



February 5, 2000

RECEIVED

FEB 09 2000

Wendy Dixon, EIS Project Manager  
M/S 010  
US Department of Energy  
Office of Civilian Radioactive Waste Management  
Yucca Mountain Site Characterization Office  
PO Box 30307  
North Las Vegas NV 89036-0307

Dear Ms. Dixon:

These comments are supplemental to the comments we sent to you on January 11, 2000, regarding the Yucca Mountain Project DEIS.

- 1 | The Sierra Club at all levels and in places throughout the nation, has consistently and ardently proclaimed its opposition to the Yucca Mountain Project as a solution to the nation's high-level nuclear waste problem. The omissions and uncertainties that appear throughout this DEIS render it arbitrary and capricious and, therefore, unacceptable.

Specifically, these supplemental comments address additional concerns about site safety at Yucca Mountain, cumulative long term risk and transportation issues, and 5 other concerns about the DEIS and the DEIS process. In the summary, we use the Precautionary Principle to argue that because of the large uncertainties and great potential impact, the Yucca Mountain Project must be stopped and alternative projects must be studied.

### Site Safety

- 2... | 1. The description of the current system of groundwater flow in the Death Valley region is inadequate at this time. (Section 3.1.4)

The groundwater flow is described using a regional flow model that is oversized and data sparse. This regional flow model is presently being redone and adjusted to use new and ongoing data collection.

We inadequately understand the hydraulic relationships between the lower carbonate aquifer and the volcanic units that overly it, and the alluvial units beneath and down gradient of it. We need more than a single well test to define the transmissivity of this regional unit.



...2 There is a sadly inadequate description of the hydraulic character and sorptive capability for radionuclides in the alluvial units in Forty Mile Wash based on actual field data. Apparent hydraulic conductivity measurements are not very reliable on a large scale.

Until the DOE can perform more hydraulic analysis of units in the vicinity of the repository footprint and down gradient based on multiple well draw down tests with a pumping well and a monitor well, the apparent hydraulic conductivity values are inadequate.

3 2. The DEIS declares that "there is no reason to believe that radionuclides from nuclear tests could migrate as far as YM during the active life of the repository". (Section 3.1.4, page 3-58) This statement is a belief and not a fact.

There is a sizeable amount of data from the Nevada Test Site (NTS) testing program and there is more data being collected. However, the Underground Test Area (UGTA) project has not established with credibility and acceptability the length of time in which radionuclide contamination would reach the repository during its active life. DOE's Tritium Transport Modeling (1997) on Pahute Mesa gave a range of arrival times for tritium to reach the Oasis Valley area from the present date to as little as 40 years from now.

Possibly with the collection of more data from the data sparse area between Yucca Mountain and Pahute Mesa, the DOE UGTA program will more confidently establish tritium transport times and pathways beneath Yucca Mountain.

4 3. There have been repeated adjustments of siting and safety requirements, which resulted in relaxing them and thereby weakening them. This was done in order to be able to submit a license application to the Nuclear Regulatory Commission that is capable of being approved. The DEIS argues that high costs to the generators of nuclear waste justifies the relaxations of health and safety requirements. The health of the nation should not be put into jeopardy for the cost of the few, and the Yucca Mountain Project should have adhered to the original intent of the statutes.

5 4. Our original comments expressed concern about geologic stability, citing the earthquake event of October 1999. Now it comes to our attention that there is a theory being investigated by scientists that predicts earthquakes as large as 7.0 or 8.0 on the Richter scale that could be located as near as 20 miles from Yucca Mountain. The siting of Yucca Mountain is being called into question more vigorously every day.

6 5. We would expect that your reply to our hydrologic and geologic concerns will include descriptions of the engineering barriers that have been designed, the most recent of which is a system of water shields to be placed over the storage casks. This presents a fundamental problem in itself. Yucca Mountain, or whatever site selected for long term storage, was supposed to offer a stable geologic barrier to protect people and the environment from high level nuclear waste. Instead, you are designing engineering barriers to provide the required protection. Why can't these engineering barriers be built at the point of origin of the waste? Why does the nuclear waste have to be transported thousands of miles, contaminating handling materials and jeopardizing health and safety all along the transportation routes?

**Cumulative Long Term Risk**

7 6. The DEIS calculates the maximum potential dose from the underground testing inventory to be 0.2 millirem per year at 20 kilometers. (Section 8.3 (page 8-76). We question how this dose was arrived at. How did the Yucca Mountain project get access to the underground testing radiological source term inventory, when the information is classified and not available yet to the UGTA program? Did you take each nuclear test inventory separately or did you group the Pahute Mesa inventory together and take the summary? This calculation is inadequate because it seems to base on mostly speculation.

7. The DEIS states that no radioactive contamination attributable to underground tests has been detected in monitoring wells off the Nevada Test Site. (Section 8.3, page 8-76). Absence of evidence is not evidence of absence. There is no state of the art monitoring system on or off the NTS, because no one has constructed one. This statement should be regarded as more of a belief and subject to change as more data is collected over the next decade.

It is highly likely that underground test contamination is past the NTS boundary, because that is exactly what personnel from the DOE UGTA program said at a Community Advisory Board meeting almost four years ago in June 1996. The phenomenon of prompt injection has probably blown the radionuclides past the NTS boundary, in a manner similar to the way it probably blew Europium 0.8 miles at Benham with a colloidal boost. DOE can not afford to prove or disprove that contamination is past the NTS boundary, but Yucca Mountain could fund a well program to help make this statement more factual.

8 8. A Superfund site should not be placed next to an already existing Superfund site. Section 8.3 (page 8-73) needs to address the impact of siting a federal CERCLA type (Superfund) site (Yucca Mountain) down gradient of an existing Superfund site (the NTS, particularly Pahute Mesa).

The NTS Federal Facility Agreement and Consent Order (FFACO, 1996) was negotiated and signed to be a CERCLA-like cleanup agreement for the NTS. Although the NTS more than qualifies as a CERCLA site, it was deliberately not put on the national priority list (NPL) CERCLA program. This DEIS should do an analysis of this federal action as it pertains to the cumulative impact of the repository program because it too someday will be a CERCLA site. The Yucca Mountain repository is basically a very sophisticated and highly engineered form of underground injection of waste. It too will qualify for the NPL at some time in the future, 1000 years from now, or 10,000 years from now.

DOE modeling certainly shows that the Yucca Mountain repository will contaminate at least one square mile of the subsurface and eventually the groundwater system beneath and down gradient of the repository. What is the cumulative impact of siting one Superfund site down gradient of an existing Superfund site?

9 9. Dose calculations do not account for the additive, multiplicative and synergistic relationships of radiological and other biologically hazardous pollutants, factors and conditions that ultimately will affect recipients.

10 10. In cost-benefit analyses, the DEIS fails to include all the costs to the affected populations and to the environment due to potential failures of control. If control is not maintained, how would people and the environment be affected?

11... 11. There is no assessment of the potential impacts of global warming and other future climate change relating to both air and water pathways of radiation releases into the biosphere.

...11 Are you assuming that there are no significant impacts in these areas, even though the repository is to have at least a 10,000-year life?

12. Arbitrarily limited and unrealistic scenarios, cultural and economic systems and characteristics were used to describe future conditions and situations affecting future populations. Shouldn't a 10,000-year facility, with such long-lived and toxic material, be designed to the worst case scenario?

### Transportation Issues

12 13. How can we have any confidence in the risk analysis, when specific hazards have not been addressed along each transportation route? We were relieved to see that no shipments were planned to cross Hoover Dam, for both safety and security reasons. However, it is equally foolhardy to route high-level nuclear waste shipments through the Eisenhower/Glenwood Tunnels, which would have to occur in the route through Colorado. How many other hazardous places are included along the potential transportation routes? How many other surprises are waiting for us?

13 14. The DEIS fails to integrate Waste Isolation Pilot Plant (WIPP) and Yucca Mountain transportation risk analyses or accident scenarios into one risk model. The high-level waste routes to Yucca Mountain are also being used to carry transuranic waste shipments from various weapons facilities around the U.S. to the WIPP located near Carlsbad Caverns, NM. How can anyone possibly judge the combined and cumulative long term impacts until such an integrated assessment is performed?

### Additional Problems with the DEIS

14 15. Population assumptions and radiation dose limits are based on additional assumptions that lack appropriate conservatism to protect all individuals either today or in the future. Our original comments pointed out weaknesses in the population data for Clark County, Nevada. In general, the assumptions for the population figures and the dose limits are not stringent and they underestimate risk and exposure.

15 16. Our original comments noted that the health risks included only latent cancer deaths. In particular, there needs to be a description and an assessment of low-dose effects for the most sensitive and vulnerable members of a population (for example, for the embryo, fetus, pregnant woman, rapidly growing young child, the aged, those with previously impaired health).

16 17. The DEIS fails to provide for the protection of all components of the biosphere (that is, the protection of the environment for its own sake).

17... 18. There is inadequate consideration of the traditional basis of risk acceptance for all individuals exposed to risk. That is, for any additional dose above naturally-occurring background radiation, the individual recipient shall obtain a benefit greater than or commensurate with the added risk incurred, and shall have the option of refusing the additional dose. Specifically, the people who live in Clark and Nye Counties are being put at increased risk, with all the nuclear waste of the nation being funneled through our neighborhoods. What benefits are accrued to us? Are all the benefits accrued to other citizens of the United States? The risk is ours, and the benefits are theirs? Even if compensatory payments should be made to us and to people living along the transportation routes, how could such payments ever be commensurate with the risk of nuclear contamination? These risks are not something that we can discount lightly.

...17 | If the nuclear waste were isolated at the point of origin, the same people who benefited from the nuclear power would also bear the increased risk of radioactive exposure and nuclear contamination. This is consistent with the traditional basis of risk acceptance.

18 | 19. The DEIS ignores or outright dismisses critical recommendations and comments made by the State of Nevada, local government officials, independent scientists and members of the public throughout the history of the program and the development of this document. Why is that the people who have been selected to bear the risk against our will, have so little voice in the process? Is this the kind of nation that we pride ourselves to be?

### In Summary

19 | The Precautionary Principle must be the over-riding principle within this decision making process. This Precautionary Principle says that where there are threats of serious or irreversible damage, a practice or substance should be treated as though it is unsafe, until it is proven to be safe. The potential damage to people and to the environment here is immense. The threat stretches from the point of origin of the nuclear waste, across the entire continent, along several rail and highway routes. There is no way that anyone could ever prove that any of the practices involved in this plan are safe. Therefore, according to the Precautionary Principle, this group of practices must be considered inherently unsafe and should not be pursued.

There is too much at stake here – millions of people, thousands of tons of high level waste, thousands of miles of highways and rail, millions of acres of land where intricate suites of plants, animals, and people live. Radioactive contamination and its effects are persistent, toxic, and liable to bioaccumulate even when there is little scientific evidence to prove the strength of the causal link between release and effects. In the absence of scientific certainty, the Precautionary Principle implies that actions must be taken that will protect people and the environment from that which must be assumed to be unsafe. Certainly we have here the threat of serious and irreversible damage. It then follows that the DOE must:

1. Halt our relentless drive for approval of the inadequate Yucca Mountain site;
2. Explain to the Congress why we should not proceed.
3. Give serious reconsideration to finding the least dangerous, most equitable methods of retaining control of all radioactive wastes in a manner that will best assure that future populations will have an opportunity equal with our own to be able to continue to maintain control for the duration of its hazardous lifetime.

The DOE must take these actions to protect the nation's people and our natural heritage from the hazards of high level nuclear waste, for our environment, for our families, and for our future.

Sincerely,

*Marcia Forkos*

Marcia Forkos  
Chair., Southern Nevada Group

Wingspread Statement on the Precautionary Statement at <http://www.wajones.org/wajones/wingcons.html>; Also see Protecting Public Health & the Environment: Implementing the Precautionary Principle edited by Carolyn Raffensperger and Joel Tickner, Island Press, 1999.