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High-Level Radioactive Waste Disposal Siting: A Flawed Political Process

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Introduction

The process used in searching for a pemanent high-level radioactive waste repository is probably one of the most important developments for the state of Minnesota. With eight of the 20 second-round sites located in Minnesota, the process for selection of a second-round site should be a major concern of all state residents. The first thing that we all must do is ask questions about the siting process:

- Will the area with the least number of potential environmental problems be chosen?
- Will the site choice be based on political reasons?
- Why is permanent disposal the only option?

To help at least partially answer these questions, I have chosen to examine the siting process and some of its potential problems. I also hope to provide some insight into why this process is flawed and draw on Minnesota's experience with hazardous waste siting. Specific areas to be covered are:

- The siting decision making process
- Problems with the siting process
- Specific problems with sites in Minnesota
- Rejection of the siting process and the response of the Minnesota Legislature

The Siting Decision Making Process

When you look at the order of responsibilities as listed by the U.S. Department of Energy (DOE) (1), they are first going to find, develop, schedule, construct, and operate a high-level waste repository. The second responsibility stated is to perform research and demonstrate the feasibility of a high-level radioactive waste repository. If the order in which these responsibilities are listed is any indication of priorities in the siting process, then I think we have a major problem. We have not even determined if a permanent repository is the best option available or whether it will adequately protect the environment, yet the siting process still goes forward.

We have to ask ourselves whether the nature of a siting process with priorities placed this way does not lend itself to being a very political one. If the sites are determined before the feasibility of disposal is known, other considerations must come into play in the siting process, such as how much political fallout may result from siting the repository in the locations chosen.

One way of examining how this type of process may work is to look at past siting experiences. In 1980, the Minnesota Legislature determined that the state should site a below-ground hazardous waste disposal facility (2). The process was to choose sites with minimum adverse impact on the environment. The siting process went forward with below-ground disposal assuming it to be the only option. In 1986, the Legislature decided to end this siting process and start looking instead for a site for a stabilization and containment facility which would be built above grade (3). What the Legislature had found in those six years was that technology progressed at a rapid rate and that the best technology available can change very quickly.

Problems With the Siting Process

As we have seen from the above discussion, the central theme of the process to site having priority has some flaws. Some of the actions that result are indicative of the flaws. Basic rules to protect the environment are compromised to ensure that the siting process can continue. Also, technology that may be available in the future may be rendered useless.

An example of some basic protection that is foregone is in the groundwater quality rules of the U.S. Environmental Protection Agency (EPA) (4). The final rules relating to groundwater set levels of radiation contamination in water for individual consumption for a period of 1,000 years; even though the waste will remain radioactive for at least 10,000 years. In addition, the groundwater protected is limited to specific groundwater sources that supply drinking water to thousands of people. To make matters worse, if you have groundwater that is classified as protected and some radioactivity already exists, the groundwater can be polluted above the standards. The EPA's rationale for these standards, as stated in the *Federal Register,* is to ensure that protecting groundwater does not become an impediment to the siting process, and that the cost of containing the waste is not excessive. It appears that they do not want anything to interfere with the siting process.

In a bill to set groundwater pollution control standards, which I co-authored, the 1986 Legislature included the federal radiation levels for drinking water (5). The state law, however, which covers all water fit for human consumption, does not allow radiation levels to be exceeded after an arbitrary number of years, and does not allow the water to be contaminated beyond the levels prescribed, even though existing radiation is present. This state legislation could be preempted by the federal regulations. However, until this happens, the

Minnesota Legislature has made a statement establishing groundwater protection as a priority in the siting process.

The process chosen by the DOE also makes below-ground disposal the a priori choice without looking at other options such as long-term, monitored retrievable storage. The advantage of monitored storage facilities is that time would be available to examine disposal options and the waste would be monitored for future problems. Storage would also allow for future employment of technological changes that could help in waste disposal. When we look at the work going on in other countries such as Sweden, Canada, Great Britain, France, and Switzerland, they appear to be on the right track by studying disposal options first, rather than siting before finding the best options (6).

In addition to the physical siting problems, political problems also enter into the siting process. When you look at the crystalline rock areas investigated for the second-round sites, none of these areas were in the western United States even though a considerable amount of crystalline rock exists in the west. Apparently, the DOE used arbitrary considerations from a flawed 1979 draft report to eliminate western crystalline rock formations (7). The best guess as to why these areas in the west were not investigated further is the political problem of siting both repositories in western states. Also, the DOE at the start of this process stated that ideally repositories would be located in various regions of the country to "minimize transportation risks and requirements"(8). Eliminating sites for either political or transportation reasons is to eliminate sites that may be superior locations.

One other problem with the siting process is found in the estimated need for disposal. Between 1983 and 1985, the estimated need for disposal by year 2020 of commercial spent fuel decreased by over 20,000 metric tons (9). The second repository may not be needed by the time the waste must be placed.

Specific Problems With Sites in Minnesota

With the potential threat of radiation contamination to both surface and groundwater, it is hard to understand why Minnesota has eight of the 20 second-round sites. With the high water table in the state and surface water that flows in all directions out of the state, Minnesota would not appear to be a very adequate location. All of the Minnesota sites are near major rivers that would be able to carry the radiation to other parts of the country or to other countries, such as in the case of the Red River, which flows into Canada.

To cite an example of the problems associated with locating a repository in Minnesota, I will use the site east of St. Cloud, which includes parts of Benton, Sherburne, Mille Lacs, and Morrison counties. This site is within six miles of the Mississippi River, and any radiation released could contaminate the most important river in the country from which many communities derive their drinking water. In addition to potential problems with the river, one of the major regional aquifers would be very close to this site. The Mount Simon-Hinkley aquifer subcrops in the glacial drift within 100 feet of the surface in areas near the site. The aquifer provides over 10 percent of the groundwater used in the Twin Cities metropolitan area (10) and, it is the only bedrock aquifer used for drinking water in areas near the site. Studies have shown that this aquifer generally flows toward the Twin Cities area (11). The only barrier after the waste cannister breaks down (estimated by the U.S. DOE to occur between 300 and 1,000 years (12)) will be the granite that surrounds the site. Any cracks or fissures in the granite could allow contaminated groundwater into some of the most significant sources of drinking water in the region. I do not think that we know enough about groundwater movement to say that within 10,000 years the radioactive waste will not contaminate these major water supplies.

Rejection of the Siting Process and the Response of the Minnesota Legislature

Based on the general problems of the U.S. DOE siting process and the specific problems of siting in Minnesota, I think we need to reject the process. The potential for political and environmental problems is too high. The impact this process may have on future generations is too great in potential not to consider further.

The Minnesota Legislature has voiced its objection to the process and established policies to try to ensure that the federal government does not site an area in Minnesota without proof that there will be no complications. In 1984, the Nuclear Waste Disposal and Transportation Act was passed to ensure that safe transportation on our roads was achieved and that the exploration of sites was an open process (13). In 1985, the Legislature passed a resolution in opposition to a site in Minnesota (14), and created the Governor's Nuclear Waste Council (15) to provide oversight of the siting process and make recommendations to the Legislature and Governor. In 1986, the Legislature enacted tough groundwater pollution control standards, as mentioned earlier (16). Another bill, which pased the Minnesota Senate by a vote of 61-0, and did not get a hearing in the House, would have officially rejected Minnesota as a site and placed a moratorium on new nuclear power plants (17).

I can promise you that this is not the last that will be heard from the Minnesota Legislature on the siting process.

References

1. U.S. Department of Energy, Office of Civilian Radioactive Waste Management. October, 1985. *Overview — Nuclear Waste Policy Act.*
2. Laws of Minnesota 1980. Chapter 564, Article III.
3. Laws of Minnesota 1986. Chapter 425, Sections 12-42.
4. U.S. Environmental Protection Agency. September 19, 1985. Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes: Final Rule. *Federal Register.* 50(188): pp. 38085-87.
5. Laws of Minnesota 1986. Chapter 425, Sections 1-11.
6. Minnesota's Governor's Nuclear Waste Council. 1985. *What Are Other Nations Doing?*
7. Minnesota's Governor's Nuclear Waste Council. April 1986. *State of Minnesota Review of the U.S. Department of Energy's National Survey of Crystalline Rocks.* p. 9.
8. U.S. Department of Energy. May, 1982. *Answers to Your Questions About High-Level Nuclear Waste Isolation.* p. 25-26.
9. U.S. Department of Energy, Information Administration. 1985. *Estimate of Commercial Spent Fuel Generation by the Year 2020.*
10. Woodward, Dennis G. *National Water Summary — Groundwater Resources.* U.S. Geological Survey Water-Supply Paper. No. 2275. p. 264.
11. Delin, G. N., and Woodward, Dennis G. 1979-1980. *Hydrogeologic Setting and Potentiometric Surfaces of the*

Regional Aquifers in the Hollandale Embayment, Southeastern Minnesota, U.S. Geological Water-Supply Paper. No. 2219, pp. 46-49.
12. Minnesota Governor's Nuclear Waste Council. 1985. *The Geologic Waste Repository and the Multiple Barrier System.*
13. Laws of Minnesota 1984. Chapter 453
14. Laws of Minnesota 1985. First Special Session. Resolution 1.
15. Laws of Minnesota 1985. First Special Session. Chapter 13, Sections 242-245.
16. Laws of Minnesota 1986. Chapter 425, Sections 1-11.
17. Minnesota State Senate. Senate File 2159.

NEWS & NOTES

General Foods World Prize Established

General Foods Corporation, worldwide processor and marketer of food products, has announced the establishment of the General Foods World Food Prize. The prize will be awarded annually beginning in 1987 to individuals for outstanding achievement in improving the quantity, quality, or availability of food on a significant world level. James L. Ferguson, chairman and chief executive officer of General Foods, said the purpose of the prize is to serve both as a reward and as an example to others that solutions to world food problems are possible.

The prize will carry a cash award of $200,000 (U.S.) and is the largest prize dedicated to achievement in world food. The prize is funded by The General Foods Fund, Inc., a nonprofit foundation supported entirely by General Foods.

Winrock International Institute has been selected as administrator of the prize for its participation in and familiarity with food and agricultural projects throughout the world. Winrock International is headquartered in Morrilton, Arkansas and its president, Robert D. Havener, serves on the council of advisors of the General Foods World Food Prize. The council of advisors, made up of business, government, and academic experts on world food issues, provides advice and counsel and establishes criteria for consideration and selection of laureates.

A selection committee, chaired by Nobel Laureate Dr. Norman E. Borlaug, will review nominations of candidates. With the exception of Dr. Borlaug, who is known for his role in the Green Revolution, all members of the committee will remain anonymous throughout their terms of service.

Projecting the impact of the prize, Ferguson said, "It is our intent that the prize serve as a catalyst to stimulate interest, develop knowledge, and encourage international cooperation in the pursuit of solutions. If it accomplishes these aims, then the General Foods World Food Prize may help hasten the day when a sufficient, healthful diet is not only the right but the common lot of all persons in this world."

New Computer Aids for Forestry

A microcomputer database and low-cost software designed to simplify forest management decisions are being developed by the University of Minnesota. The database and software development is being guided by Dr. Charles R. Blinn, assistant professor and extension specialist in the Department of Forest Resources.

The frequent project analysis and monitoring needed in forest management requires that relevant economic data be systematically compiled, and that it be readily accessible to users. Lack of organization in the storage and retrieval of economic data have often made access to appropriate information difficult. The new database will contain costs and revenues associated with forest management in the Lake States and will be updated as information becomes available.

"The database," said Blinn, "will allow decision makers to obtain current and relevant information for analysis of forestry investment projects in a truly rapid and efficient manner. It should provide a quantum leap in our ability to conduct effective analyses."

New software development will eliminate laborious hand calculations required for day-to-day tasks such as measuring acreage, inventorying timber stands, and determining harvest schedules. Several programs can be linked if the user desires.

As an example of this integrated approach to software development, a landowner's timber inventory data would be saved in a file that would be accessed by a harvesting scheduling model. Outputs from the model would then be input into an economic analysis program to determine which management activities yield the best financial return to the owner.