AN UPDATE ON LOW-LEVEL RADIOACTIVE WASTE DISPOSAL IN TEXAS

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ABSTRACT

For 17 years the Texas Low-Level Radioactive Waste Disposal Authority (TLLRWDA) has been looking for the perfect disposal site in Texas. This past fall we were on the verge of success when, suddenly, our hopes were dashed again by politics. This paper is the story of politics over science. It's a sad story, but true, and we must learn to live with that reality.

GOOD SCIENCE

From the beginning the question has been where in Texas can we safely locate a waste disposal site? Like good scientists, we started with a list of siting criteria:

1. Low annual rainfall
2. Deep ground water, no aquifers
3. No flood zones
4. Suitable geology
5. Low population density

"Low annual rainfall" eliminated about half of Texas because the eastern part of the state gets 30 to 50 inches of rainfall per year. "Deep groundwater, no aquifers" eliminated another large part of the state because of two major aquifers. The Edwards Underground Aquifer, which is the sole source of drinking water for San Antonio and much of Central Texas, occupies thousands of square miles in arid central and southwest Texas. The Ogalalla Aquifer in the panhandle and northwest Texas reduced our search area even more. The criteria of "no flood zones" eliminated a strip of land approximately 100 miles wide along the Gulf Coast of Texas. This area is known as the Coastal Plains, and it is subject to flooding from hurricanes and tropical storms. In our initial screening, the search for "suitable geology" was not a major issue. The only areas we considered unsuitable were coastal areas where there is too much sand and the groundwater is too shallow, and seismically active areas where faults with recent history of movement exist. Texas is not prone to seismic activity except for isolated fault lines in far west Texas which are well known and accurately mapped in many references. "Low population density" is hard to quantify, but our initial search screened out major cities and the populated counties around them.

The first site we selected was in south Texas in McMullen County. The annual rainfall is approximately 20 inches per year, there is a lot of clay near the surface, and the region is sparsely populated. This site met with a lot of resistance from local politicians and the nearby Nueces River Authority. The Texas Legislature intervened and passed a law that stated we couldn't locate a radioactive waste disposal facility within 20 miles of any

existing or proposed lake or reservoir used for drinking water. They further ordered the TLLRWDA to search for a site on state-owned land. These actions by our legislature killed the McMullen County site and sent us on a search of state lands, which are primarily in west Texas.

Much of the state-owned lands in west Texas are over the Ogalalla Aquifer except for the Trans-Pecos area that is the region west of the Pecos River. The next site we chose was near Fort Hancock, Texas in Hudspeth County. The site is approximately 45 miles southeast of El Paso in an area with less than 13 inches of rainfall per year. The selected site is on an alluvial plain where the predominant soils are clay and sandy clay. Hudspeth is one of the least populated counties in Texas. In 1987 we began to characterize the site by contracting with the University of Texas Bureau of Economic Geology (UTBEG) to conduct a thorough geological analysis of the property.

Once again politics became an issue that would ultimately doom this site just as it did in McMullen County. The County of El Paso sued the TLLRWDA to stop our site characterization work. This formidable opponent felt that radioactive waste should not be disposed of in West Texas. The case was heard in a district court in El Paso. The Judge found in favor of El Paso and stated that no sites in Hudspeth could be considered for our project. One of the Judge's main technical findings was that surface fissures might allow radioactive materials to leach into the groundwater. The TLLRWDA's scientific experts did not agree, and we were prepared to appeal the court's decision when a political solution was found.

Governor Ann Richards and a majority of the Legislature felt that Hudspeth County was the right place in Texas for the disposal facility. They were supported by the political leaders of Hudspeth County who could see the financial benefits of being a host county for this State project. So a law was passed by the Texas Legislature that drew a 400-square-mile box in southeast Hudspeth County where the TLLRWDA was instructed to search for a suitable site. The City of El Paso and El Paso County officials were satisfied and agreed not to oppose any sites in the box, because they would be more than 90 miles from El Paso. So a political compromise was reached, and we believed we had narrowed our search to an area that is only 20 miles wide by 20 miles long. Unfortunately, as we would soon learn, political compromises are only good as long as the politicians remain in office.

In 1991, the TLLRWDA selected a site 5 miles east of the town of Sierra Blanca in Hudspeth County. Between 1991 and 1998 we invested $30 million in this site. By 1993 we had applied for a license to operate a below ground disposal facility in which low-level radioactive wastes would be buried in concrete canisters with at least 5 meters of earthen cover over the waste. Our application contained over 14,000 pages of information, including very thorough geological investigations, seismic reviews, performance assessments, and detailed engineering plans. The regulators, a state agency known as the Texas Natural Resource Conservation Commission (TNRCC), provided a very thorough review of our application. The TNRCC reviewers were the second set of geologists, engineers, and health physicists to study the proposed facility. They also

concluded that the site was safe and should be licensed. The next step was the public hearing.

In September 1996 two administrative law judges (ALJs) from the State Office of Adjudicative Hearings opened the public hearing in Sierra Blanca. The first step was to identify parties to the hearings. Over 60 individuals and/or organizations applied for party status. Eventually, 28 parties were admitted. The criteria for being admitted was very broad, and party status was given to people from as far away as 150 miles. Party status also was given to a city and a state in Mexico. The next 15 months were spent in discovery where all parties submitted prefiled testimony. Depositions were taken from many of the key witnesses. During this time, the opponents of the disposal facility were able to garner a lot of support from politicians in El Paso, West Texas, and Mexico.

The technical testimony began in January 1998 and was completed by May. In July 1998 the ALJs rendered their decision. They issued a proposal for decision that recommended denial of the license for two reasons. First, they believed that the socioeconomic analysis prepared by the applicant was insufficient. They believed we should have studied the entire trans-Pecos area instead of only a two county area. They also thought we should have studied special impacts of a radioactive disposal facility more thoroughly. Special impacts include the perception that such a facility may hurt property values or tourism, as well as perceived fears of health risks from the radioactive waste itself.

In addition, the ALJs stated that the applicant did not thoroughly investigate an inferred fault beneath the site. During the geological investigation two borings indicated a 500-foot offset in the bedrock over a distance of 5,000 feet. Our geologists believed this was probably an ancient fault that was part of the alluvial basin floor. They dated the fault at over 12 million years old. The geologists all agreed that the fault had not moved within the last 2 million years. This meant that the fault was not “capable” of movement under Nuclear Regulatory Commission (NRC) regulations for nuclear power plants. Consequently, further study of this natural feature was discontinued. The ALJs were not convinced. They agreed that the fault had not moved in 2 million years, but they were concerned that it might be connected to a more active fault 25 miles away. They criticized us for not doing a more thorough investigation of the inferred fault. In the end, this was our Achilles heel that gave the politicians a reason to turn down our license.

POLITICS OVER SCIENCE

In the final analysis the decision to deny our license was a political decision even though it was officially blamed on poor science. Even the opponents agreed on that point. We thought we had solved the political problem in 1991 when the Texas Legislature specified Hudspeth County as the host county, and the El Paso politicians agreed to go along with the compromise. But political compromises are only good as long as the politicians remain the same, and the politicians cannot remain the same if the review process takes over 5 years. Most elected officials are only elected for 2-year terms. Many of them have moved on to new endeavors by the time the final decision is made. Their successors have no reason to follow the compromises made by the original

politicians. In fact, a controversial project involving radioactive waste is a liability for a politician. So most of them oppose a project like ours.

Many opponents surfaced in the 5 years between the time we submitted our application and the final decision was made. They included the not-in-my-back-yard (NIMBY) politicians, the anti-nuclear power activists, the activists concerned about environmental racism, and the Mexican politicians. The NIMBY group included almost any west Texas politician that was not part of the compromise worked out by Governor Richards and whose district would not benefit financially from this project. The anti-nuclear activists included national groups such as GreenPeace, Earth First, the Sierra Club and others who believe we should not have nuclear power plants. They believe that by making it impossible to dispose of radioactive materials, public opinion will eventually kill nuclear power in the United States. The environmental racism activists can be characterized as politicians looking for votes by playing on the feelings of disadvantaged groups such as minorities. Clearly, the Sierra Blanca site was chosen for scientific reasons, not racist reasons, but this issue garnered a lot of emotional support for our opponents. The most unique opponents to this site were from south of the border in Mexico. Many Mexican politicians saw this fight against the “nuclear dump” as an emotional cause they could use to get votes. They did not allow themselves to be confused by the scientific facts, and they opposed the site on the basis of a misinterpretation of an international agreement between the United States and Mexico.

Bad timing was the most significant political factor for this project. In my opinion, the ALJs were moved by the pleas of injustice from the area residents and local politicians, and this caused them to look more closely at the scientific facts. In the end, this supercritical review left them convinced that the applicant had not done enough to characterize the inferred fault. Their recommendation for denial gave the politicians more fuel for public outcry during the fall political season in Texas. The most important elections in Texas last fall were for governor and lieutenant governor. Governor George W. Bush was running for re-election, and he hoped to carry a fellow Republican into office as lieutenant governor. One region that the Republicans hoped to carry was El Paso and all of West Texas. A Republican had never done this before. However, the Sierra Blanca facility became a major issue for the Democrats who put the Republicans on the defensive at every turn. The Democrats were constantly calling for Governor Bush to instruct his appointees at the TNRCC to deny the license. Governor Bush steadfastly said that it was a decision for the TNRCC and he would not intervene. I believe he did not intervene, but I also believe that appointed officials, even without direct contact, feel political pressure. This pressure causes one to look more closely at the scientific facts, and if there is any doubt about the scientific facts, to deny the license. In my opinion that is what happened in this case.

I do not believe that politics is a dirty word. Our political system is the best in the world even though it has flaws. The views of our politicians reflect the views of the citizens whether they are scientifically sound or not. I do believe that we scientists have our heads in the sand when we think science can overcome politics. It cannot. Politics represent the larger majority of the population. Politics will win over science every time.

Our scientific community cannot ignore politics any longer. We must find scientific solutions to technical problems that are acceptable to the politicians. It may be time to find solutions that do not depend on inexact sciences such as geology.

WHERE DO WE GO FROM HERE?

The Sierra Blanca project cost over $30 million for site characterization, design, and legal representation during the licensing hearings. The process took over 6 years. As it turned out, both money and time have been wasted. Meanwhile low-level radioactive waste continues to be stored in temporary facilities at over 900 locations in Texas cities and towns which presents us with several safety concerns. If a natural disaster such as a fire, a hurricane or a tornado strikes one of the institutions or commercial establishments where waste is stored, radioactive material will be released to our atmosphere. As more and more beneficial uses are found for radioactive materials, this problem will grow. It is time to find a solution to this problem before an accident does occur. We definitely need one management facility in a remote location in Texas to manage the waste.

At the time of this writing the TLLRWDA is waiting for instructions from the Texas Legislature. In 1991 they told us to find a site in Hudspeth County. That political compromise did not work out. So we are waiting for their guidance. As we wait for the Legislature to act, we are developing alternatives to the Sierra Blanca site and meeting with legislators to get their advice. The three alternatives we are considering are as follows:

1. Select a new site for underground disposal;
2. Work with the private sector to develop a public/private partnership to find a solution to this problem; and
3. Consider Assured Isolation.

If we are instructed to select a new site for underground disposal, we will use our statewide screening study (completed in 1985) as the basis for our search. We will probably look for communities that express an interest in hosting our facility because we realize that all politics are local, and we must have local support first.

The concept of a public/private partnership may be acceptable to the legislature. Under this scenario we would look for private firms who already operate hazardous waste disposal facilities and who have found acceptance in their local communities. The public part of the partnership would probably include state ownership of the license and control of the health physics and quality control programs. The State would ultimately be responsible for post-closure care. The public part would include the operations of the facility on a daily basis under a contract with the TLLRWDA.

Assured Isolation is a concept that has been studied by many states and the Department of Energy (DOE). It involves isolation of the wastes in robust storage facilities such as concrete vaults that can resist the forces of nature over centuries. The main advantage of Assured Isolation is that the vaults can be inspected and repaired in the future if needed.

These facilities do not rely on the geology of the site to protect the environment. Because the general public does not believe we can walk away from a disposal site and depend on mother earth to protect us, this may be a more politically acceptable approach.