California Military
Environmental Coordination
Committee

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MOFFETT FIELD
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September 12, 1995

Ms. Sherri Wasserman Goodman
Deputy Under Secretary of Defense (Environmental Security)
Office of the Under Secretary of Defense
Washington, D.C. 20301-3000

Dear Ms. Goodman:

On behalf of the California Military Environmental Coordination Committee (CMECC), we would like to describe for you some of our progress toward reducing characterization and remediation costs while maintaining data quality needed for effective environmental cleanup. Thank you for your comments on our December 1994 report, "Options for Cost Reductions in Environmental Assessment," and for your support of our plans to implement the most beneficial initiatives. As part of our effort to decrease costs and improve quality assurance for analytical services in Department of Defense cleanup efforts, we have appointed a Process Action Team (PAT) to focus on data quality and laboratory costs. The PAT is pursuing the cost reduction options that you support, and CMECC estimates that these initiatives may result in up to 30 percent reduction in overall cleanup program costs.

After considering the options presented in our December 1994 report, CMECC has concluded that the most immediate and significant benefits may be achieved by developing a "consensus standard protocol" for the use of field measurement technologies. By developing standards in the CMECC forum, with input from both the Military Departments and the regulatory agencies, this effort will essentially standardize data requirements throughout DoD (initiative number 3 of the above-cited report). At the same time, this initiative will address two other options from the report that you support: (1) improving the definition of sampling and analysis objectives in environmental restoration, and (2) facilitating the use of field test methods over extractive sampling methods. The PAT has identified available data and begun to define the content and structure of the consensus protocol. Their progress will be presented at the CMECC meeting September 12-14, 1995, in San Diego.

Field measurement technologies have been demonstrated to generate substantial cost savings in site characterization and remediation activities. Several examples of such cost reductions are attached. However, the lack of a selection and application standard to assure that reliable data of known quality is collected by these techniques has been a major impediment to their use. The development of a consensus standard protocol will generate cost savings by:

- Reducing the number of field samples taken for off-site laboratory analysis – resulting in up to 50 percent reduction of total analytical costs
- Reducing site investigation costs, including well installation, sample handling, and validation – resulting in 30-40 percent reduction of total project costs
- Shortening characterization phase by up to 50 percent, resulting in cost savings from shorter mobilization time and fewer site visits

CMECC's unique structure, which brings together technical experts from the Military Departments, the regulatory agencies, and industry, gives us access to information on field technologies being used virtually worldwide. It also allows CMECC to tap into existing resources, rather than duplicating what

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has already been accomplished. For example, at its June 1 meeting, the PAT identified numerous activities already undertaken by services and agencies that are directly relevant to the cost reduction initiatives identified in the 1994 report. These activities include the National Environmental Laboratory Accreditation Conference, which is developing uniform standards for the performance and operations of all environmental laboratories across state and federal agencies and services. At the same time, the Tri-Service Environmental Chemistry Quality Assurance Workgroup is developing uniform performance standards for DoD laboratories. The PAT is tracking these efforts and will build upon them wherever possible.

The recent $300-million rescission from the Fiscal Year 1995 (FY95) Defense Environmental Restoration Account (DERA) and the $200-million reduction in the FY96 DERA underscore the importance of cost-effective cleanup efforts. Site characterization is a critical step in any remediation effort, but no one wants to spend scarce resources on inefficient sampling and analysis. CMECC anticipates that the consensus field measurement protocol will improve cost-effectiveness of cleanup efforts throughout California and, potentially, nationwide. Upon completion of the field measurement protocol, the PAT will identify a California base to demonstrate laboratory cost savings available through the use of new and innovative site characterization technologies.

We will keep you updated on the development of the consensus standard protocol. If you have any questions relating to the technical issues in this letter, please call Alan Hurt, chairman of the Data Quality/Cost Reduction PAT, at (619) 532-3964. In addition, Mr. Hurt has scheduled a meeting with Mr. Gary Vest in September to discuss CMECC and Navy initiatives, and any of the issues in this letter could also be discussed at that time.

Sincerely,

David Wang
Chief Program Officer
Base Closure and Conversion Program
California Department of Toxic Substances Control

John Kemmerer
Chief, Base Closure Program
U.S. EPA, Region 9

Jerry Katz
West Coast NAVFAC
Environmental Interagency Executive
U.S. Department of Navy

Attachment

Site Characterization Cost Reduction Using Field Measurement Technologies
Three Case Studies

Immunoassay

Immunoassay field screening technology can provide semiquantitative analytical results on a rapid turnaround basis, at a substantial cost savings over conventional analytical techniques. Commercially available immonassay field test kits can measure organic compounds in water and soil. Each immunoassay test kit includes an antigen specifically developed to bind with and allow measurement of a specific substrate, such as pesticides, polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), and fuels. The kits allows for data generation at a cost of approximately $15 to $120 per analysis, which can be completed in as little as 30 minutes. Conventional laboratory methods for data generation cost approximately $110 to $400 per analysis, with a 1 to 4 week delay in data delivery. Approved methods for immunoassay screening analysis are published in the EPA methods compendium, "Test Methods for Evaluating Solid Waste, SW-846," updates II (July 25, 1995) and III (draft).

Immunoassay test kits were used at Naval Air Facility Adak in the Aleutian Islands to identify soils containing PCBs at concentrations exceeding 10 parts per million (ppm) for immediate removal. This approach was the optimal choice due to the absence of available fixed laboratories in this remote location. Excavation equipment and test kits – backed by limited confirmation analysis – were used side-by-side to increase the efficiency of the removal operation, which resulted in the excavation of 1,000 cubic yards of soil. The use of the test kits allowed for completion of the project in less than half the estimated time required (40 days rather than 90) at an estimated cost savings of approximately 49 percent. (EnSys Environmental Products, Inc. Case Study.)

X-Ray Fluorescence Spectrometry

X-ray fluorescence spectrometry (XRF) also can provide high quality screening data in a timely and cost-effective manner. XRF can be used to measure concentrations of certain metals, particularly heavier elements, in soil and water. The use of XRF allows for data generation at a cost of approximately $2 to $50 per analysis; the technique can complete an analysis in 20 minutes or less. Conventional measurement techniques for data generation costs approximately $25 to $200 per analysis, with a 1 to 4 week delay in data delivery.

A field portable XRF was used at the California Gulch Superfund Site in Leadville, Colorado to characterize lead in soil. The relatively low analytical cost allowed for rapid screening of samples from a large number of collection points and, therefore, minimized the error associated with estimating values at unsampled points. As a result, a more statistically representative depiction of contaminant distribution was possible. A comparison of analytical data generated by a fixed laboratory for the site demonstrated that the XRF data were of adequate quality for site characterization purposes. (An X-Ray Fluorescence Survey of Lead Contaminated Residential Soils in Leadville, Colorado, A Case Study, EPA/600/R-93/073.)

Site Characterization and Analysis Penetrometer System (SCAPS)

SCAPS provides semiquantitative measurement of PAH – a component of petroleum products – using a sensor mounted on a cone penetrometer is advanced beneath the ground surface. It produces a set of data in real time without taking core samples or generating cuttings. Conventional laboratory analysis

of core samples would require at least 3 weeks to provide similar results. The immediate quantitative data on PAH concentrations expedites project schedules significantly. SCAPS can decrease site characterization costs by: (1) significantly reducing the number of field samples sent to off-site laboratories for analysis, (2) providing on-site and real-time analysis, (3) requiring only minimal "idle time" of field crew and equipment, (4) totally eliminating sample handling such as packaging and shipping, and (5) enabling early recognition of complicating factors.

A comparison of site characterization performance and costs for three underground storage tanks was performed at NCBC Port Hueneme, MCB Camp Pendleton, and MCLB Barstow. Site characterization was performed using SCAPS and concurrently using conventional soil sampling techniques. The results indicate that use of SCAPS would result in average savings of 40 percent of the total characterization costs.