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LETTER DISCUSSING WHAT STEPS NEED TO BE TAKEN TO FACILITATE THE STATE OF  
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION TO APPROVE  
NON-ENHANCED BIOREMEDIATION AT CORRECTIVE ACTION SITE NAVY EXCHANGE  
SERVICE STATION MILLINGTON SUPPACT TN  
11/19/1993  
U S DEPARTMENT OF THE INTERIOR



# United States Department of the Interior



## GEOLOGICAL SURVEY

Water Resources Division  
Stephenson Center, Suite 129  
720 Gracern Road  
Columbia, SC 29210-7651  
November 19, 1993

Mr. John Karlyk  
Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Dr., P.O. Box 10068  
Charleston, S.C., 29411-0068

Dear Mr. Karlyk:

Having completed the Corrective Action Plan (CAP) for the Naval Exchange Service Station, the next step is to procure Tennessee Department of Environment and Conservation (TDEC) approval for using non-enhanced bioremediation as the Corrective Action at this and other sites. We have several factors in our favor, including:

- (1) Extensive testing showing that other cleanup methods (vacuum extraction) won't work.
- (2) Extensive microbiological data showing that hydrocarbons are being degraded at the site.
- (3) Extensive monitoring data showing that the contaminant concentrations are declining with time, that the plume is not migrating, and that contaminants are not reaching any point of contact with humans.

Given the information at hand, we can make a strong case that more invasive corrective actions (soil excavation, removal, and disposal, for example) will result in substantially more environmental exposure than our chosen corrective action. In addition to being the most feasible and most cost-effective corrective action, it is the most environmentally sound as well.

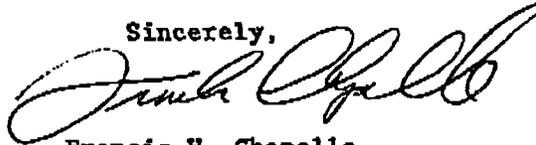
Our chief obstacle will be institutional bias against anything that resembles the "no action" alternative. I believe the best way to address this is to aggressively point out that non-enhanced bioremediation is not no action, that in fact the contamination is being actively remediated, and that we have the data to prove it. Furthermore, this data justifies selection on non-enhanced bioremediation as the most appropriate corrective action and puts the onus on TDEC to accept it.

In order to facilitate TDEC approval, I suggest that SouthDiv draft a letter to TDEC stating our case, contact Glenn Birdwell by phone to informally appraise him of our position, and offer to meet with TDEC officials to explain the technical rationale behind our selection. I am perfectly

willing to give a technical seminar for TDEC personnel to make the case for applying non-enhanced bioremediation to certain instances of environmental contamination.

I have enclosed as suggested draft of the letter to TDEC. Feel free to modify the draft as you see fit. I'll plan on calling Glenn Birdwell in the next couple of days to tell him about the CAP, explain why that's the best way to go, and to volunteer to give a technical seminar at DNR.

Sincerely,

A handwritten signature in cursive script, appearing to read "Francis H. Chapelle".

Francis H. Chapelle  
Hydrologist

cc Mr. Herb Fraser

Mr. Glenn Birdwell  
etc.

Suggested  
Draft  


Dear Mr. Birdwell:

Enclosed is a copy of the Corrective Action Plan (CAP) for the Naval Exchange Service Station, Naval Air Station Memphis, Millington, Tennessee, that was prepared by the U.S. Geological Survey. The CAP selects non-enhanced bioremediation as the most appropriate corrective action, a selection that is based on extensive evaluation of alternative remedial strategies.

I would like to draw your attention to the technical basis for this selection. It has long been known that petroleum hydrocarbons are subject to natural microbiological degradation in shallow ground-water systems. What has not been known, however, is how to identify those instances where where natural degradation is the most effective and environmentally sound alternative for site cleanup. This CAP includes a framework (Appendix A) recently developed by the U.S. Geological Survey that addresses this problem. Simply stated, this framework quantitatively compares rates of microbial hydrocarbon degradation with rates of ground-water flow. If, as is the case at the Naval Exchange site, rates of degradation are high relative to rates of ground-water flow, then ground water contamination will be reduced below clean-up levels at the edges of the plume, effectively shielding nearby points of contact from contaminants. Furthermore, as the monitoring data at this site show, levels of contamination in the plume itself are reduced over time.

The Naval Exchange Service Station site is unique in that it has long-term monitoring data showing the lack of contaminant migration and the reduction of contaminant levels in the plume itself. In addition, this site has undergone extensive microbiological characterization, including estimation of contaminant degradation rates. Because of this extensive characterization, this site represents an ideal example of the circumstances under which non-enhanced bioremediation can be selected as the corrective action with a reasonable degree of confidence.

We anticipate that this general subject of non-enhanced bioremediation, as well as the Naval Exchange site, will be of interest to you and your colleagues. In addition, we anticipate you may have questions regarding the CAP and the technical procedures upon which it is based. We suggest that a meeting be convened in the near future where these general issues, as well as the CAP itself, can be discussed. Dr. Frank Chapelle of the U.S. Geological Survey, who has developed the framework for evaluating non-enhanced bioremediation, has agreed to give a technical seminar explaining the procedures used at the Naval Exchange site. We, in return, are interested in the views of yourself and others with regulatory responsibilities in regard non-enhanced bioremediation.

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I have talked to Frank Chapelle about using his letter in its entirety under Sonja Div letter head and forwarding it & reports to TN Regulators. He approved.

11/19/93

JK.

We view this CAP as one of few instances where the case for non-enhanced bioremediation has been adequately documented. As such, we feel it can lead to a useful discussion of where non-enhanced bioremediation is applicable as a Corrective Action, and where it is not.

Thank you for your consideration.

Sincerely,

John Karlyk