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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

DOCKETED  
USNRC

BEFORE THE COMMISSION

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In the Matter of )  
)  
NORTHERN STATES POWER COMPANY )  
)  
(Goodhue County Independent Spent Fuel )  
Storage Installation) )

OFFICE OF THE CLERK  
DOCKET

Docket No. 72-18-1 SFS1

PETITION FOR LEAVE TO INTERVENE  
AND REQUEST FOR HEARING  
OF THE MINNESOTA ENVIRONMENTAL QUALITY BOARD

The Minnesota Environmental Quality Board (MEQB) hereby petitions for leave to intervene and requests a hearing in the matter of the application by Northern States Power Company (NSP) for a materials license for the storage of spent fuel in Goodhue County, Minnesota. The matter is NRC Docket No. 72-18.

This petition for leave to intervene and request for hearing is filed pursuant to the Nuclear Regulatory Commission's Notice of Consideration of Issuance of a Materials License for the Storage of Spent Fuel and Notice of Opportunity for a Hearing, published in the Federal Register on September 17, 1996, 81 Fed. Reg. 48989, and in accordance with the requirements of 10 C.F.R. § 2.714 (1996).

I. PARTIES

The names, addresses, and telephone numbers of the individuals to whom all correspondence and communications should be addressed on behalf of the Minnesota Environmental Quality Board are:

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## II. THE MEQB

The Minnesota Environmental Quality Board is an agency of the State of Minnesota with state-wide jurisdiction. The MEQB is comprised of commissioners from nine other state agencies, including the Pollution Control Agency, the Department of Natural Resources, the Department of Public Service, the Department of Health, the Department of Agriculture, the Department of Transportation, the Office of Strategic and Long-range Planning, the Board of Water and Soil Resources, and the Office of Environmental Assistance, a representative of the Governor's office who serves as chair, and five citizens appointed by the Governor. Minn. Stat. § 116.03, subd. 2 (1994).

## III. MEQB AUTHORITY

The MEQB has authority over power plant siting, transmission line routing, wind power systems, environmental review, and other matters. Specifically, the MEQB has authority over the siting of a dry cask storage facility in Goodhue County. Minn. Stat. § 116C.80 (1994). In 1991 the MEQB prepared a state Environmental Impact Statement on the Prairie Island Independent Spent Fuel Storage Facility (ISFSI), for which NSP holds an NRC license.

## IV. MEQB INTERESTS

The nature and extent of the MEQB's interest in this proceeding arises from the fact that Northern States Power Company has applied for a license to construct a dry cask storage facility in Goodhue County away from the Prairie Island Nuclear Generating Plant. NSP cannot under Minnesota law site such a facility without a site certificate from the MEQB. On October 2, 1996, the MEQB denied NSP's application for a site certificate to construct a dry cask storage facility in Goodhue County. Copies of the MEQB's Resolutions and Findings of Fact, Conclusions, and Orders adopted on October 2, 1996, are attached to this Petition. An order from the NRC issuing a materials license for a dry cask storage facility in Goodhue County would not by itself authorize construction of such a facility since the MEQB has denied a site certificate for the facility.

The specific aspect of the proceedings of interest to the MEQB relates to the siting of a dry cask storage facility in Goodhue County. Siting raises issues like transportation, accidents, and releases, that are related to public health and the environment.

#### **V. RIGHTS OF STATES**

Under the Atomic Energy Act, 42 U.S.C. § 2021(1), the NRC is directed to afford a reasonable opportunity for State representatives to participate in license applications pending before the NRC. 10 C.F.R. § 2.714(d) (1996) provides that the Commission "shall permit intervention . . . by the State in which such area is located."

#### **VI. COORDINATION WITH OTHER MINNESOTA AGENCIES**

The Minnesota Department of Public Service has also filed a petition for leave to intervene. The Department of Public Service represents the interests of Minnesota citizens with regard to the implications of this proceeding on electrical energy production and rates. The MEQB represents the interests of Minnesota citizens with regard to siting of facilities for the storage of spent nuclear fuel. The Commissioner of the Department of Public Service serves on the Minnesota Environmental Quality Board. The Department of Public Service and the MEQB will coordinate their involvement in this proceeding to represent the best interests of the people of the State of Minnesota. These interests cannot be adequately represented by any other party to this proceeding. The intervention of the MEQB will be in the public interest.

#### **VII. HEARING REQUEST**

The MEQB hereby requests that the NRC hold a public hearing on NSP's application. If the NRC continues to process NSP's application for a dry cask storage facility, even though the MEQB has denied a site certificate for the facility, a hearing is necessary to examine whether issuance of a license would be inimical to the common defense and security and to the health and safety of the public and the protection of the environment.

WHEREFORE, the Minnesota Environmental Quality Board requests that the Nuclear Regulatory Commission accept and grant its Petition for Leave to Intervene and allow the MEQB to participate as a full party to this proceeding and that the Nuclear Regulatory Commission schedule the holding of a public hearing on this matter.

Dated this 14<sup>th</sup> day of October, 1996

Respectfully submitted



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ATTORNEY FOR THE MINNESOTA  
ENVIRONMENTAL QUALITY BOARD

Adopted by the MEQB on October 2, 1996, by a vote of 14-0

**RESOLUTION**  
Denial of Application

**WHEREAS**, Northern States Power Company (NSP) filed an application in July 1995 with the Minnesota Environmental Quality Board (MEQB) for a site certificate to store spent nuclear fuel in a dry cask storage facility called the Goodhue County Independent Spent Nuclear Fuel Storage Facility; and

**WHEREAS**, the Legislature directed that a Certificate of Site Compatibility could not be issued to NSP for the dry cask storage facility unless the site is comparable to the Independent Spent Fuel Storage Facility located on Prairie Island; and

**WHEREAS**, the MEQB established a Site Advisory Task Force to assist the MEQB in carrying out its administrative tasks in siting a dry cask storage facility in Goodhue County; and

**WHEREAS**, the MEQB has compiled an extensive record relating to the transportation and storage of spent nuclear fuel in casks; and

**WHEREAS**, the transportation of nuclear fuel from the Prairie Island Nuclear Generating Plant to an offsite storage facility will present an increased risk not associated with onsite storage;

**NOW, THEREFORE, BE IT RESOLVED** that the MEQB approves and adopts the proposed Findings of Fact and Conclusions determining that there is no comparable alternate site in Goodhue County because the transport of casks to any alternate site would make that site inferior to the Prairie Island site, and issues its Order denying NSP's request for a Certificate of Site Compatibility for the Goodhue County Spent Nuclear Fuel Storage Facility.

**BE IT FURTHER RESOLVED** that the Chair is authorized to formally request that Northern States Power Company withdraw its license application to the Nuclear Regulatory Commission (NRC) at the earliest possible date.

**BE IT FURTHER RESOLVED** that the Chair is authorized to intervene in the NRC proceedings to inform the NRC of the Board's action denying a siting permit for NSP's proposed Goodhue County ISNFSF, to advise the NRC that implementation of a Goodhue County ISNFSF requires state approval, and to request that the NRC immediately suspend or terminate its review of NSP's license application.

**BE IT FURTHER RESOLVED** that John Hustad, Chair of the Board, is authorized to sign the Findings of Fact, Conclusions, and Order.

**GOODHUE COUNTY  
INDEPENDENT SPENT NUCLEAR FUEL STORAGE FACILITY**

In the Matter of the Northern States Power  
Company Application for Certificate of Site  
Compatibility for the Goodhue County  
Independent Spent Nuclear Fuel Storage  
Facility

**FINDINGS OF FACT, CONCLUSIONS  
AND ORDER**

October 2, 1996

The above captioned matter came before the Minnesota Environmental Quality Board (MEQB) at a special meeting pursuant to an application by Northern States Power Company (NSP) for a Certificate of Site Compatibility authorizing construction of an independent spent nuclear fuel storage facility in Goodhue County, Minnesota.

**STATEMENT OF ISSUE**

Pursuant to Minn. Stat. § 116C.80 (1994), Northern States Power Company (NSP) filed with the MEQB an Application for a Certificate of Site Compatibility for a dry cask storage facility in Florence Township, Minnesota, called the Goodhue County Independent Spent Nuclear Fuel Storage Facility. The MEQB has reviewed the application in accordance with its Procedures, Considerations and Rules for Siting a Dry Cask Storage Facility and has developed an extensive administrative record. The MEQB now makes the following:

**FINDINGS OF FACT**

The Prairie Island Nuclear Generating Plant.

1. NSP operates the Prairie Island Nuclear Generating Plant in Red Wing, Minnesota. The plant began operation in 1973.

The Prairie Island Independent Spent Fuel Storage Installation.

2. During the course of operation of the Prairie Island Plant, NSP stored spent nuclear fuel in a holding pool in the plant. In June 1989, NSP announced that the holding pool capacity was nearly exhausted and it would seek approval to construct an above-ground dry cask storage facility, called an Independent Spent Fuel Storage Installation (ISFSI), at the Prairie Island Plant site to store additional spent fuel.
3. The MEQB prepared an Environmental Impact Statement (EIS) on the proposed Prairie Island ISFSI and on May 16, 1991, after public comment, determined that the Final EIS was adequate.

4. In April 1991, NSP filed an application with the Minnesota Public Utilities Commission (MPUC) for a Certificate of Need for the ISFSI. After extensive public hearings, the MPUC issued a Certificate of Need, on August 10, 1992, authorizing the construction of the ISFSI but limiting the number of TN-40 casks to be stored there to 17. This decision was challenged by a number of opponents to the dry cask storage and, in 1993, the Minnesota Court of Appeals held that approval from the Legislature was required to implement the ISFSI.

#### The 1994 Legislation.

5. The matter came before the Minnesota Legislature during the 1994 Session. In the 1994 Prairie Island Legislation the Legislature ratified and approved the Final EIS and the limited certificate of need and authorized NSP to store nuclear wastes at Prairie Island in a certain number of casks and under certain conditions. Minn. Laws 1994, ch. 641 (codified at Minn. Stat. §§ 116C.77 to 116C.80, 216B.2423 to 216B.244, and 216C.051).
6. One of the conditions for storage was that NSP had to search for a second above-ground site located in Goodhue County not on Prairie Island. Minn. Stat. § 116C.771(b)(1994) The Legislature required NSP to obtain a certificate from the MEQB that the site is comparable to the ISFSI on Prairie Island before it could construct another dry cask storage facility at a second site. Minn. Stat. § 116C.80 (1994)
7. The Legislature directed the MEQB to adopt procedures, considerations, and rules from the Power Plant Siting Act and the Power Plant Siting Rules that could apply to the siting of a second dry cask storage facility. The MEQB selected those procedures, considerations, and rules that were appropriate for siting a dry cask storage facility. Draft procedures were distributed, and after a 60-day public comment, during which no comments were submitted, the MEQB adopted the Procedures, Considerations, and Rules for Siting a Dry Cask Storage Facility, without change to the draft, on October 20, 1994.

#### The Mdewakanton Dakota Tribal Council.

8. The 1994 legislation provided that the authorization to store spent nuclear fuel in casks at Prairie Island was not effective until the Governor, on behalf of the State, and Northern States Power Company entered into an agreement binding the parties to the terms of Minn. Stat. §§ 116C.771 and .772 (1994) and the mandate for 200 megawatts of windpower and 75 megawatts of biomass power by December 31, 2002. Minn. Stat. § 116C.773 (1994).
9. The Governor and NSP entered into such an agreement on May 20, 1994.

10. The statute provides that the Mdewakanton Dakota Tribal Council at Prairie Island is an intended third-party beneficiary of the agreement between the State and NSP and has standing to enforce the agreement. Minn. Stat. § 116C.773 (1994). The Agreement between the State and NSP also recognizes that the Tribal Council is an intended third-party beneficiary of the agreement and has standing to enforce the agreement.
11. Nothing in the Agreement or in the statutes mandates that NSP has to find a second site in Goodhue County or that the MEQB has to issue a certificate for a second site. Since NSP has no obligation to find a second site, and there is no guarantee that a second site can be located in Goodhue County, NSP has no right under the Agreement to a second site, and the Mdewakanton Dakota Tribal Council, as a third-party beneficiary, has no right to require NSP or the MEQB to site a second facility.

#### NSP's Application for a Site Certificate for the Proposed Goodhue County Facility

12. On July 20, 1995, NSP applied to the MEQB for a site certificate for a Goodhue County Independent Spent Nuclear Fuel Storage Facility. In its application, NSP identified two possible sites for dry cask storage, both located in Florence Township in Goodhue County.
13. The MEQB accepted NSP's application on August 17, 1995, finding that it complied with the application content requirements provided in Minn. Rule part 4400.2710. Upon acceptance of the application, the MEQB immediately began the siting process under the Procedures, Considerations, and Rules for Siting a Dry Cask Storage Facility.

#### The Site Advisory Task Force.

14. The Legislature directed that siting procedures and considerations associated with an application for a certificate of site comparability must provide for an opportunity for all interested persons to participate. Minn. Stat. § 116C.80, Subd. 3 (1994).
15. A provision of the Power Plant Siting Act (Minn. Stat. § 116C.59 Subd. 2), which requires the Board to adopt broad spectrum citizen participation as a principal of operation, was included in the Procedures, Considerations, and Rules for Siting a Dry Cask Storage Facility.
16. On September 7, 1995, the Chair of the MEQB issued an Order appointing a Site Advisory Task Force, comprising 15 residents of the affected area, and charged it to review NSP's application, consider possible additional alternative sites, and provide a public forum for discussion of environmental issues. The Chair amended the order on

September 29, 1995, and issued a Supplemental Order on January 2, 1996, adding three members to represent communities in which additional alternative sites were proposed.

17. The Site Advisory Task Force held ten public meetings in the project area from September 1995 to January 1996. In January 1996, the Site Advisory Task Force submitted its report to the MEQB. The MEQB received the advisory report in a presentation made by the Task Force at the January 18, 1996, MEQB meeting.
18. In its report the Task Force discussed its consideration of the two sites proposed by NSP and the sixteen additional candidate sites that had been proposed by citizens, one of which was proposed both to the Task Force and directly to the MEQB. The sixteen sites met the legislative constraints of being off Prairie Island but within Goodhue County.
19. In conducting its analysis of the sixteen additional candidate sites, the Task Force applied the siting criteria included in the MEQB's Procedures, Considerations, and Rules for Siting a Dry Cask Storage Facility. MEQB Task Force Report at 62.
20. The Task Force analysis was based on site visits, current environmental data, land use mapping including aerial photography, and the technical information it had collected. MEQB Task Force Report at 67.
21. In its recommendations of environmental issues which were significant, the Task Force reported that "Issues associated with the transportation of nuclear waste through populated areas are paramount." MEQB Task Force Report at 114.
22. The Task Force concluded that neither the sites proposed by NSP nor any of the 16 properties proposed as alternate sites by concerned citizens were feasible and prudent and recommended that offsite storage not receive further consideration by the MEQB. MEQB Task Force Report at 112-115.
23. The conclusion was based on a finding that "onsite storage is less onerous than off-site storage in that it avoids some of the dangers associated with transportation and the difficulties of emergency response." MEQB Task Force Report at 115.

#### Other Activities.

24. In addition to the public meetings held by the Site Advisory Task Force, the MEQB provided additional opportunities for the public to make its comments known to the MEQB through public meetings and written comments. Forty-six written comments were received by the MEQB between September 1995 and January 1996.
25. Alternative sites could be proposed by any person for consideration by the MEQB

through the Site Advisory Task Force or through the procedure contained in Minn. Rule Part 4400.3100. One candidate site called the NSP Service Center Site and located in the Red Wing Industrial Park was proposed by an individual directly to the MEQB under Minn. R. 4400.3100. The Site Advisory Task Force also included this candidate site in its review. See Finding 18.

26. The MEQB also created an Interagency Technical Review Committee comprising representatives of seven state agencies -- the Pollution Control Agency, the Department of Natural Resources, the Department of Transportation, the Department of Health, the Department of Public Service, the Department of Agriculture and the Department of Public Safety. This Committee met on six occasions to review the application and discuss technical considerations. The meetings were open to the public.
27. On February 23, 1996, the MEQB sent a letter, signed by all members of the Board, to certain legislative leaders, advising the Legislature that the MEQB supported repeal of the siting legislation.

#### Staff Report.

28. At its meeting on March 28, 1996, the MEQB considered how to proceed with the siting of the Goodhue County facility. The MEQB directed its staff to prepare a report for the Board in which the staff discussed the background of nuclear waste storage in Minnesota, identified issues, including transportation, that would have to be examined as part of the siting process, and reviewed options available to the MEQB under the siting process.
29. The staff presented its report, entitled Staff Report to the Minnesota Environmental Quality Board on the Siting of a Dry Cask Storage Facility in Goodhue County, to the Board on June 20, 1996. The MEQB incorporated into the Staff Report an analysis by the Minnesota Department of Public Service of the Nuclear Waste Fund, a fund created under federal law to provide monies for the siting of a permanent, national repository for nuclear wastes. The Staff Report also included information summarizing the Minnesota Department of Health's radiation health monitoring program at the Prairie Island ISFSI.
30. At the June Board meeting, the MEQB ordered a 60-day period for the public to comment on the Staff Report. The comment period closed on August 23, 1996. The MEQB received 266 comments with 941 signatures during the comment period. These comments are outlined in a Summary of Public Comment prepared by the MEQB staff.

NRC Application

31. On August 8, 1996, NSP submitted a license application to the Nuclear Regulatory Commission for the Goodhue County Alternate Spent Nuclear Fuel Storage Facility.
32. NSP provided MEQB with a copy of the NRC application on August 9, 1996.

Standards for Approval of an Alternate Site.

33. A dry cask storage facility cannot be sited in Minnesota unless the MEQB determines that the facility can be located and operated in a manner that is protective of public health and the environment. The Power Plant Siting Act and the MEQB rules establish criteria that must be applied to any proposed large electric generating plant Minn. Stat. § 116C.57, subd. 4 (1994) and Minn. Rules part 4400.3310. These same criteria were adopted by the MEQB in the Procedures, Considerations and Rules for Siting a Dry Cask Storage Facility.
34. In addition to the statutory and regulatory requirements, the Legislature has required that any second dry cask storage facility in Goodhue County must be "comparable" to the Independent Spent Fuel Storage Facility at Prairie Island. Minn. Stat. § 116C.80, subd. 2 (1994). If a proposed Goodhue County facility is not comparable to the Prairie Island ISFSI, a certificate cannot be issued by the MEQB for the proposed site.
35. The MEQB examined the potential public health and environmental impacts of the proposed Prairie Island ISFSI when it prepared the Environmental Impact Statement on the proposed project in 1991. Major issues evaluated in the 1991 Final EIS for the Prairie Island ISFSI include Radiological Health, Flooding, and Accidental Releases.
36. The Final EIS contained a health risk assessment conducted by the Minnesota Department of Health. The health risk assessment indicated that the Prairie Island facility could be constructed with berms and other protective measures that would keep the radiation dose rate to which the nearest residents would be exposed below the levels set by the Department of Health, which levels are more stringent than federal levels.
37. The MEQB finds that other sites in Goodhue County could be located and constructed in such a fashion that the risks associated with the radiation dose rate to which the nearest resident would be exposed would be less than the level set by the Department of Health.
38. The Final EIS stated that the casks at the Prairie Island facility would be located at elevations above the 500-year flood stage elevation, and the casks could withstand the maximum hypothetical flood.

39. The MEQB finds that an alternate site in Goodhue County that is located at elevations higher than the Prairie Island ISFSI would be even less at risk to flood damage than the Prairie Island site, but that the risk from floods is so small at Prairie Island that this issue is not significant in the MEQB's analysis.
40. The Final EIS stated that there are no credible circumstances that would cause the casks to tip over, but that if the cask were to tip over the cask confinement barrier would not be breached and no radioactivity would be released.
41. The MEQB finds that any alternate site would also have no credible circumstances that would cause the casks to tip over. The casks would be as secure at the second site as they are at Prairie Island.
42. The Final EIS stated that the structural materials and dimensions enable the casks and vaults to withstand attack by small arms fire, pyrotechnics, mechanical aids, high velocity objects, and most forms of explosives without release of spent fuel.
43. The MEQB finds that storage of the casks at an alternate site would be as secure from sabotage and terroristic attacks as the casks at Prairie Island.
44. There are risks associated with the handling of the spent fuel in moving it from the spent fuel pool to the casks at the Prairie Island ISFSI. The risks associated with handling the spent nuclear fuel in initially moving it out of the pool would be the same regardless of where the fuel ultimately ends up. However, shipment of the spent nuclear fuel to a site away from the Prairie Island Plant and the additional handling required for such shipment raise risks that come with the siting of a remote location that are not encountered with the Prairie Island ISFSI because that facility is located immediately adjacent to the Plant.
45. The Final EIS examined the risks associated with the handling of the spent nuclear fuel to move it from the pool to the storage facility. In the Final EIS the MEQB concluded that the radiation dose experienced by workers involved in cask loading, transportation, and emplacement could be significant. The Final EIS concluded that the cancer incidence risk could be as high as 18 cancers per 1,000 if one worker were to be involved with 48 casks. The Final EIS stated, "This is a relatively high risk." FEIS at 6.15
46. The Final EIS did not address in detail the increased risks associated with the shipment and additional handling required to move the spent nuclear fuel to an offsite facility. As part of this proceeding, however, transportation has always been a major issue. The Site Advisory Task Force analyzed the transportation and handling risks in some detail.

The MEQB has compiled reports and other documents regarding the risks associated with the transport and handling of spent nuclear fuel.

47. An alternate site in Goodhue County would require the spent nuclear fuel to be transported from the Prairie Island ISFSI or Plant to the second site and would have to undergo additional handling. The shipment of the spent nuclear fuel and the additional handling steps increase the risks associated with storage of the fuel in casks.
48. Because of the importance of the transportation and handling risks that would be involved with an offsite facility, the MEQB examines these issues in detail in the following findings.

#### Transportation Technology.

49. NSP is currently using storage-only "TN-40" dry casks at Prairie Island, but has proposed using a multipurpose canister system at an alternative Goodhue County site. Under NSP's proposed system, spent fuel is first sealed in a basic canister and then different "overpacks" are used for transport, storage, and permanent disposal. Such canister systems are designed to eliminate the need to directly handle the spent fuel again after it is sealed in the multipurpose canister. *Application for Site Certificate: Goodhue County Independent Spent Nuclear Fuel Storage Facility, Northern States Power Company, July 1995, at 2-1.*
50. In May 1996, NSP provided information on the canister system they selected for the Goodhue County site. The canister system (TranStor) is designed by Sierra Nuclear Corporation. This system, or any proposed spent fuel storage and transport system, must be certified by the U.S. Nuclear Regulatory Commission (NRC) as meeting all safety requirements prior to its use. NRC rules 10 CFR chapter 71 are designed to ensure the safety of the containers used to transport nuclear spent fuel.
51. Under NRC rules, 10 CFR 71, a transportation container must be able to meet certain accident-related radiation standards during extreme hypothetical accidents such as the cumulative impact of (1) a free drop of 30 feet onto an unyielding surface, (2) a free drop of 40 inches onto a six-inch diameter steel bar, (3) exposure to 1475 degree fire for 30 minutes, and (4) immersion under 3 feet of water for 8 hours.
52. Sierra Nuclear applied to the NRC for certification of their TranStor transportation system in December 1995. The Sierra Nuclear NRC application includes a Safety Analysis Report (SAR) that describes the design and safety features of the proposed shipping containers. NSP has included this SAR as part of its application to the NRC for licensing of the Goodhue County site. The safety features of the proposed shipping containers are described in the SAR, including those for structural integrity, heat

dissipation, criticality control, and safe operation. *Safety Analysis Report for the TranStor Shipping Cask System*, Sierra Nuclear Corporation, December 1995.

### Transportation Risk

53. More than 2,500 shipments of spent nuclear fuel have been made throughout the United States without causing any adverse radiological consequence to the public. *The State Role in Spent Fuel Transportation Safety*, Transportation Series No. 3, National Conference of State Legislators, May 1996 at 3.
54. Nevertheless, railway accidents are not uncommon. Knowledgeable groups and individuals have expressed concern that while spent nuclear fuel can be shipped safely, there is always a chance that transportation or fuel handling related accidents will occur. These concerns are partly based on the fact that full-scale destructive testing has not been completed on spent fuel transportation containers. *Report of The Site Advisory Task Force, Goodhue County Dry Cask Storage Alternate Site Project*, to the Minnesota Environmental Quality Board, January 1996, at 26; *Draft Handbook of High-Level Radioactive Waste Transportation*, Second Edition, Council of State Governments, October 1995 at 13-15.
55. Although the risk is small, transporting spent nuclear fuel does present potential risks from increased radiation exposure and increased non-radiation related accidents that could affect both (1) the general public and (2) occupational workers such as spent fuel handlers and railroad workers.
56. The potential radiation-related health risks to these two groups during transportation can be further divided into two general types of risk: routine operation and transportation accidents.
57. Radiation exposure during routine transport must be shown to be within NRC safety guidelines prior to licensing, but routine transport would nevertheless increase radiation exposure to potentially "maximally exposed" individuals, such as a rail yard worker, a resident near the rail line, or a person in an automobile stopped at the crossing. *Draft Environmental Impact Statement for a Container System for the Management of Naval Nuclear Spent Fuel*, Appendix B, Department of the Navy, May 1, 1996.
58. Radiation risks due to extreme severe accidents could affect the public, railway workers, and emergency response personnel through the following exposure routes:
  - a. Direct radiation dose from the damaged container
  - b. Inhalation dose from the plume of radioactive material released from a damaged container

- c. Direct radiation dose from contact with material released from a damaged container
- d. Direct radiation dose from ground deposition of the radioactive material released from a damaged container
- e. Inhalation dose from resuspension of radioactive material deposited on the ground.

*Draft EIS for Naval Spent Fuel, Appendix B, May 1, 1996.*

59. A comprehensive risk assessment commissioned by the NRC indicates that transporting spent nuclear fuel is generally safe but not entirely risk free. The study estimates that for shipping containers meeting NRC requirements, radiological hazard would be expected in about 6 of every 1000 severe transportation accidents. And one in 10,000 rail accidents would likely result in extensive damage to the shipping cask and the spent fuel. *Shipping Container Response to Severe Highway and Railway Accident Conditions*, Lawrence Livermore National Laboratory, February 1987, Overview.
60. The risk assessment concluded that in the most severe transportation accidents, such as a full speed train collision with a fully loaded gasoline tanker, containment or radiation shielding could fail and a radiological hazard could result. Assuming large-scale cladding and containment failure, the radiation hazard to the general public, workers, and emergency response personnel would be mostly limited to (1) increased radiation near the cask due to shielding damage, (2) the release of <sup>85</sup>Kr, radioactive krypton gas (3) potential release of particles, including corrosion from assembly cladding that can contain radioactive Cobalt-60, and (4) the release small amounts of volatile radioactive elements during a high temperature fire. *Shipping Container Response to Severe Highway and Railway Accident Conditions*, Lawrence Livermore National Laboratory, February 1987, Main Report, at 8-5 to 8-20; *Application for Site Certificate: Goodhue County Independent Spent Nuclear Fuel Storage Facility*, NSP, at 4-11; *Safety Analysis Report for the TranStor Shipping Cask System*, Sierra Nuclear Corporation, December 1995.
61. Radioactive krypton gas, or volatile elements released during a fire, are the components of the spent fuel system capable of dispersing away from the immediate accident site. Under an extreme improbable accident scenario with total cladding and containment failure, a maximally exposed person near such an accident would receive an increased radiation dose. Depending on the exact accident scenario assumed, however, the maximum radiation dose is expected to be well below or slightly above the NRC requirements designed to protect public health as a result of a transportation accident. *Shipping Container Response to Severe Highway and Railway Accident Conditions*, Lawrence Livermore National Laboratory, February 1987; *Application for Site Certificate: Goodhue County Independent Spent Nuclear Fuel Storage Facility*, NSP, 1995.

### Handling Risk

62. The potential for an accident during spent fuel handling also presents additional small but incremental radiation and non-radiation health risks to workers.
63. Risks to workers during routine handling of spent fuel for canister systems have been preliminarily quantified. *Multi-Purpose Canister At-Reactor and Monitored Retrieval Storage Facility Dose Assessment*, Tonya H. Sawyer and Robert Eble, Jr., High Level Radioactive Waste Management: Proceedings of the Fifth Annual International Conference, 1994 at 1383-1385. As with transportation, the radiation risks to workers during normal operations are conservatively estimated to be well within regulatory guidelines, but increased radiation exposure above background levels does occur. More specifically, worker exposure occurs in the following steps:
  - a. Loading a canister, which has previously been placed in a transfer cask (either in a spent fuel pool or other on-site facility)
  - b. Welding the canister shut
  - c. Preparing for moving a loaded on-site transfer cask
  - d. Moving a loaded on-site transfer cask and moving the empty storage cask
  - e. Transferring a loaded canister from a transfer cask into a storage cask
  - f. Retrieving the canister from an ISFSI also results in radiation exposure to workers as does movement of an unloaded but previously used shipping cask.

### Incremental Goodhue County Risk

64. The first steps required to move spent nuclear fuel from Prairie Island to a new Goodhue County storage site would be similar to that required to transfer the spent fuel directly to a centralized national storage facility or permanent national repository. These steps include transferring spent fuel from a TN-40 cask at Prairie Island into a canister, welding the canister shut, transferring the loaded canister into a shipping overpack, moving the canister and overpack onto a train, and then shipping the spent fuel by rail.
65. Implementing an alternative Goodhue County storage facility first and later moving the spent fuel to a centralized national facility would also require *for each canister*:
  - a. An extra rail trip from Prairie Island to the Goodhue County facility;
  - b. Extra handling steps at the Goodhue County site when the shipping cask is taken off the train, the spent fuel canister is transferred to a storage cask, and the storage cask is moved to the Goodhue County storage area;

- c. A further extra handling step when the spent fuel in a storage cask at Goodhue County is transferred back into a shipping cask and onto a train for shipment to a national facility; and
  - d. Possibly an extra return rail trip, with a loaded cask, back north through Prairie Island in-route to a centralized national facility.
66. In addition, for canister systems, the largest radiation risk to workers appears to occur during the initial handling and transfer of spent fuel assemblies into the canister and welding it shut. *Multi-Purpose Canister At-Reactor and Monitored Retrieval Storage Facility Dose Assessment, 1994*. The canister system is designed such that the spent fuel then remains inside the basic canister enclosure indefinitely. The Department of Energy (DOE), however, has identified at least two contingencies that could require further direct handling of the spent fuel assemblies: (1) the canisters would for some reason be determined to be unacceptable for transport following longer-term storage, or (2) the system would be determined to be unacceptable for an emplacement in a centralized interim facility or permanent repository. *Multi-Purpose Canister System Evaluation, A Systems Engineering Approach*, U.S. Department of Energy, Office of Civilian Radioactive Waste Management, September 1994, at 26-28.

#### Environmental Impact Analysis and Hearing

67. The Procedures, Considerations and Rules for Siting a Dry Cask Storage Facility provide that the MEQB shall prepare an Environmental Impact Assessment as part of the siting process. Minn. Rules part 4400.3210. The EIA provides an analysis of the potential human and natural environmental effects of the sites proposed by the applicant and any additional sites the Board decides to include in the analysis. The scoping of the EIA would be the next step to undertake were the MEQB to continue with the siting process.
68. The Power Plant Siting Act and the Procedures, Considerations and Rules for Siting a Dry Cask Storage Facility also provide for the holding of a public hearing on the application. Minn. Stat. § 116C.58 (1994) and Minn. Rules part 4400.3200. This hearing is normally held after the preparation of the EIA.
69. The evidence in the administrative record that has been compiled is sufficient to allow the MEQB to determine whether any alternate site in Goodhue County is comparable to the Prairie Island ISFSI.
70. No factual issues remain to be evaluated in an EIA or at a public hearing that would change the conclusions that follow:

## CONCLUSIONS

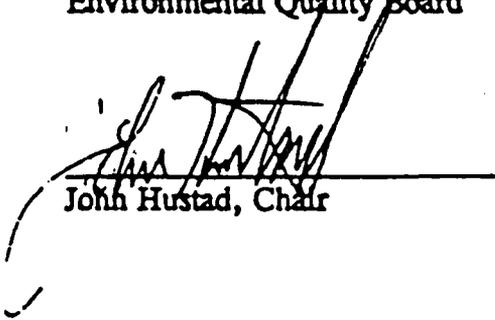
1. The MEQB has jurisdiction over Northern States Power Company's request for authorization to construct a dry cask storage facility in Goodhue County.
2. The public has been given opportunity to participate in the siting process and to comment upon NSP's application and to propose potential sites.
3. The MEQB has compiled an adequate record to determine whether any possible sites in Goodhue County are comparable to the Prairie Island Independent Spent Fuel Storage Installation.
4. Transportation of the spent nuclear fuel to a second site in Goodhue County, and the additional handling that is required to transport the casks, will raise risks that will always make another Goodhue County site not comparable to the Prairie Island facility.
5. The preparation of an Environmental Impact Assessment and the holding of a public hearing would not provide additional material evidence that would affect the Board's decision in this matter.
6. The Prairie Island ISFSI and any other site in Goodhue County are not comparable.
7. Any of the foregoing Findings of Fact that more properly should be designated as Conclusions are hereby adopted as such and any Conclusions that more properly should be designated as Findings are hereby adopted as such.

## ORDER

**IT IS HEREBY ORDERED** that Northern States Power Company's request for a Certificate of Site Compatibility for a Goodhue County dry cask storage facility is denied.

Approved and adopted this 2nd day of October 1996.

State of Minnesota  
Environmental Quality Board

  
\_\_\_\_\_  
John Hustad, Chair

Adopted by the MEQB on October 2, 1996, by a vote of 14-0

**RESOLUTION**  
**Compliance Certification**

**WHEREAS**, the Legislature directed in Minn. Stat. § 116C.771(b) that Northern States Power (NSP) Company could store spent nuclear fuel in a designated number of casks at the Prairie Island Nuclear Generating Plant if the Minnesota Environmental Quality Board (MEQB) determined by December 31, 1996, that NSP had completed certain tasks; and

**WHEREAS**, on September 6, 1996, NSP submitted a letter to the MEQB requesting that the MEQB determine that NSP had complied with the legislative mandates; and

**WHEREAS**, the MEQB has compiled an administrative record relating to NSP's compliance with the legislative mandates and has reviewed and evaluated that record;

**NOW, THEREFORE, BE IT RESOLVED**, that the MEQB approves and adopts the proposed Findings of Fact and Conclusions determining that NSP has filed a license application with the United States Nuclear Regulatory Commission for a spent nuclear fuel storage facility off Prairie Island in Goodhue County, is continuing to make a good faith effort to implement the site, and has contracted for the construction and operation of 100 megawatts of wind power in addition to wind power under construction in 1994, and issues its Order determining that NSP has complied with the legislative mandates contained in Minn. Stat. § 116C.771(b).

**BE IT FURTHER RESOLVED** that John Hustad, Chair of the Board, is authorized to sign the Findings of Fact, Conclusions, and Order.

## COMPLIANCE CERTIFICATION

In the Matter of a Request  
By Northern States Power Company  
for Certification of Compliance

**FINDINGS OF FACT, CONCLUSIONS  
AND ORDER**  
October 2, 1996

The above captioned matter came before the Minnesota Environmental Quality Board (MEQB) at a special meeting pursuant to a request by Northern States Power Company (NSP) for certification that it had complied with the provisions of law enabling it to implement dry casks six through nine at the Prairie Island Independent Spent Fuel Storage Installation at the Prairie Island Nuclear Generating Plant.

### STATEMENT OF ISSUE

Pursuant to Minnesota Statutes § 116C.771(b) (1994), Northern States Power Company has requested the MEQB to determine that NSP has complied with the actions required of NSP under the statute. Such a certification by the MEQB is necessary to allow NSP to fill and use storage cask numbers six through nine.

The MEQB now makes the following:

### FINDINGS OF FACT

1. In 1994, the Minnesota Legislature passed what is referred to as the "1994 Prairie Island Legislation." Laws 1994, chapter 641 (codified at Minn. Stat. §§ 116C.77 to 116C.80, 216B.2423 to 216B.244, and 216C.051).
2. The 1994 Prairie Island Legislation authorized NSP to immediately begin storing spent nuclear fuel in dry casks at Prairie Island. Under Minn. Stat. § 116C.771(a) (1994), NSP was authorized to fill and use five casks at Prairie Island. NSP has filled four casks as of the date of these findings, and these casks are in place at the Prairie Island Independent Spent Fuel Storage Installation. A fifth cask could be filled and in place in the near future.
3. In order to fill and store four additional casks at the Prairie Island ISFSI, NSP is required to comply with certain legislative mandates spelled out in the 1994 Prairie Island Legislation. These mandates are:
  - a. File a license application with the United States Nuclear Regulatory Commission (NRC) for a spent nuclear fuel storage facility off of Prairie Island and in Goodhue County;
  - b. Continue to make a good faith effort to implement the site for which it has filed a license application with the NRC; and

- c. Construct, contract for construction and operation, or purchase installed capacity of 100 megawatts of windpower in addition to windpower under construction or contract on the effective date of the statute, which was May 1994.
4. By letter dated September 6, 1996, NSP requested that the MEQB make a certification that NSP is in compliance with the three legislative mandates described in the statute.
5. Minn. Stat. § 116C.771(b) requires that NSP obtain the necessary certification from the MEQB by December 31, 1996.

License Application to the Nuclear Regulatory Commission.

6. On August 8, 1996, NSP submitted a license application to the NRC for the Goodhue County Alternate Spent Nuclear Fuel Storage Facility.
7. NSP provided MEQB with a copy of the NRC application on August 9, 1996.
8. On September 9, 1996, the NRC wrote to NSP and advised NSP that the application contained the necessary information to begin NRC's review and that the application had been assigned Docket No. 72-18. The NRC also advised that a "Notice of Consideration of Issuance of a Materials License for the Storage of Spent Fuel and Notice of Opportunity for Hearing" had been forwarded to the Office of the Federal Register for publication.
9. The NRC "Notice of Consideration of Issuance of a Materials License for the Storage of Spent Fuel and Notice of Opportunity for Hearing" was published in the Federal Register on September 17, 1996.

Good Faith Efforts to Implement the Site.

10. On July 20, 1995, NSP submitted an application to the MEQB for a site certificate for the Goodhue County Independent Spent Nuclear Fuel Storage Facility. In its application, NSP identified two possible sites for dry cask storage, both located in Florence Township in Goodhue County.
11. The application was accepted by the MEQB on August 17, 1995, and the MEQB immediately began the siting process.
12. Since commencement of the siting process, NSP has continued to provide the MEQB with the information relating to the proposal that the MEQB has requested of NSP. NSP has attended public meetings of the Site Advisory Task Force.

13. NSP has promptly paid all assessments by the MEQB of its costs incurred in processing the NSP application.

Wind Power Implementation.

14. At the time of the enactment of the 1994 Prairie Island Legislation, there were 25 megawatts of windpower capacity in operation along Buffalo Ridge in Lincoln County (Phase I Project). NSP has a contract to purchase all the capacity and net energy.
15. In September 1994, NSP submitted an application to the MEQB for a Certificate of Site Compatibility for a 100 megawatt windpower facility in Lincoln County along Buffalo Ridge (Phase II Project).
16. In 1995, the Legislature changed the law to require a site permit, instead of a Certificate of Site Compatibility, for large wind energy generating facilities. Minn. Laws 1995 Ch. 203. On October 31, 1995, the MEQB issued a site permit for the Phase II Project to NSP.
17. On June 21, 1995, NSP selected Zond Minnesota Development Corporation II as the contractor to construct and own the Phase II project.
18. On September 6, 1996, NSP and Zond Minnesota Development Corporation II entered into a contract whereby NSP would purchase the capacity and net energy from the Phase II Project. The Phase II Project has a capacity of 100 megawatts of power. The contract has a thirty-year life.
19. On September 6 and 9, 1996 NSP presented the NSP/Zond contract to MEQB Staff and Counsel for review. On September 10, 1996, NSP provided the MEQB with certain portions of the contract that are not proprietary.

**CONCLUSIONS**

1. The MEQB has jurisdiction to determine whether Northern States Power Company has complied with the legislative mandates spelled out in Minn. Stat. § 116C.771(b) (1994).
2. NSP has filed a license application with the United States Nuclear Regulatory Commission for a spent nuclear fuel storage facility off of Prairie Island in Goodhue County.
3. NSP is continuing to make a good faith effort to implement the site for which NSP has applied for a license from the NRC.
4. NSP has contracted for construction and operation of 100 megawatts of wind power that is in addition to wind power that was under construction or under contract in May 1994

when the 1994 Prairie Island Legislation went into effect.

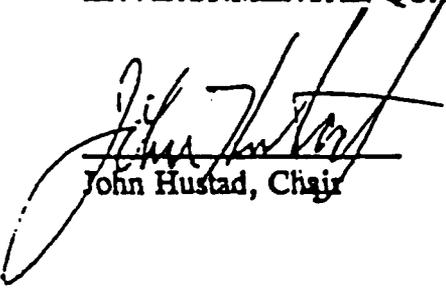
5. Any of the foregoing Findings of Fact that more properly should be designated as Conclusions are hereby adopted as such and any Conclusions that more properly should be designated as Findings are hereby adopted as such.

**ORDER**

**IT IS HEREBY ORDERED** that Northern States Power Company has complied with legislative mandates contained in Minn. Stat. § 116C.771(b) (1994).

Approved and adopted this 2nd day of October 1996.

STATE OF MINNESOTA  
ENVIRONMENTAL QUALITY BOARD



John Hustad, Chair