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MEMORANDUM

TO: Darlene Goering
Permits Management Program

FROM: Kirby Olson, Environmental Scientist and Specialist O, *KO*
Permits Management Program

**SUBJECT: RISK ASSESSMENTS IN RESPONSE TO RSI FOR PRS 00-028(a, b)
TASK LANL-01-025**

DATE: March 5, 2002

LANL submitted a data review and combined human health and ecological risk assessment in response to an RSI from NMED. The "a" PRS is the county golf course; the "b" PRS is the North Mesa athletic fields.

Human Health Risk

The Contaminant of Potential Concern (COPC) concentrations were compared to residential SALs at a 10^{-6} level of risk and a Hazard Quotient (HQ) of 1.0. Chromium was screened apparently screened as Chromium (III) with a level of 210 mg/kg. The concentration corresponding to 10^{-6} level of risk for chromium (VI) is 30. However, the NMED screening level for chromium (VI) is 230 mg/kg, so this COPC can still be screened out using our criteria. Other screening levels used for carcinogens are fine. Noncarcinogen benchmark for mercury used the mercury and compounds (assumed no methyl mercury), but the max detection is about 2% of the methyl mercury screening level, so there would be no excess risk even if all the mercury present existed in the methylated form. Other screening levels used for noncarcinogens match the NMED guidelines. For the one radionuclide COPC, Pu-239, I compared the detections to the EPA SSL based on direct ingestion of soil at a 10^{-6} level of risk. The EPA SSL is 2.88 pCi/g; the maximum concentration detected at the site is 1% of this EPA screening level. Based on the results of the screening there is no excess human health risk at this site for residential use.



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Ecological Risk

Maximum concentrations of Contaminants of Potential Ecological Concern (COPECs) were compared to LANL ESLs for their suite of terrestrial receptors. All organic compounds and radionuclides were eliminated by comparison to the final (lowest) ESL for each compound. Individual HQs for each receptor are presented for antimony, cobalt, mercury, and silver. Antimony exposure point concentration was based on the detection limit exceeding the ESL; antimony was not detected at the site. Mercury and silver generated HQs less than one for all terrestrial receptors except plants. The only COPEC that clearly fails the screening assessment is cobalt. The maximum detected value of cobalt generates HQs significantly above one for a number of the terrestrial receptors. The robin (all 3 diets) showed the most elevated HQs; but HQs are also above one for the rodents, cottontail, and the kestrel (which serves as the surrogate for the spotted owl at this site). Generally HQs of this magnitude would warrant further investigation of the site. However, the exposure point concentration for cobalt needs to be viewed in light of the following:

- Cobalt was detected in 32 of 37 samples, but only 2 samples exceed background
- The 2 samples are a 9.2 mg/kg on the golf course and a 11.6 mg/kg in the center of the hardball court
- All the ESLs (except the red fox) are well below the background level for cobalt, therefore any detections above background would show high excess risk using screening values
- The 2 elevated sample areas constitute only a small portion of the PRSs and of the home ranges of the receptors at risk. This is particularly true for the two bird species, one of which is the surrogate for the spotted owl.

Based on qualitative considerations of these factors, the two high sample results for cobalt are unlikely to translate into actual excess risk for receptors at the site. This site can be screened out for risk to ecological receptors.