

9. The Presentation of Spurious Groundwater Contaminant Data in the NAS Report.

The NAS committee was aware that possibly all of the R-wells (over 80 discrete screened intervals in more than a total of 40 wells) did not produce reliable and representative water samples and that the LANL scientists did not have the capability to identify if any of the discrete screened intervals produce valid water quality data. On page 5 of the NAS Report the committee recognized that mistakes in the construction of monitoring wells might hide knowledge of contamination:

“Implementing a monitoring plan involves the practicalities of constructing groundwater wells and analyzing samples from the wells. Any monitoring activity faces a conundrum: If little or no contamination is found, does this mean that there is in fact little or no contamination, or that the monitoring itself is flawed.”

Unfortunately, the prepublication copy of the NAS report contains discussion, and presents data in a Table and on two Color Plates that misrepresent the data from the LANL as representative of ambient groundwater for the purpose of monitoring.

Misrepresentation of Overview of Groundwater Contamination. Table 3.3 presents the frequencies of detections of 13 categories of key contaminants in LANL ground water for the alluvial sediments, the perched zones of saturation, and the regional aquifer. For the different categories of contaminants, the table presents the number of analyses, the number of detections, and the frequency of detections. The data in the table for the regional aquifer and perched zone samples cannot be trusted as being reliable because of the overarching findings of the NAS committee that most or all of the wells installed as an activity of the LANL Hydrogeologic Workplan do not produce reliable and representative water samples. In addition, there are many variables that affect whether a given contaminant or combination of contaminants is detected in a discrete water sample such as the method detection limit of the analytical method, the dilution by long well screen, the new mineralogy formed by drilling additives, the method used for sample collection, etc. There is no value in Table 3.3. This Table should be removed from the Final NAS Report.

A statement on page 38 of the prepublication copy of the NAS report does not show that the NAS committee is keeping in mind the unreliable data from the wells installed in the regional aquifer:

“While it is not surprising that the more mobile contaminants have been detected in the regional groundwater, their concentrations are much attenuated from the concentrations detected in the shallower subsurface.”

Attenuation is expected. Nevertheless, when a contaminant is detected in the unreliable monitoring wells, the actual concentration in the *in situ* formation water in the regional aquifer may be much higher.

Misrepresentation of Plutonium Groundwater Contamination in NAS Report

Plutonium measured in the regional groundwater is described on page 44 as follows:

“Graphical representations of LANL’s sampling data for plutonium and tritium contrast the general tendencies of these contaminants to migrate with groundwater and indicate how they are distributed across the site. Color Plates 5A and 5B compare plutonium measured in the shallow soils versus plutonium in the deep regional groundwater. They show that most plutonium is currently located in the shallow surface soils at the canyon bottoms. LANL has attributed its few sporadic [sic] detections of plutonium in the regional groundwater to “false positives” (Phelps, 2007; also see Chapter 5).”

The caption on Color Plate 5B is for “Plutonium distribution in top of the regional groundwater.” In fact, only a small population of the wells are focused on collecting water samples at the top of the regional aquifer. The sampling locations are for the network of new unreliable characterization wells, the old test wells that have only produced spurious data for plutonium contamination, and the Los Alamos County supply wells that have screens at a great depth in the regional aquifer.

Color Plate 5B does not present reliable knowledge of the distribution of plutonium at the top of the regional zone of saturation and should be removed from the NAS report. A serious misrepresentation on Plate 5B is the use of water samples from the old test wells as being reliable for the knowledge that plutonium contamination has not reached the regional aquifer beneath MDA AB where 23,000 Ci of plutonium are buried in shafts as legacy waste from the Hydronuclear Experiments to test the safety of nuclear weapons. It is a disappointment that the NAS committee has not brought attention to the spurious contaminant data produced from the old test wells. Instead, Plate 5B represents the old test wells as producing representative and reliable water quality data.

Misrepresentation of Tritium Groundwater Contamination in NAS Report

Color Plates 6A and 6B present the level of tritium contamination in alluvial sediments and in the regional aquifer, respectively. Plate 6B is titled “Tritium distribution top of regional aquifer. In fact only a small population of the wells are focused on collecting water samples at the top of the regional aquifer. The sampling locations are for the network of new unreliable characterization wells, the old test wells that have screens hundreds of feet long and the Los Alamos County supply wells that have screens at a great depth in the regional aquifer.

The background level for atmospheric tritium of 50 pCi/L presented on Color Plate 6A is unreasonably high. The actual background level is approximately 15 pCi/L*. Also, on Plate 6B, the background level for tritium at the water table in the regional groundwater of 2 pCi/L* is unreasonably high for atmospheric tritium. In fact, tritium is not present in the regional aquifer from atmospheric background. Any tritium detected in the regional aquifer is due to sources of contamination at the laboratory. Plate 6B does not accurately represent tritium levels at the water table of

the regional aquifer in response to high levels of tritium in surface sources along the wet canyon bottoms or buried in legacy waste dumps. Groundwater monitoring in the regional aquifer is insufficient for accurate knowledge of the tritium contamination. The two plates on tritium contamination should be removed from the NAS Final Report.

*Source: Michael Dale, Hydrologist, NMED DOE Oversight Bureau