

**Comments on US Department of Energy's  
"Draft Former Western Dog Pens Backfill Risk Assessment for the  
Laboratory for Energy-Related Health Research,  
University of California at Davis, California,"**

Prepared by Weiss Associates, May 26, 2006

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There are several areas that need attention in the finalization of the US Department of Energy's "Draft Former Western Dog Pens Backfill Risk Assessment" report. These are discussed below.

**Characterization of the Woodland Area Fill Soil Source**

There is need to provide information on the former agricultural area near Woodland where the Woodland soil is to be taken from. For example, what is the current land use of this area, and where is it located? A report of this type should provide sufficient information so that someone else could go to the location of the soil source now or at some time in the future and, using the same methodology, take a set of samples similar to those presented in this report. Justification for this approach is that, at some time in the future, questions may be asked about some aspect of the fill soil, such as other unmeasured contaminants present in the soil or activities in the area that may, at some time in the future, need further investigation/review (for example, whether there has been a spill of some kind in that region). In these cases it would be desirable to have comprehensive information on the source of the fill soil.

Also, information on the approach used to sample this soil to adequately characterize its current contaminants should be present in the report. Was the soil taken from the surface or below the surface of the area? What areal and depth of fill soil sampling locations were used? How was the adequacy of these sampling locations evaluated? As far as I can find, the current report provides no information on the characteristics of the area from which the fill soil is to be taken or on the fill soil sampling methods. The report should be revised to provide this information.

**Adequacy of Analytical Methods Used**

Another area of concern is the issue of the adequacy of the analytical method detection limits relative to concentrations of chemicals in stormwater runoff from the LEHR site that can lead to increased bioaccumulation of chemicals in Putah Creek fish which are used as human food and serve as a food source for some wildlife. Of particular concern are the organochlorine "legacy" pesticides such as DDT, dieldrin, toxaphene, etc. As DSCSOC has been pointing out since the mid-1990s when it first became involved in the LEHR site investigation/remediation, concentrations of these pesticides below analytical method detection methods for water and soil samples can bioaccumulate to excessive concentrations in aquatic systems like Putah Creek. One way to determine if there is a potential problem of this type is to examine Putah Creek fish for excessive concentrations in edible tissue. If the fish tissue concentrations are less than critical concentrations then it is evident that, independent of the concentrations in stormwater runoff from LEHR, there is no water quality bioaccumulation problem in Putah Creek due to

these chemicals. However, as of yet, UCD/DOE and the US EPA have failed to conduct reliable studies on the concentrations of organochlorine legacy pesticides in Putah Creek fish. Without this information it is not possible to rule out that LEHR stormwater runoff is contributing to excessive bioaccumulation of hazardous chemicals in Putah Creek fish.

The current draft report focuses on direct impacts on organisms in contact with the fill soil. The areas of fill will in the future contribute to erosion from the area to a greater extent than is occurring now. This means that there will be a new or increased source of chemicals (the fill areas) for stormwater runoff from LEHR. Bioaccumulation through the aquatic food web to significant levels to humans and wildlife can occur at lower concentrations in water and aquatic sediments than can occur to cause impacts based on direct organism contact with the soils. This issue needs to be discussed in a credible report on the potential impacts of the fill soil.

Table 2, the listing for Toxaphene, which has been an important agricultural pesticide in the Central Valley that is bioaccumulating in fish to excessive levels in some waterbodies, lists the range of detection limits from 69.4 to 7,970  $\mu\text{g}/\text{kg}$ . Because of this excessively large range, additional information needs to be provided as to what the detection limits were for the samples analyzed. Were most of the detection limits in the thousands of  $\mu\text{g}/\text{kg}$ ? If so, the analytical detection limits used may not have been adequate.

***Mercury Impact Issues.*** Mercury in LEHR stormwater runoff has been found to be at sufficient concentrations to add to the excessive bioaccumulation of mercury in Putah Creek fish. This situation must be discussed in the DOE report as a situation where LEHR mercury in the fill soils is apparently not leading to problems to organisms in contact with the soil on the LEHR site; however, the mercury in stormwater runoff from the fill areas could be contributing to excessive bioaccumulation of mercury in Putah Creek fish. This issue should be presented and discussed in this report.

Page 4-1, second paragraph states that, "... *the modeled travel time for mercury was more than 5,000 years.*" A credible report on this issue that contains this statement must also discuss the fact that the modeling approach is not necessarily reliable, since it assumes  $K_d$  coefficients for laboratory-based systems, which may not be applicable to LEHR site situations, and since the vadose modeling that is used is based on an average annual moisture content of the soil column, rather than a wetted front and preferential pathway transport approach, which is more likely occurring at LEHR.

***Other Soil Characterization Issues.*** Was total organic carbon (TOC) content of the soils evaluated? If so, what were the values? If TOC has not been determined, it should be. Also, some of the physical characteristics of the soil should be included, such as particle size range, dominant clay type, etc. These physical parameters are important in determining the ability to develop a compacted soil cover for the fill area.