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September 7, 1988
1801-03

Mr. Thomas C. Greengard
Rockwell International
Rocky Flats Plant
Building 750
P.O. Box 464
Golden, Colorado 80402-0464

Subject: Need for Drilling the 903 Pad

Dear Mr. Greengard:

In response to your recent question, this letter presents my recommendations regarding the need for drilling through the 903 Pad.

Data available at this time indicate the following.

- o Drums containing uranium and plutonium contaminated machine cutting oil and other fluids leaked into the subsurface. Generally the drums contained lathe coolant consisting of mineral oil(?) and carbon tetrachloride, although some of the drums contained hydraulic oil, vacuum pump oil, TCE, PCE, silicone oil and acetone. Ethanolamine was added to the drums after 1959 to reduce corrosion (apparently a significant number of the drums corroded during the first year of use of the area).
- o It has been estimated that 5,000 gallons of liquid containing 86 grams of plutonium were released (no estimate of uranium); however, based on soil retention calculations, it appears that a greater volume must have been released.
- o Soils in areas surrounding the pad appear to contain elevated plutonium concentrations (especially surficial samples) but do not appear to contain elevated organic concentrations.
- o Both alluvial and bedrock ground water appear to contain volatile organic compounds.

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Given these conditions, it is my opinion that the pad and underlying soils must be drilled and sampled in order to evaluate the following.

1. Is there organic soil contamination beneath the pad?

Will attrition scrubbing remove organics so that the coarser (non-plutonium-bearing) soil fraction can be returned to the site of soil removal, or will the coarse fraction require disposal offsite as a hazardous waste?

If the scrubbing removes the volatiles, how will the scrubbing fluid be treated and disposed?

2. What is the depth of penetration of radionuclides into the subsurface?

The penetration may be so shallow that it may be advantageous to dispose of all contaminated material at a mixed waste site.

The penetration may be so deep (more likely) that disposal of the concentrate after attrition scrubbing may not be cost-effective compared to a total encapsulation technology.

Both of these questions (and the need to drill and sample the pad) could be mooted by showing that the storage area was much larger than the pad itself and that we have already drilled the storage area and found nothing.

I trust that these discussions meet your needs. Please call if you have questions or would like to discuss any of the above.

Sincerely,



Benjamin P. Doty, P.E.