



**U.S. DEPARTMENT OF COMMERCE**  
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 Office of Response and Restoration  
 c/o EPA Office of Site Remediation and Restoration (HIO)  
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 7 Dec. 1999

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Mr. Emil Klawitter  
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Dear Christine/Emil:

Thank-you for the Workplan Remedial Investigation of IR Program Site 16 Former Creosote Dip Tank and Fire Fighting Training Area. Naval Construction Battalion Center. North Kingstown, RI. Prepared for the U.S. Navy by EA Engineering, Science, and Technology, Inc., November 1999. A screening level ecological risk assessment is proposed and the Problem Formulation was presented in the Workplan. Receptors of concern that were identified included omnivorous and carnivorous birds and mammals, terrestrial plants and invertebrates, and marine invertebrates, and fish. Assessment and measurement endpoints are presented below:

ASSESSMENT ENDPOINTS	MEASUREMENT ENDPOINTS
• Ecological health of terrestrial invertebrate and plant communities	• Evaluation of soil chemistry with respect to screening values
• Ecological health of marine fish and plankton communities	• Evaluation of seep water chemistry with respect to screening values
• Long term health and reproductive capacity of omnivorous avian species	• Evaluation of dose in prey based on surface soils data and dietary exposure models
• Long term health and reproductive capacity of herbivorous mammalian species	• Evaluation of dose in prey based on surface soils data and dietary exposure models
• Long term health and reproductive capacity of primary carnivorous mammalian species	• Evaluation of dose in prey based on surface soil data and dietary exposure models

## COMMENTS

In general, it is difficult to assess the adequacy of the Field Sampling Plan without a more detailed summary of previous investigations. It is recommended that summary statistics of the data in each environmental media, at each source area be included in the Workplan (max/min/mean concentrations, frequency of detection), along with a brief discussion of the distribution of contamination. From Figure 4 it appears that previous investigations provided pretty good spatial coverage of soils and groundwater near described source

areas. What is not known, however, is whether any of the monitoring wells were screened in the shallow groundwater. The Workplan reported that the shallow water table was found between 1.5 and 4 meters below ground surface, but the only reported groundwater concentrations were from deep wells. Experience with other wood treating facilities indicates that the water table can be highly contaminated because of direct discharges to sumps and the presence of saturated soils, while the low solubility and mobility of PAHs prevents substantial migration to deeper aquifers. The previous seep sample containing phenanthrene (concentration not presented) also provided evidence for the migration of PAHs via the shallow groundwater. No sediment investigations have been conducted in association with this site.

From the limited information presented in the Workplan, the proposed additional groundwater investigations appear appropriate to characterize potential PAH-contamination in the shallow aquifer. The Workplan proposes 7 nested wells, screened in both the shallow and deep aquifers approximately 30 to 120 m apart. Four of these wells are downgradient of the Creosote Dip Tank Area and between this source and Allen Harbor.

The Workplan did not explain how the 2 proposed seep samples were identified for sampling. To characterize the impact of contaminated seeps on a nearshore area, all major seeps should be identified and sampled during a precipitation event, when they are most likely to be visibly discharging. Given the direction of groundwater flow beneath source areas, only about 150 m of beach environment would be vulnerable to seeps contaminated by site related contamination.

No sediment sampling has been conducted as part of site investigations. Nearshore sediments should be sampled in order to: 1) determine the extent of PAH contamination directly in estuarine habitats of concern, 2) determine the extent of contaminant migration from the source areas, 3) determine if past discharges have contaminated the area, and 4) determine the potential for impacts to resident biota. Sediment investigations should also be extensive enough to distinguish between site and non site-related contamination. According to Figure 5, a marina type structure is present in the nearshore, downgradient of the site. These objectives indicate that at least 6 downgradient and 2 reference stations should be sampled in the nearshore and analyzed for the TCL/TAL scan. Sediment investigations should be added as a measurement endpoint to determine the ecological health of marine fish and plankton communities. For the ecological screening, concentrations should be compared to ERL/ERM guidelines or other ecological benchmarks.

We are reluctant to recommend benthic community studies in this area of Allen Harbor because of the large marina-type structure present in the nearshore. According to Figure 5, the structure is about 30 m from the beach downgradient of source areas. If this is a functional marina, it is likely that sedimentation from wave shading, scouring from prop wash, and perhaps the intermittent discharge of contaminants would alter the structure of the benthic community. These alterations would not likely be distinguishable from those caused by PAH-contamination originating from the site.

Please let me know if you have any questions.

Sincerely,

Kenneth Finkelstein, Ph.D.

cc: Cornell Rosiu (EPA)