STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF WATER MANAGEMENT
Permitting, Enforcement and Remediation Division

2 April, 2001

John Burleson
BRAC Environmental Coordinator
Stratford Army Engine Plant
550 S Main St.
Stratford, CT

RE: SAEP Draft EE/CA for OU2

Dear ~~Mr~~ John ~~Burleson~~:

DEP has reviewed the Draft Final "Engineering Evaluation/Cost Analysis [EE/CA] for the Operable Unit 2 Source Areas, Stratford Army Engine Plant, Stratford, Connecticut" dated November, 2000, prepared for the U.S. Army Corps of Engineers, New England District, Concord Massachusetts by Foster Wheeler Environmental Corporation and Harding Lawson Associates. This document has been prepared to further implementation of a non-time-critical removal action (NCRA).

DEP Permitting, Enforcement and Remediation Division offers the following comments on the EE/CA:

1. The ARAR list should also include the following:

   Injection wells, for chemicals or steam, also require permitting under the Regulations of Connecticut State Agencies (RCSA) Section 22a-430-1 et seq.; expectably the permitting mechanism would be an emergency authorization.

   A general permit registration for storm-water discharge associated with construction may be required if the disturbed acreage exceeds the threshold value.

   Management of debris and polluted media that are not regulated as RCRA hazardous waste is subject to the State's Solid Waste Management Regulations at RCSA 22a-209-1 et seq.

   Specifically note the applicability of RCSA 22a 174 sections -3 and -29 for air discharges of toxic compounds associated with the SVE, water treatment, and in-situ volatile pollution treatment systems.

2. The depth limit on applicability of the volatilization criteria for groundwater is not correctly applied. The presence of polluted groundwater within 15 feet of the structure triggers applicability of the volatilization criteria to all polluted groundwater, regardless of depth. Remediation compliance, however, may be determined by several approaches outlined in the Remediation Standard Regulations (RSRs), and the full body of polluted groundwater may not require remediation to the volatilization criteria for groundwater for compliance to be achieved. The Soil Gas Volatilization criteria should be defined as an alternative NCRA objective. Please note that DEP has revised some criteria applicable to SAEP, a copy of the revision is enclosed.

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3. Drinking water standards apply specifically to delivered water at the tap. The GB groundwater classification implies the aquifer is not expected to be used as a source of drinking water, and thus the RSR groundwater protection criteria are not applicable GB areas. To fully close the exposure pathway, the DoD should also indicate their intention to restrict withdrawal of groundwater for any purpose, which would preclude possible imprudent use of the aquifer as a water source that is potentially consumed.

4. The EE/CA should clarify that references to risk-assessment-based cleanup levels (sections 2.4.5, 2.6) and alternative remediation criteria (section 3.5) are for criteria that must be approved by the Commissioner within the RSR framework. DEP expects that this approval would occur in conjunction with the RI/FS, rather than the NCRA.

5. It is appropriate to use the Surface Water Protection Criteria, which include an attenuation factor, as an evaluation criteria for triggering interim actions. Note, however, that DEP's Remediation Standard Regulations preclude use of the Surface Water Protection Criteria listed in RSR Appendix D in cases where a groundwater plume discharges directly to a wetland (such as the tidal flat), and require instead the use of applicable aquatic life criteria in DEP's Water Quality Standards. The long term remedy must satisfy the aquatic life criteria, and, in the case of volatile organic pollution, such criteria must be developed in consultation with DEP staff. DEP expects that the long term remedy will address this issue through the ecological risk study and groundwater model being developed in conjunction with the RI. Several options also exist in the RSRs for demonstration of compliance through groundwater monitoring, and these should be noted as means for evaluation of the NCRA activity.

6. DEP has not approved the cited interior cleanup standard for hexavalent chrome. DEP does not explicitly regulate indoor environments, and recommends you contact the local director of health for specific guidance. Please note that the EE/CA Appendix A lacks supporting details of exposure assumptions from the referenced cleanup criterion development document, and also lacks an evaluation of how the exposure assumptions incorporated in that document are consistent with those typically used in Connecticut, as exemplified by the remediation standard regulations. Note also that Connecticut uses the 10E-6 risk level as a threshold for evaluations of potential risk associated with pollutants. To support establishment of criteria for use in the NCRA, DEP would be willing to coordinate any risk evaluation review with the state Department of Health, if the supporting documentation is updated for Connecticut's risk assumptions and submitted for review concurrently with the design stage of the NCRA.

7. The staging of the various actions proposed for the chrome plating area should be carefully examined. Additional information should be developed on the potential interaction of the actions in implementation, and on the most cost effective sequencing of the removal actions. For example, subsurface installation of the SVE system and injection/extraction wells should precede installation of a new floor with a barrier liner. Will the heat of the thermal extraction methods adversely affect the SVE system or barrier integrity? Will the disruption of the aquifer condition associated with any in-situ action addressing the solvent plume fundamentally change the chrome distribution and require further characterization to design an effective remedy for the in-situ chrome reduction? Will manganese precipitation associated with organic oxidation adversely affect effectiveness of delivery of the ferrous sulfate reductant for chrome oxidation?

8. The presence of a sub-slab liner in the chrome plating area could limit the ability to install or service below-grade supply and waste lines, which could be a long-term limiting condition

affecting building re-use. Alternative means of preventing recontamination of the new slab should be evaluated.

9. DEP recommends that areas of shallow soil contamination greater than the Industrial/Commercial direct exposure criteria that are present under the plating room floor be removed when the floor of the plating area is removed.

10. The proposed floor removal area for the chrome plating area is not shown on figures.

11. Flooding to stabilize shallow chrome contamination does not seem to address the eastern areas of shallow soil contamination by chrome. How might this potential source later be addressed in the final remedy, since it would be under the barrier-protected slab? If the slab is to be interpreted as an engineered control under the RSRs an approval would be required.

12. It is unclear if an initial flush, which has been discussed, will be implemented prior to treatment for in-situ chrome reduction. DEP recommends that at least one pore volume be extracted for treatment and discharge through the CWTP prior to initiation of the in-situ treatment process.

13. The design phase of the NCRA must demonstrate that the chemical injections are within hydrogeologically controlled "cells" to provide the basis for issuance of an discharge permit. DEP must be presented with a flowpath analysis demonstrating the limited number of extraction wells, especially for the chrome pollution, adequately maintain hydraulic control on injected chemicals.

14. The discussion of reversibility of the stabilizing reaction should be expanded to show how this NCRA is potentially consistent with a final remedy.

15. Although this NCRA does not address treatment of volatile organic chemicals in the vadose zone, this may be key to achieving compliance with target indoor air concentrations in the final remedy. Consider ensuring that SVE trench spacing over hotspot/release areas is sufficient to allow such treatment without re-excavation/modification.

16. Condensate back-drain in the SVE system as proposed may require a groundwater discharge permit, and is generally discouraged by DEP. A preferable alternative would be to collect condensate backdrain in a sump for disposal or pumpage to the sanitary sewer after pretreatment.

17. Some of the artificial fill on the site may have been placed hydraulically. If the areas of likely hydraulic fill are coincident with the SVE system proposed, please review your model to ensure the possibly lower permeability of the hydraulic fill is included in the sensitivity analysis and system design.

18. The SVE system is not shown on cross-sections of the thermal actions. How will the SVE system interrelate to the vapor recovery wells associated with the thermal action options?

19. Provide for developing an estimate of potential concentrations of toxic organic compounds in air wastestreams early in the design process. The potential concentrations and mass loading per day for the system emissions may affect selection of the required air treatment technology.

20. Will the presence of a silt layer, especially in the lower half of the target treatment interval at the chrome plating area, affect chemical contact efficiency for either the chrome reduction or volatile oxidation? Please further evaluate details of chemical circulation where significant thickness of silt is targeted for in-situ chemical treatment.

21. The need for additional characterization during design development should be discussed more fully. The shallow soil and concrete chrome contamination extent investigation has been limited to the footprint of the chrome plating area, however the rational for this limitation is not presented, especially for soil pollution, which may have spread laterally. Also, there may be need to further delimit the southern extent of deeper chrome contamination, since only shallow data is available. Clearly state that the lateral extent of VOC Hot Spot 2 requires further delineation, possibly affecting design and cost as presented in the EE/CA.

22. Discuss the rational for delineation of the hot spot treatment area boundaries. Consider physical extent of source, percent of total contaminant mass, and how the bounding concentration contour relates to potential severe effects on indoor air quality.

23. Additional monitoring may be required. The description of the monitoring program should be expanded in development of a long-range monitoring plan. The specific monitoring objective of each well should be identified as it relates to the monitoring program. Similarly, the data objectives for the proposed analytical parameters should be identified. Note that these may vary between the various action options. Also, the monitoring program should be designed to both monitor longterm conditions in the aquifer and document performance of the actions implemented. Please note DEP rarely considers long-term monitoring less than semiannually.

24. Please describe treatment capacity of the CWTP as it relates to proposed flows, especially the pre-treatment capability for hexavalent chromium

25. DEP has not specifically reviewed the cost and design calculation appendices in detail, further development of this information in the design documents may result in review comments. Detailed comments on in-situ remedial action may also arise during review of design documents.

26. It is appropriate to use a 30 year O & M period as a basis for cost comparisons however the long term responsible party and funding mechanism should be identified, as the actual period may be longer if pollution remains in place, governed by Environmental Land Use Restrictions.

If you have any questions please contact me.

Sincerely,

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Supervising Sanitary Engineer
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ENCLOSURE
cc:
Nelson Walter, HLA
Meghan Cassidy, EPA
RAB