 4-3.**
Justification must be provided for collecting sediment samples from upstream and downstream locations only. Sample locations representative of the entire stream, wetland system, or area of known discharge is required.

10. **Section 4.1.1.1: Soil and Sediment Sampling, page 4-3.**
Justification for collecting sediment samples from a depth of 12-18 inches rather than 0-6 inches must be provided. Sediment below the 0-12 inch surface interval is not representative of the biotic stratum.

11. **Section 4.2.4: Sample Analysis/Lots, page 4-14.**
The agency responsible for QA/QC validation must determine whether corrective action procedures were adequate in instances where analytical spiking levels specified in the "approved" method were not performed.

12. **Section 5.1.4: Comparison With Established Criteria, page 5-22.**
Contrary to what is stated in the text, the NJDEP's Ground Water Quality Standard for PHC is "none noticeable".

Section 5 - Study Area Investigations. Previous comments provided in this letter have referred to instances of investigatory, analytical and reporting techniques which are not consistent with NJDEP policies, procedures and/or regulations. Such inconsistencies have lead to significant problems in reviewing and commenting on the document. Without all the data provided to back up each request for no further action, the NJDEP cannot approve of these requests.

13. **Section 5.2, CWHA AREE 1: Transformer Leak, page 5-28.**
At a minimum, the areal extent of the affected area must be provided as justification for limiting sampling to collection of one soil sample in this area.

14. **Section 5.2, CWHA AREE 1: Transformer Leak, page 5-28.**
Justification must be provided for collecting the surface soil sample for PCB analysis from a depth of 12-18 inches below the ground surface. In the absence of justification otherwise, resampling from the 0-6 inch surface soil is required. Sampling from 12-18 inches does not appear to be consistent with page 3-23 of the Work Plan which stated that "3 grab surface soil samples would be taken from the area immediately below the transformer pole. These were not to be composited as stated, but it was expected that the sample(s) taken would be from the surface soil. These changes were not noted in Table 3-1 "Summary of Adjustments to Work Plan." Resampling is necessary.

15. **Section 5.2, CWHA AREE 1: Transformer Leak, page 5-28.**
Soil sample results were not include for this AREE. This information should be provided pursuant to General Comment 4.

16. **Section 5.3, CWHA AREE 8: CWHA Stream, page 5-31.**
The sediment sample results must be compared with the criteria referred to in General Comment 2. Additional information should be provided consistent with Specific Comments 2, 9 and 10.

17. **Section 5.4, EA AREE 1: Sewage Treatment Plant, page 5-37.**
Justification for collecting only two samples from the sludge drying bed (approximately 6,000 square feet) must be provided in the text since this is not in accordance with the sampling frequency specified in the Tech Regs (N.J.A.C. 7:26E-3.5 - which requires 1 sample per 900 square feet).

18. **Section 5.4, EA AREE 1: Sewage Treatment Plant, page 5-37.**
The text indicates that soil samples were collected from below the sludge bed/natural soil interface. In the absence of justification otherwise, sampling of the actual sludge material for characterization is required. Since the tanks were built in 1942, inputs may have changed over time and the current tank sample results may not be indicative of past sludge constituents.

19. **Section 5.4, EA AREE 1: Sewage Treatment Plant, page 5-38.**
It is unclear from the text whether samples were collected from historic leak areas - please explain. Justification is required for limiting soil sampling around the tanks to one sample per tank as the Tech Regs specify that one sample for each 100 linear feet around the tank should be sampled. The Tech Rules also specify that soil sampling be conducted to the water table or to a depth of 10 feet, whichever is encountered first. (The Work Plan states samples will be taken at 5 foot intervals until the water table.) It must be discussed as to whether sampling was conducted to the groundwater table in these areas.

20. **Section 5.4, EA AREE 1: Sewage Treatment Plant, page 5-48.**
The NJDEP is concerned about the physical hazards presented by the structural integrity of the building, tanks, clarifiers and digesters, as well as the significant threat of "old laboratory chemical bottles." All of these hazards must be addressed prior to site disposal.

21. **Section 5.5, EA AREE 2: Marconi Buildings and Leachfields, page 5-48.**
Justification for completing only three soil borings in the vicinity of the fill area must be provided (i.e., provide the estimated areal extent of the fill area). Ten borings with three samples selected for analysis from each boring was specified in the Work Plan. Modifications to this were not noted in Table 3-1. Please explain.

22. **Section 5.5, EA AREE 2: Marconi Buildings and Leachfields, page 5-48.**
Justification for deviating from the required frequency of sampling specified in the Tech Regs for leachfields must be provided (i.e., the Tech Rules, N.J.A.C. 7:26E-3.9, require a minimum of four samples per leachfield).

23. **Section 5.5.7, EA AREE 2, page 5-65.**
Pursuant to the Tech Regs (N.J.A.C. 7:26E-3.8); TOC, pH, and grain size analysis must also be conducted for proposed sediment samples.

24. **Section 5.6.7, EA AREE 3, page 5-84.**
Cadmium was detected at levels which exceed NJDEP Soil Cleanup Criteria. The Residential Direct Contact Soil Cleanup Criteria for Cadmium is 1. Surface soil sample 3BO5 detected a level of 3.75 ppm. The text determines that Cadmium exists in the blanks at levels which indicate that the detections were false. Without additional information, the NJDEP cannot concur with this determination.

25. **Section 5.6.7, EA AREE 3, page 5-87.**
Pursuant to the Tech Regs (N.J.A.C. 7:26E-3.8); TOC, Ph, and grain size analysis must also be conducted for proposed sediment samples.

26. **Section 5.7, EA AREE 12: Farmhouse Dump, page 5-87.**
Removal and sampling of the tank, vault and piping must be conducted in accordance with the Tech Regs.

27. **Section 5.7, EA AREE 12: Farmhouse Dump, page 5-87.**
The excavation should not allow for the release of any environmental or human health hazard. Further, ground water sampling and analysis is advised for any soils determined to be above the Impact to Ground Water Soil Cleanup Criteria.

28. **Section 5.7, EA AREE 12: Farmhouse Dump, page 5-87.**
To facilitate review, Figure 5.7-1 should depict the estimated boundaries of the original farmhouse dump, the dry ditch, and the excavated area discussed in this section.

28. **Section 5.7, EA AREE 12: Farmhouse Dump, page 5-87.**
See General Comment 2 and Specific Comments 2, 9, and 10 above.

29. **Section 5.7, EA AREE 12: Farmhouse Dump, page 5-87.**
The text indicates that 15 anomalies interpreted as buried metal objects are present in this AREE - see General Comment 5. Further investigation of these anomalies is justified since this area has been historically used as a dump and both buckets and drums have been found here.

30. **Section 5.8, EA AREE Surface Dump #1, page 5-98.**
To facilitate review, the estimated extent of the dump and the location of the pit should be depicted in Figure 5.8-1.

31. **Section 5.8, EA AREE Surface Dump #1, page 5-98.**
See General Comment 2, and Specific Comments 5 and 8 above.

32. **Section 5.8, EA AREE Surface Dump #1, page 5-98.**
See General Comment 6.

33. **Section 5.8, EA AREE Surface Dump #1, page 5-98.**
See General Comment 9.

34. **Section 5.9, EA AREE Surface Dump #2, page 5-112.**
To facilitate review, Figure 5.9-1 should depict the estimated boundaries of the dump.

35. **Section 5.9, EA AREE Surface Dump #2, page 5-112.**
See General Comment 2 and Specific Comments 6 and 8 above.

36. **Section 5.9, EA AREE Surface Dump #2, page 5-112.**
See General Comment 6.

37. **Section 5.9, EA AREE Surface Dump #2, page 5-112.**
See General Comment 9.

38. **Section 5.12, EA AREE Possible Petroleum Releases, page 5-130.**
The text does not provide any discussion regarding why stressed vegetation areas are linked (and limited) to petroleum releases. Information as to why, and what the suspected petroleum sources were should be explained.

39. **Section 5.12, EA AREE Possible Petroleum Releases, page 5-130.**
Further discussion is required regarding the compaction assessment, including why soils in these areas are more compact than others. This may actually indicate past landfilling and capping activities in these areas. Regardless of the results of the compaction assessment, soil samples should be collected in these areas to verify the absence of contamination.

40. **Section 5.12, EA AREE Possible Petroleum Releases, page 5-130.**
As stated previously, contrary to what is stated in the text, the NJDEP's soil cleanup criteria for TPH is 10,000 ppm.

41. **Section 5.12, EA AREE Possible Petroleum Releases, page 5-135.**
According to page 3-70 of the Work Plan, stained soil and stressed vegetation were to be removed. Based on the information contained in the SI text, no soils or stressed vegetation were removed. Reasoning for this deviation must be provided in the SI text.

42. **Section 5.13, EA AREE Leachfields, page 5-142.**
See General Comment 9.

43. **Section 5.13, EA AREE Leachfields, page 5-142.**
The sampling performed does not meet the requirements of the Tech Regs which require one sample per 500 square feet with a minimum of four samples per leachfield. Appropriate reasoning for this should be provided.

44. **Section 5.13, EA AREE Leachfields, page 5-142.**
See General Comment 5.

45. **Section 5.13 EA AREE Leachfields, page 5-146.**
The Work Plan stated that the split-spoon samplers were to be driven to the bottom of the leach fields and then every 5 feet to ground water. The SI text reports that the samplers were driven to 6 feet and then every 5 feet to ground water. The discrepancy should be explained.

46. **Section 5.13 EA AREE Leachfields, page 5-171.**
Sample LF9015 for the respective leachfield showed Cadmium contamination above the Residential Cleanup Criteria for Contaminated Sites and therefore the NJDEP cannot approve of no further action at this area without additional sampling which would support such a determination.

47. **Section 5.13 EA AREE Leachfields, page 5-171.**
AREE 23a consists of 9 separate and distinct leachfields. The statement that Cadmium was detected at AREE 23a in only 16 percent of the samples is inaccurate when in fact, Cadmium exceeded Residential Cleanup Criteria by over 300 percent in 100 percent of the reported samples in Area LF9015. Please correct the statement to reflect the data per area of concern (i.e., separate leachfield).

48. **Section 5.14, EA AREE 23D, Possible PCB Release, page 5-172.**
The NJDEP recommends that the stained concrete areas be cleaned along with AREE 16.

49. **Section 5.15, EA AREE 25: Former Coal Storage Pile, page 5-172.**
In the absence of justification otherwise, additional soil sampling from **within** the surficial 4-inch thick layer of coal dust is required to characterize the contaminants present in this waste material. Sampling discussed in this section were taken only to determine if metals had leached downward into the soil.

50. **Section 5.16, AE AREE 30: Out-of-Service Wells, page 5-180.**
All out-of-service wells must be abandoned appropriately as required in New Jersey regulations, specifically N.J.S.A. 4A-4.1.

51. **Section 5.17, AE AREE 31: Outfalls, page 5-193.**
See General Comment 2 and Specific Comments 5 and 8.

52. **Section 5.17, AE AREE 31: Outfalls, page 5-181.**
For reasons discussed in the preceding Specific Comment 51, Phase I sediment sampling may not be adequate. Justification for limiting Phase II sediment sample analysis to PCBs, metals, and mercury must also be provided.

53. **Section 5.18, AE AREE 32: Two Former Storage Yards, page 5-197.**
Reasoning should be provided as to why TPH analysis was not performed on soil samples taken from AREE 32.

54. **Section 5.18, AE AREE 32: Two Former Storage Yards, page 5-200.**
Please explain the statement "An environmental sample was collected and held for possible analysis from each split-spoon sample." Specifically what criteria was used to distinguish between those samples analyzed and those which were not.

55. **Section 5.18, AE AREE 32: Two Former Storage Yards, page 5-200.**
Along the same lines as Specific Comment 54, please explain what criteria were used by the geologist as implied by the statement "at the geologist's discretion."

56. **Section 5.18, AE AREE 32: Two Former Storage Yards, page 5-200.**
As required by General Comment 4, please state at what depths ground water samples were taken.

57. **Section 5.18, EA AREE 32: Two Former Storage Yards, page 5-196.**
See General Comment 9.

58. **Section 5.18, EA AREE 32: Two Former Storage Yards, page 5-199.**
To facilitate review, the estimated boundaries of the storage yards should be depicted on Figure 5.18-1, as per General Comment 6.

59. **Section 5.18, EA AREE 32: Two Former Storage Yards, page 5-201.**
Justification for the small number of samples (less than the required frequency of sampling specified in the Tech Regs for storage areas) must be provided.

60. **Section 5.18, EA AREE 32: Two Former Storage Yards, page 5-201.**
The text states that wells were placed in the center of the storage yards. Justification should be provided for not placing these wells in locations down gradient of ground water flow as required by the Tech Regs, specifically N.J.A.C. 7:26E-3.7 and 4.4.

61. **Section 5.18, EA AREE 32: Two Former Storage Yards, page 5-209.**
Manganese should also be included in the list of contaminants which were found to exceed established criteria at AREE 32.

62. **Section 5.18, EA AREE 33: Two Waste Treatment Tanks, page 5-220.**
Tank testing, removal and post excavation sampling must be conducted in accordance with the Tech Regs, specifically N.J.A.C. 7:26E-3.8, and as required by rule, P.L.