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February 12, 1992



I

Col. David E. Benson
Commander
27th CSG/CC
Cannon Air Force Base, NM 88103-3251

RE: Cannon Air Force Base Assessment of Contaminant Location and Areal Extent in Landfill #5 - NM7572124454

Dear Col. Benson:

In response to the informal meeting between Jim Richards and Doug Huff of Cannon Air Force Base (CAFB), this letter sets forth an approach to assessing the extent, if any, of subsurface solvent contamination.

Phase I

The following discussion focuses on characterization of contamination in the source and the unsaturated zone so that the contaminants can be tracked from the source outward to its maximum extent. CAFB may choose to characterize the subsurface respecting any volatile contamination using a "Geoprobe", gas vacuum monitoring/extraction wells, or any other acceptable approach.

The general requirements for whichever method is chosen are that CAFB be specific in sampling grid specifications, (random sampling will not necessarily be adequate), the methodology should be clearly outlined in a workplan submitted to New Mexico Environment Department (NMED), and sampling should be conducted within the landfill cells themselves.

Soil Vapor Survey

The first approach is that of obtaining soil vapor samples by utilizing a device such as the "Geoprobe." If CAFB can adequately determine the locations of the landfill cells, then the soil vapor survey may be conducted within the cells themselves.

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Soil vapor sampling should be conducted every 50 feet. CAFB may choose to divide this task into two different years, performing one half of the work the first year and the remaining work during the second year. NMED estimates that as many as 400 samples, evenly distributed within the cells should be taken, to determine the presence and location of volatile organic contamination, if any.

A soil vapor survey, with on-site evaluation employing a gas chromatograph/mass spectrometer (GC-MS) should be used to locate any volatile organic contamination (VOC) plumes in the source area and to form the basis for optimization of soil sampling locations. The central objectives here are to: 1) Determine the source and horizontal extent of any possible VOC's to the bottom of the landfill, and 2) Determine the areas of highest concentrations of VOCs (hot spots). These would then be used as locations for the boreholes for soil sampling.

Once "hot spots" have been identified, a more detailed investigation will be necessary using soil coring or sampling methods.

Gas Vacuum Monitoring/Extraction Wells

If for any reason the soil vapor survey doesn't work, it may be necessary to install a passive system. This will require augering to a depth of 25 feet or to the bottom of the landfill whichever is deeper. Split spoon soil samples must be collected every 5 feet and analyzed by laboratory analysis methods. After the total boring depth has been reached, four inch PVC casing should be installed using threaded joints, screened at the bottom. The annulus should be backfill with pea gravel and a 2 foot bentonite seal placed 5 feet above the screen.

Determining what may be an acceptable grid spacing is based on an assumed permeability of a clay loam with an assumed moisture content. Based on a depth of 25 feet and a vacuum of 160 inches of water, average soil pore vapor velocity should be 37 ft/day. If the wells were pumped and sampled for 4 days, a radius of investigation should be approximately 150 feet. If this is the case approximately 202 vacuum monitoring wells should be installed. The advantage to this is that after they are installed, they can readily be used for remediation, if necessary. After installation of this grid, CAFB should perform pneumatic permeability tests in each vapor monitoring well to assess the area of investigation, the necessary pump capacity for that area of investigation, and to determine if additional vapor monitoring wells will be necessary to characterize the landfill.

The vapor monitoring/extraction well locations should be evenly spaced, within the landfill cells. The sampling points should be

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equidistant both from each other and from the edges of the landfill.

Vapor monitoring well installation, pneumatic permeability test calculation methods, equipment specifications, and data collection procedures should be included in a workplan, approved by NMED, and the workplan followed during site characterization.

Data analysis should involve an analytical chemist for the GC-MS interpretation and a hydrogeologist with experience in performing soil gas surveys.

Phase II

If volatile organic contaminants are detected in Phase I above, then soil borings should be conducted at location suspected to be zones of contamination. Successive boring should be advanced until 20 feet of uncontaminated soil are verified or groundwater is encountered. These core samples would be logged appropriately by a qualified hydrogeologist or geologist. The core samples should be laboratory tested for Inorganics (various methods), VOCs (EPA method 8240), Semivolatile Organic Compounds (EPA method 8270) and Organic chlorine Pesticides/Polychlorinated Biphenyls (EPA method 8080). All samples should be obtained and analyzed following a reviewed and approved quality assurance/quality control procedure.

Additionally, regardless of identifying any VOC contamination in the landfill, a series of random soil borings should be conducted to verify these findings.

NMED needs to know what CAFB's budget cycle is in order to propose a timeline for the completion of this characterization. The schedule below is proposed. If CAFB has a conflict with this please submit an alternative.

TASK	START	END
Phase I	April 15, 1992	July 15, 1993
Phase II (if necessary)	July 16, 1993	Oct. 15, 1993

Under the Hazardous and Solid Waste Act, CAFB is ultimately responsible for characterization and remediation of continual releases from solid waste management units. The above characterization of Landfill #5 may be acceptable to the Hazardous and Radioactive Materials Bureau (HRMB). HRMB is open to any feasible alternative proposed by CAFB and in no way proposes this

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as the only method for characterization.

Thank you for your prompt attention to this matter. If you have any questions, please telephone Lee Winn at (505) 827-4300.

Sincerely,

Benito J. Garcia
Bureau Chief
Hazardous and Radioactive Materials Bureau

BJG/lw

cc: Jim Richards, CAFB
Herb Grover
Dave Morgan
Bruce Swanton
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William K. Honker, EPA Region 6

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