Battelle
Pacific Northwest Laboratories

Project Number

Internal Distribution

PE Bramson
WD McCormack
KR Price
JT Rieger
MJ Sula
FILE
LB

Date April 29, 1983

To PA Eddy

From LS Prater JTR for LSP

Subject Plume Maps for the Annual Report

W. D. McCormack and M. J. Sula have made two suggestions concerning the contaminant plume maps included in our annual report. I think that their suggestions are good. Please evaluate them for their possible merit. Perhaps we can have a meeting with other interested individuals in our section to discuss these and any other alternatives.The two suggestions provided by W.D. McCormack and M. J. Sula are outlined below.

The first suggestion involves changing the isopleths used on the tritium map to better indicate the radiological impact of the plume. This change is necessary because of the program's changing emphasis. In the past, the concentrations of contaminants in the ground water were very high and contamination was confined to the site. At that time, the emphasis was on comparing the concentrations of the radionuclides to DOE's concentration guides. Now that the concentrations have dropped and the plume has reached the river, the emphasis is more in terms of comparing the concentrations to background levels. Currently, the lowest tritium concentration shown on the map is 30 pCi/mℓ; this is approximately 150 times greater than the background concentration of tritium in the river (∿.2 pCi/mℓ for 1982). The lowest concentration mapped should probably be closer to the background concentration, perhaps about 2 pCi/mℓ. Another reason to change the isopleths would be to reflect the drinking water standard for tritium of 20 pCi/mℓ. The recommended isopleths are:

<2 pCi/mℓ

2-20 pCi/mℓ

21-200 pCi/mℓ

>200 pCi/mℓ

The second suggestion involves smoothing out the year-to-year variations in the plumes that occur because of analytical outliers. Currently, we use one year's data (sometimes only one measurement per well) to draw the plume maps. A better approach might be to do a trend analysis of past years' data and use the predicted value for the current year to draw the maps. Another idea would be to use some type of weighted average of the past three to five years' data. The current year's data could still be listed in an appendix at the back of the report.

LSP:dr