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LETTER TRANSMITTING CORRECTIVE ACTION PLAN FOR NAVY EXCHANGE SERVICE
STATION FACILITY I. D. # 0-791718 MILLINGTON SUPPACT TN
11/24/1993
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Mr. Glenn Birdwell
State of Tennessee
Department of Environment and Conservation
Memphis Environmental Field Office
Perimeter Park, Suite E-645
2500 Mt. Moriah Road
Memphis, TN 38115-1511

Subj: CORRECTIVE ACTION PLAN, NAVAL EXCHANGE SERVICE STATION,
FACILITY I.D. NO 0-791718

Dear Mr. Birdwell:

Enclosed is the Corrective Action Plan for Naval Exchange Service Station, Facility I.D. # 0-791718, Naval Station Memphis, Millington, TN. This report was prepared by U.S. Geological Survey in accordance with the Tennessee Corrective Action Plan (CAP) guidelines dated January 1992. The CAP selected nonenhanced bioremediation as the most appropriate corrective action. This selection 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 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 shows, 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.

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Dr. Frank Chapelle of the U.S. Geological Survey and I 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. Dr. Frank Chapelle suggested that a meeting be convened in the near future where these general issues, as well as the CAP itself, can be discussed. Dr. Chapelle 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 your views and the views of others with regulatory responsibilities in regard to non-enhanced bioremediation.

Dr. Chapelle views this CAP as one of few instances where the case for non-enhanced bioremediation has been adequately documented. As such, he feels it can lead to a useful discussion of where non-enhanced bioremediation is applicable as a corrective action, and where it is not.

Please note that the CAP was prepared by a Federal agency, the U.S. Geological Survey and the wording of the signature page reflects the policy of that agency. Such wording is designed to convey that the report has been approved by the Director of the U.S. Geological Survey and that the undersigned affirms the accuracy of the report. Furthermore, this wording is designed to be acceptable in all 50 states when the U.S. Geological Survey prepares engineering documents for other Federal Agencies.

Please call me at (803) 743-0624 if you have any questions concerning this matter.
Thank you for your consideration.

Sincerely,

JOHN KARLYK, P.E.
Environmental Engineer
Petroleum Branch

Copy to: (w/encl)
NAS Memphis (Attn: Ms. Tonya Barker, PWD)

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