

Interdepartmental Memo
Department of Environmental Protection
Bureau of Water Management

To: Ken Feathers

From: Traci Iott

Date: January 23, 2002

Re: Review of Ecological Risk Assessment - Stratford Army Engine Plant

I have completed my review of the Ecological Risk Assessment, Volume 3 of 9 of the Remedial Investigation Report for the Stratford Army Engine Plant in Stratford, Connecticut. Comments have been provided below regarding the Ecological Risk Assessment. Although there are issues to address regarding the evaluation of ecological risk at the facility, I believe that there is sufficient information at this time to conclude that there are potential risks to ecological receptors due to exposure to contaminants associated at the site. In order to keep the remediation process moving forward, I recommend that the comments provided below be addressed within the context of a document which details preliminary remediation goals based on ecological risks instead of solely focusing on revising the ecological risk assessment.

Section

Comment

General

Approach should be streamlined. The various iterations within the same document is confusing.

Provide a separate section explicitly comparing and detailing the differences between study areas near SAEP and selected background sites. Use maximum and 95th UCL of the mean for comparisons.

Use maximum and 95th UCL data for comparison to environmental benchmarks.

Comparisons to benchmarks and background provided in the text are too general. More detail should be provided such as Hazard Quotients or other explicit descriptions in place of terms such as "are similar (higher or lower)".

Do not use background data to screen out contaminants for further evaluation.

Evaluate polynuclear aromatic hydrocarbons (PAHs) individually but also as a group. For samples in which individual PAHs exceed benchmarks, keep all PAHs for further evaluation.

Update the environmental benchmarks for each media as needed. For compounds for which benchmarks or criteria were not provided, evaluate other data sources for use as environmental screening benchmarks.

Provide descriptive statistics (Mean, median, maximum, 95th UCL) for all data sets used in the evaluation.

9.3 Do not assume that groundwater pathways are not complete and have no effect on the surrounding surface waters without supporting data and appropriate technical justifications.

9.3.1 Potential site-related impacts on the surface water in the intertidal mudflats should be evaluated. This can be done by evaluating groundwater at the site and using the Surface Water Protection Criteria (SWPC) in the Connecticut Remediation Standard Regulations. In this case, the SWPC would be equivalent to the lowest Connecticut surface water quality criteria for each substance. This is because the intertidal mudflats are not permanently inundated with water throughout the tidal cycle, and dilution cannot be applied to this situation.

The surface water can be evaluated directly by measuring constituents in the water at the bottom of the water column and comparing measurements throughout the tidal cycles.

9.3.1.2 The 95th upper confidence limit on the mean should be used for comparison to surface water quality criteria or benchmarks.

Surface water quality criteria or benchmarks were not used for many of the analytes evaluated. In cases where there is not an adopted water quality criterion for a parameter in question, an appropriate water quality benchmark should be obtained from other sources or derived. Chronic water quality benchmarks can be obtained from either EPA or Oak Ridge National Laboratories (Toxicological Benchmarks for Screening Potential Contaminants

of Concern for Effects on Aquatic Biota: 1996 Revisions) for many of the substances for which no benchmark is currently identified. Freshwater values should be used if appropriate saltwater values are not available. Benchmarks should be provided for all substances, even those that were not detected. It is important to evaluate whether the detection limit is appropriate for evaluating risk.

The detection limits for cyanide, PCBs and several PAHs exceeded applicable water quality criteria.

9.3.2.1 Compounds in sediments can be removed from consideration based on non-detect results provided that the detection limit is equal to or less than the appropriate environmental benchmark for that substance. If the detection limit is greater than the benchmark, the substance cannot be removed from consideration.

9.3.2.2 Do not remove individual PAHs. Treat these compounds as a group. Use EPA's draft protocols for evaluating PAHs in sediments.

9.3.6 Toxicity Profiles - include a presentation of Tier II Water Quality Benchmarks when adopted Water Quality Criteria are not available. Also include a discussion of tissue residue values based on the following datasets:

Jarvinen, A. W. and G. T. Ankley. 1999. Linkage of Effects to Tissue Residues: Development of a Comprehensive Database for Aquatic Organisms Exposed to Inorganic and Organic Chemicals. Society of Environmental Toxicology and Chemistry, Pensacola, Florida.

United States Army Corps of Engineers (USACE). Environmental Residue-Effects Database. <http://www.wes.army.mil/el/ered/>

9.4.1 Potential pathways should also include water consumption for waterfowl, shore birds and piscivorous birds.

Fish should be included as potential receptors in the area of outfall 008.

9.4.2 Assessment endpoints should include direct toxicity, not just bioaccumulation.

- 9.5.1.1.3 Do not remove PCBs from consideration at outfall 008.
- 9.5.1.1.5 Do not use aquatic life benchmarks to screen potential effects on wildlife receptors.
- 9.5.2.2 Potential impacts due to contaminated groundwater from the site migrating to surrounding surface water needs to be explicitly and technically evaluated in detail.
- 9.6.1 Text indicates that copper is elevated in surface water at outfall 008 and the Marine Basin and that the issue will be addressed via the sediments. However, copper is not included in the sediment evaluation for these areas. Exceedances of surface water quality benchmarks/criteria should be addressed independently from sediment quality evaluations.
- 9.6.2 Environmental impacts associated with groundwater from the site should not be ruled out at this time since a complete evaluation of site related groundwater has not yet been completed.
- 9.6.6 Justify the reason for using a different area use factor for piping plover utilizing the Marine Basin and Intertidal Flats while area use factors for other avian species are the same for these two areas.
- Provide justification for seasonal use factors.
- Include an explicit discussion of potential impacts on all threatened/endangered species. Discussion of sturgeon populations can be included in discussions of aquatic life impacts.