

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF FEDERAL AND STATE MATERIALS AND ENVIRONMENTAL
MANAGEMENT PROGRAMS
DIVISION OF WASTE MANAGEMENT AND ENVIRONMENTAL PROTECTION

ENVIRONMENTAL ASSESSMENT
FOR THE AMENDMENT OF U.S. NUCLEAR REGULATORY COMMISSION
LICENSE NO. SNM-2506 FOR
PRAIRIE ISLAND INDEPENDENT SPENT FUEL STORAGE INSTALLATION

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ENVIRONMENTAL ASSESSMENT
FOR THE AMENDMENT OF U.S. NUCLEAR REGULATORY COMMISSION
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The U.S. Nuclear Regulatory Commission (NRC) is considering amending License Number SNM-2506 issued to Northern States Power Company Minnesota (NSP), to authorize the modification of the TN-40 cask design at its Prairie Island Independent Spent Fuel Storage Installation (PIISFSI).

This Environmental Assessment (EA) was prepared in accordance with NRC regulations listed in 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions"; applicable NRC guidance outlined in NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with Nuclear Material Safety and Safeguards Programs" (NRC 2003); and other relevant National Environmental Policy Act (NEPA)-implementing regulations, including Council on Environmental Quality regulations (40 CFR Parts 1500-1508). NRC is also conducting a detailed safety review of the PIISFSI request for license amendment. The results of the safety evaluation will be documented in a separate Safety Evaluation Report (SER).

1.0 INTRODUCTION

By letter dated March 28, 2008, as supplemented August 29, 2008, NSP, formerly Nuclear Management Company, LLC, submitted a request to the NRC to amend materials license SNM-2506 for the PIISFSI. The license amendment request proposes the design modification of the TN-40 cask to the TN-40 HT cask. The modified cask design will accommodate the dry storage of fuel with higher initial enrichment and higher burnup. The ISFSI is located within the site boundary of the Prairie Island Nuclear Generating Plant (PINGP) within the city limits of Red Wing, Minnesota. Under license SNM-2506, NSP is authorized to receive, possess, store, and transfer spent fuel to the PIISFSI under the provisions in 10 CFR Part 72. The PIISFSI, operated by Xcel Energy Inc., has been conducting operations under a site-specific license since October 1993.

1.1 Current Facility Use

The primary function of the PIISFSI is to provide interim dry storage of irradiated fuel assemblies. It is designed to accommodate 48 storage casks, with a capacity of 40 spent fuel assemblies per cask. Two concrete pads provide for two parallel rows of 12 casks per row on each pad. The casks, which are self-supporting cylindrical vessels, provide safe storage by ensuring a reliable decay heat path from the spent fuel to the environment and by providing appropriate shielding of the fission product inventory. Fuel stored at the ISFSI originates only from the PINGP and will cool for a minimum of 12 years. Cooling of the casks is accomplished through the transfer of decay heat from the fuel to the basket, from the basket to the cask body and ultimately to the environment by thermal and natural convection.

Individual casks measure 2.44 m (8 ft.) in diameter, 4.88 m (16 ft.) tall, and weigh approximately 108,862 kg (240,000 lbs.) when loaded. They are aligned vertically on the concrete storage pads in a sequence that provides for access to any individual cask. Each storage cask consists of the following components as shown in Figure 1.1:

- Basket assembly for support of the fuel assemblies
- Containment vessel enclosing basket assembly and fuel
- Gamma shield
- Neutron shield
- Top neutron shield
- Pressure monitoring system
- Weather cover
- Upper and lower trunnions

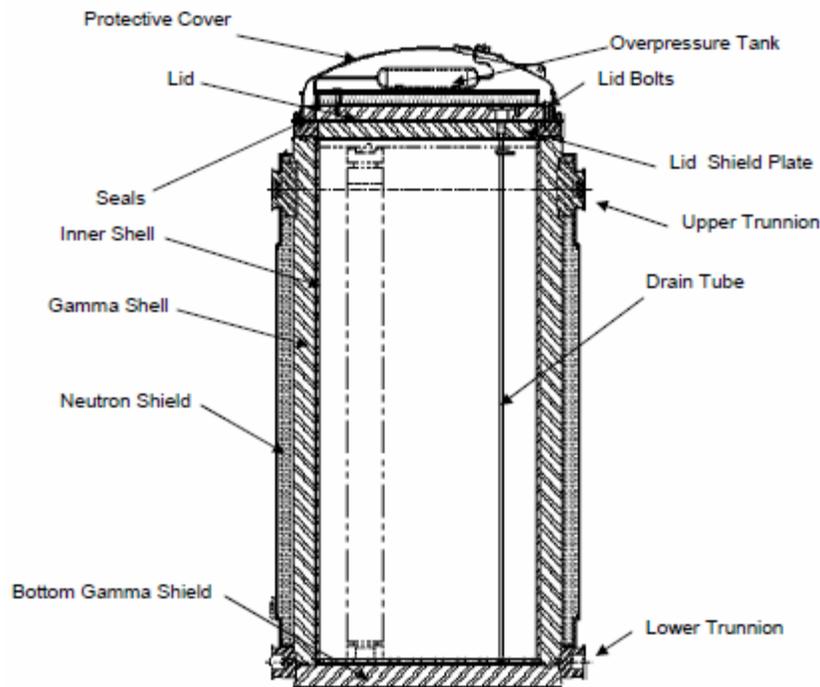


Figure 1.1 TN-40HT Cask

Under the proposed license amendment, the facility is requesting to modify the cask design from the current TN-40 to the TN-40HT cask system. While very similar in design, the major difference is that the TN-40HT cask is designed to store higher enrichment and higher burnup fuel with a maximum load of 32 kW. In order to accomplish this, the heat transfer capability of the basket design was enhanced. Additionally, to accommodate the enhanced basket, minor changes were made to the cask body. The TN-40HT employs a slightly thinner lid, shield shell, and cask bottom shell. However, the radial neutron shield thickness was increased to offset the higher neutron source of the high burnup fuel.

The equipment storage building, which is used to store the cask lifting yoke and transport vehicle, is located on the ISFSI site. The building is a steel frame structure with painted steel

walls and roof panels. Two smaller block buildings house the security system equipment and alarm monitoring equipment.

The ISFSI is located within a controlled fenced-in area within the site boundary of the PINGP. Access to the ISFSI area is controlled and access is limited to personnel during operations. In addition to access being limited at the PINGP site boundary, it is further limited at the ISFSI site boundary with fencing located 110 m (360 feet) west of the nearest edge of the ISFSI concrete storage pad. In addition, a 5.18 m (17 ft.) high earthen berm surrounds the ISFSI, except for the access road opening. The berm is designed for radiation shielding but also visually screens the facility from plant exclusion area boundaries.

1.2 Need for the Proposed Action

The approved cask for storage of spent fuel at the PINGP site is the TN-40. Currently, fuel with an initial enrichment of <3.85 wt% uranium-235 and a burnup of <45 Giga Watt-days/Metric Ton of Uranium (GWd/MTU) may be stored in the TN-40 cask and placed on the ISFSI pad. Burnup refers to the thermal energy released by fuel while it is in the reactor. With newer fuel technology, reactors are capable of achieving higher burnup, resulting in fuel with a higher temperature and greater neutron radiation. Since 1990, the PINGP has been operating with higher enriched fuel, has burned the fuel to burnup values greater than the above-mentioned limits, and stored it onsite in the spent fuel pool. PINGP seeks approval to use interim dry storage for fuels with an enrichment of ≤ 5 wt% uranium-235 and a burnup of <60 GWd/MTU. To accommodate higher initial enriched and higher burnup fuel, modifications to the cask design are required. The designated modified cask is the TN-40HT.

1.3 The Proposed Action

The objective of NSP is to modify the current TN-40 cask design. The PIISFSI stores spent fuel from the PINGP, Units 1 and 2. The dry cask system changes would allow continued operation of the PINGP following plant license renewal. The modified dry cask system, referred to as the TN-40HT, will accommodate dry storage of fuel with higher initial enrichment and higher burnup than that currently allowed with the TN-40 cask design. The enhancements involve features that improve heat transfer and neutron absorption. The heat transfer capability of the basket design must be enhanced as well as minor changes to the cask body to accommodate the enhanced basket. The changes being made to the cask design are such that the TN-40HT cask will use existing equipment for lifting, loading, and transporting. This EA addresses the expected environmental impacts associated with the proposed design modification of the ISFSI cask on the Prairie Island site.

2.0 ALTERNATIVES TO THE PROPOSED ACTION AND ENVIRONMENTAL IMPACTS

2.1 No Action

The no-action alternative will result in continued use of the TN-40 dry cask storage system. Under this alternative, NSP would not be able to store higher enriched and higher burnup fuel at the site-specific ISFSI. No action would result in the lack of an appropriate storage or disposition path for the higher enriched and higher burnup fuel.

3.0 AFFECTED ENVIRONMENT

The Prairie Island site is located on a low island terrace associated with the Mississippi floodplain. The ISFSI is situated approximately 274.3 m (300 yd) from the main generating plant. It is located in the city limits of Red Wing in Goodhue County, Minnesota, approximately 45.1 km (28 mi) southeast of the Minneapolis-St. Paul metropolitan area. This is in the southeast corner of Minnesota, where the Mississippi River serves as the state boundary between Minnesota and Wisconsin. There are two nuclear generating units in operation at the Prairie Island site with licensed power output of 1650 MWt per unit. The facility is situated on approximately 2.3E6 m² (560 acres), surrounded by the Vermillion River on the west and by the Mississippi River on the east. The protected area fence surrounding the ISFSI is within the Prairie Island site boundary and exclusion area. Earthen berms surrounding the ISFSI provide radiological shielding.

NSP owns approximately 2.3E6 m² (560 acres) of land at the PINGP, with the exception of areas controlled by the U.S. Army Corps of Engineers (USACE). The protected area of the ISFSI and the access road connecting the ISFSI and auxiliary building is on land owned by NSP. East of the plant, the exclusion zone boundary extends to the main channel of the Mississippi River. USACE owns islands within this boundary as well as a small strip of land northeast of the plant site. The Corps has entered into an agreement with NSP to prevent residential construction on that strip of land within the exclusion zone for the life of the power plant.

The ground surface near the Prairie Island site is fairly level to slightly rolling, ranging in elevation from 205.7 m (675 ft.) to 215.2 m (706 ft.) above mean sea level (msl). The surface slopes gradually toward the Mississippi River to the northeast and Vermillion River on the southwest. Normal water level is 205.6 m (674.5 ft.). Steep bluffs run parallel to this stretch of the Mississippi River and rise to an elevation of over 304.8 m (1,000 ft.) above msl approximately 2.41 km (1.5 miles) northeast and southwest of the site. Northeast and southwest of these bluffs, the ground elevation above msl ranges from 304.8 m to 365.8 m (1,000 to 1,200 ft.) and is marked by many eroded coulees.

The City of Red Wing has a population of approximately 16,358. Red Wing was incorporated as a city in 1857. Principal products include shoes, pottery, leather, linseed oil, safety products, and robotic products. The District of Prairie Island is governed by the Prairie Island Indian Community (PIIC) and has its own land use authority.

Red Wing, located in Goodhue County, serves as the county seat. Goodhue County as well as the adjacent counties of Dakota and Pierce (the latter of which is located in Wisconsin) are predominantly rural. Dairy products and livestock account for most of the three-county farm products with field crops and vegetables accounting for most of the remainder of the products.

The current land use in the surrounding area is a mixture of commercial, light industrial, residential, municipal, and commercial farming. The plant occupies a former cultivated field. Land within a radius of 8.05 km (5 mi) of the site is devoted almost exclusively to agriculture. Principal crops include soybeans, corn, oats, hay, barley, and some cannery crops at about 6.44 km (4 mi) from the plant site. The nearest dairy farm is located more than 3.22 km (2 mi) southwest of the plant site. Some beef cattle are raised approximately 3.22 km (2 mi) southwest of the site. Cattle are on pasture from early June to late September or early October. During the winter, cows are fed on locally produced hay and silage. Beyond the site boundary

and within a 1.6 km (1 mi) radius of the plant, there are approximately 20 to 30 permanent residences or summer cottages. The closest occupied offsite residence is approximately 914.4 m (3,000 ft.) north-northwest from the plant.

The Prairie Island Indian Reservation lies approximately 1.6 km (1 mi) northwest of the site. The PIIC is a federally recognized Indian Tribe organized under the Indian Reorganization Act. The reservation population is approximately 250 persons; the total enrollment of the tribal community is approximately 760 persons. Sturgeon Lake Road serves as the separating boundary between the PIIC and the PINGP. This mostly rural road provides access to the plant as well as to PIIC's residential areas, government offices, health clinics, and gaming enterprise mentioned below.

The PIIC owns and operates the Treasure Island Resort and Casino, which includes a 480-room hotel and convention center. Treasure Island Resort and Casino offers gaming, dining, live entertainment, a 95-space RV park, a 137-slip marina to accommodate those arriving via the Mississippi River, and sightseeing and dinner cruises on their riverboat. The PIIC is the largest employer in Goodhue County with over 1,500 employees in both the casino and government offices. In addition to the hotel and casino, the PIIC also operates a wastewater treatment facility.

Another business facility located about 3.22 km (2 mi) west-northwest of the Prairie Island site boundary is the tribal owned convenience store and gasoline station.

The following industrial facilities (workforce population greater than 30) are located within 8.05 km (5 mi) of the plant site:

Advertising Unlimited, 4.83-6.44 km (3-4 mi) South

DB Industries, 4.83-6.44 km (3-4 mi) SSE

IRC Industries, 4.83-6.44 km (3-4 mi) SSE

Jostens, 4.83-6.44 km (3-4 mi) SSE

Dayco PTI, 4.83-6.44 km (3-4 mi) SSE

Protein Technologies, 6.44-8.05 km (4-5 mi) ESE

Ram Center Inc., 4.83-6.44 km (3-4 mi) South

Red Wing Shoe Company, 4.83-6.44 km (3-4 mi) SSE

Republican Eagle (Manufacturing), 6.44-8.05 km (4-5 mi) SSE

Riedell Shoe Company, 4.83-6.44 km (3-4 mi) SSE

Riviera Cabinets, 4.83-6.44 km (3-4 mi) SSE

Central Research Laboratory, 4.83-6.44 km (3-4 mi) South

No military installations are within 8.05 km (5 mi) of the plant site. No large natural gas pipelines pass close to the site.

Several surface water bodies are located adjacent to the PIISFSI. The main waterway, the Mississippi River, along with the Vermillion River, Sturgeon Lake, and the Cannon River all serve as primary surface water bodies near the site. Lock and Dam Number 3, which controls the levels of the Mississippi River and the Sturgeon Lake, is located approximately 2.41 km (1.5 mi) downstream from the site. The lock and dam is one of a series of navigation dams created by the USACE on the Mississippi River for maintaining a minimum-depth navigation channel. The Vermillion and Cannon Rivers enter the main stream of the Mississippi River below the dam, and therefore are not directly controlled by the dam system. Normal pool level upstream from Lock and Dam 3 is 205.6 m (674.5 ft.). Discharge from Lock and Dam 3 is typically highest in spring and early summer.

There are no withdrawals of river water for supply of city water for at least 482.8 km (300 mi.) downstream from the site. Minor withdrawals of river water for irrigation purposes do occur, the nearest being the City of Red Wing which withdraws water for landscaping. Surface drainage at the site is essentially nonexistent, primarily due to the extremely sandy nature of the soils and the topography of the island. There are no well-established drainage lines, and because of the nature of the terrain, there are many small internal drainage basins.

4.0 HUMAN AND ENVIRONMENTAL IMPACTS

Operation activities at the ISFSI have the potential to spread residual radiological contamination via accidents and to increase dose rates through direct exposure. Impacted populations include site workers and members of the public in the local community. Operation activities also present non-radiological impacts due to increased cask surface temperature.

4.1 Radiological Impacts to Site Workers and Members of the Public from Operational Activities

The PIISFSI provides interim storage of discharged spent fuel assemblies from the PINGP, Units 1 and 2. Under normal operating conditions, the cask is designed such that no releases of contamination are expected. For accident conditions, the hazard may involve the release of radioactive materials.

The storage casks are designed to ensure that: (1) fuel criticality is prevented, (2) cask integrity is maintained, and (3) fuel is not damaged to preclude its removal from the cask. These design criteria satisfy the requirements for 10 CFR Part 72 and consider the effects for normal operations and for off-normal events including natural phenomena and fabricated accidents for example fire, mishandling of casks, and impact by airplane. For a TN-40HT cask, the analysis of a loss of confinement barrier assumed a leak at the inner seal in addition to a failure of the pressure boundary of the overpressure monitoring system.

Table 4.1 indicates the dose for hypothetical accident conditions at a distance of 110 m (361 ft), the total distance from the cask to the ISFSI site boundary. The maximum 30-day total effective dose equivalent (TEDE) value is 0.24 mSv (24 mrem). The maximum 30-day dose to any organ/tissue (TODE) is 2.44 mSv (244 mrem). The critical organ in this case is the bone surface. The maximum 30-day Lens Dose Equivalent value is 0.241 mSv (24.1 mrem).

Table 4.1 Accident Conditions		
Organ	10 CFR 72.106(b) Limit (mrem)	110 meter dose (mrem)
Whole Body (TEDE)	5,000	24
Organ (TODE)	50,000	244 (Bone Surface)
Lens of Eye (LDE)	15,000	24.1

These values are well below the limiting off site doses defined in 10 CFR 72.106(b).

During the storage phase, radiological impacts to workers will result from routine activities, such as performing radiation surveys, surveillance activities, and routine security patrols. The actual surface dose rate along the side of a single cask is expected to increase from a value less than 0.58 mSv/hr (58 mrem/hr) for the TN-40 cask to a value less than 0.61 mSv/hr (61 mrem/hr) for the TN-40HT cask.

Potential radiological impacts to workers on the PINGP site who are not involved in cask handling (i.e., workers outside of the ISFSI boundary) from routine operations at the ISFSI are limited by the distance to the casks and the shielding provided by the berm around the ISFSI site. The dose rate at the ISFSI site boundary (110 m [361 ft]) is calculated to be 2.43E-04 mSv/hr (2.43E-02 mrem/hr) when the pad is fully loaded (i.e., with 48 casks). Therefore, doses attributable to the ISFSI for PINGP workers not involved in cask handling are expected to be much lower than the 10 CFR Part 20 Subpart C occupational dose limits applicable to workers at ISFSI sites. Doses to members of the public would be further limited by the distance to the PINGP site boundary and would therefore not exceed the regulatory limits of 0.02 mSv/hr (2 mrem/hr) for external sources outlined in 10 CFR 20.1301(a)(2) for individual members of the public.

The highest exposures to the nearest offsite permanent and transient individuals were calculated to be 2.42E-6 mSv/hr (2.42E-4 mrem/hr) and 2.64E-7 mSv/hr (2.64E-5 mrem/hr) respectively. The calculation of collective population dose conservatively assumes that all permanent residents within the 3.22 km (2 mi) radius are located at the same distance of 0.72 km (0.45 mi) from the ISFSI as the nearest resident and all transient residents are 1.3 km (0.8 mi) from the ISFSI. The total annual collective off-site dose within a 3.22 km (2 mi) radius from ISFSI operations would be 3.60 person-rem. The rapid attenuation of neutron and gamma dose rates with distance makes the doses for the more distant population negligible. Note that this is the maximum dose rate that would occur with 48 casks. It would occur when the last 2 casks are placed on the ISFSI. Thereafter, the dose rate would constantly decrease due to decay.

The annual exposure to the nearest offsite permanent resident, which is shielded by the 5.18 m (17 ft.) berm, has been calculated to be 2.2E-2 mSv/yr (2.20 mrem/yr). This is an increase from the calculated dose from the TN-40 casks, with an annual exposure to the nearest permanent resident of 8.0E-4 mSv/yr (8.0E-2 mrem/yr) (NRC 1992). The TN-40 dose is based on the same number of casks (i.e., 48 casks), the same distance to the nearest resident (i.e., 0.72 km [0.45 mi]), and the same shielding features provided by the berm as the TN-40HT cask. The increase in dose from cask storage is attributable to the higher enrichment and higher burnup fuel stored in the casks. However, the modified cask is designed to offset these effects to an extent, resulting in a smaller dose increase than would occur if the higher enriched and higher burnup fuel were placed in the TN-40 cask. Despite the small increase in exposure expected to

occur because of the change in fuel, the exposure to the nearest offsite permanent resident from the ISFSI is still well below the 0.25 mSv/yr (25 mrem/yr) limit specified in 10 CFR 72.104(a) and the 1 mSv/yr (100 mrem/yr) limit in 10 CFR 20.1301(a)(1).

No activities at the previously mentioned industrial facilities located within 8.05 km (5 mi) of the ISFSI present a hazard to the safe operation of the plant, nor does the operation of the ISFSI impose adverse impacts on those industrial facilities.

The TN-40HT casks are designed such that the radial neutron shields are 1.91 cm (0.75 in) thicker than the TN-40 cask. Therefore, the casks provide sufficient radiation shielding to mitigate the increased dose incurred by the higher enriched and higher burnup fuel to allow as low as reasonably achievable (ALARA) doses to the public. They are also designed so that no radioactive discharges are expected during operation activities. For that reason, area radiological alarm systems, airborne radioactivity monitors, and effluent monitoring programs are unnecessary at the ISFSI. However, as an additional measure of conservatism, thermo luminescent dosimeters (TLD) will be used to record dose rates along the ISFSI site boundary fence. Additionally, as indicated in Section 1.1, instrumentation to monitor cask pressure is a design component of the TN-40HT cask.

Visual surveillance of the ISFSI is performed on a quarterly basis to determine that no significant damage or deterioration of the exterior of the casks has occurred. The surveillance also includes reading of the TLDs along the nuisance fence and observation to determine that no significant accumulation of debris on the cask surface has occurred.

The NRC concludes that NSP has provided adequate plans to ensure that potential radiological impacts to members of the public from the proposed action will not exceed NRC limits and are unlikely to result in adverse environmental impacts.

4.2 Non-Radiological Impacts

Potential non-radiological environmental impacts could be caused by increased decay heat and increased cask surface temperature, resulting from the higher enriched and higher burnup fuel. As previously indicated, each TN-40HT cask is designed to dissipate up to 32 kW of decay heat. The decay of heat is passively dissipated by convection, conduction, and thermal radiation to the environment in the immediate vicinity of the ISFSI. The operation of the ISFSI requires no active heat dissipation system. Accordingly, there will be no impact on surface or groundwater quality or aquatic biology.

The surface temperature of a single TN-40HT cask is 126.6 °C (260°F), an increase from 115.5°C (240°F) with the TN-40 cask. As the cask approaches the specified temperature, the air temperature in the immediate vicinity of the casks will be higher than the ambient temperature. The affected area is relatively small and localized. Thermal impacts to members of the public due to the increased cask temperature are limited by the distance to the casks. Therefore, the increase in cask surface temperature is not expected to affect the climate of the region. NRC staff has determined that the proposed action and the incremental increase in surface temperature will not affect listed species or critical habitat.

4.2.1 Environmental Justice

4.2.1.1 Minority Populations in the Vicinity of the PIISFSI

According to 2000 census data, 16.6 percent of the population (approximately 2,756,000 individuals) residing within an 80-km (50-mile) radius of the PIISFSI identified themselves as minority individuals. The largest minority group was Black or African American (approximately 185,000 persons or 6.7 percent), followed by Asian (approximately 140,000 persons or about 5.1 percent). According to the U.S. Census Bureau, about 3.9 percent of the Goodhue County population identified themselves as minorities, with American Indian and Alaska Native persons comprising the largest minority group (1.3 percent). The NRC staff has identified the PIIC as a minority population within an 80-km (50-mile) radius of the PIISFSI. The PIIC is located immediately north and adjacent to the NSP property within 1.6 km (1 mi) of PINGP, Units 1 and 2 and the ISFSI. According to census data 3-year average estimates for 2006-2008, the minority population of Goodhue County, as a percent total population, had increased to 5.3 percent.

4.2.1.2 Low-Income Populations in the Vicinity of the PIISFSI

According to 2000 census data, approximately 32,000 families and 199,000 individuals (approximately 4.6 and 7.2 percent, respectively) residing within an 80-km (50-mi) radius of the PIISFSI were identified as living below the Federal poverty threshold in 1999. The 1999 Federal poverty threshold was \$17,029 for a family of four.

According to census data in the 2006-2008 American Community Survey 3-Year Estimates, the median household income for Minnesota was \$57,795, while 13.2 percent of the state population and 9.6 percent of families were determined to be living below the Federal poverty threshold. Goodhue County had a lower median household income average (\$55,813) and lower percentages (7.9 percent) of individuals and families (5.5 percent) living below the poverty level, respectively.

4.2.1.3 Impact Analysis

Potential impacts to minority and low-income populations would mostly consist of radiological effects; however, radiation doses from the modified TN-40 cask design at the PIISFSI would be well below regulatory limits. Because of its proximity to the plant and the uniqueness of the community, the NRC acknowledges that there is the potential for the PIIC to be disproportionately affected by the PIISFSI. However, based on recent monitoring results, concentrations of contaminants in native leafy vegetation, soils and sediments, surface water, and fish in areas surrounding PINGP 1 and 2 and the PIISFSI have been quite low (at or near the threshold of detection) and seldom above background levels. Consequently, no disproportionately high and adverse human health impacts would be expected in special pathway receptor populations in the region as a result of subsistence consumption of fish and wildlife.

Therefore, based on this information and the analysis of human health and environmental impacts presented in this EA, the proposed modification would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations residing near the PIISFSI.

4.3 Cumulative Impacts

The NRC staff considered potential impacts in the environmental analysis of the proposed action when added to other past, present, or reasonably foreseeable future actions. The geographic area considered is the PIISFSI site. Other actions considered include the proposed license renewal of the PINGP, Units 1 and 2 reactors; the proposed license renewal of the PIISFSI facility; the proposed expansion of the PIISFSI pad; and the proposed power uprate for reactor units 1 and 2. None of these potential future actions will have a cumulative impact on the current PIISFSI site. Additionally, all of these actions will require their own separate process to uphold NEPA. NRC approval of the proposed license amendment, when combined with the known effects on resource areas at the site, is not anticipated to result in any cumulative impacts at the site.

5.0 AGENCIES AND PERSONS CONSULTED

NRC staff prepared this Environmental Assessment (EA) with input from the U.S. Fish and Wildlife Service, the Minnesota State Historic Preservation Office, and the PIIC.

By e-mail letter dated January 26, 2009, the U.S. Fish and Wildlife Service indicated that based on current information, only one endangered species under U.S. Fish and Wildlife jurisdiction are known to occur in the site project area. The federally endangered Higgins eye pearlymussel (*Lampsilis higginsii*) exists in the Mississippi River within one mile of the site. The proposed action will not emit any discharges into the river; therefore, the proposed action will have no impacts on federally listed species or critical habitat.

NRC staff has determined that the proposed action is not the type of activity that has potential to cause effects on historic properties. No adverse impacts to existing archaeological resources are expected to occur because there is no increase in the footprint of the ISFSI. Therefore, no further consultation is required under Section 106 of the National Historic Preservation Act.

On July 10, 2009, NRC provided a draft of its Environmental Assessment to the State of Minnesota, Department of Natural Resources (MNDNR) Environmental Review Unit for review. On July 28, 2009, the NRC received a response via telephone from the MNDNR indicating they had no comments.

In addition to consultations, the NRC talked with interested stakeholders during the review period, namely the PIIC. During a September 15 and October 30, 2009 teleconference, NRC staff discussed with a representative of the PIIC the environmental review process and impacts from the proposed action, specifically radiological and non-radiological, as described in the EA. The input and concerns of the PIIC were incorporated into the final text of the EA.

6.0 CONCLUSION

NRC staff concludes that the approval of the license amendment will not cause any significant impacts to the human environment and is protective of human health. No radiological contaminated effluents are expected during site operations. Likewise, surface and groundwater are not expected to be impacted. No measurable radiation exposure to a member of the public is anticipated, and public exposures will therefore be less than the applicable exposure limits in 10 CFR 20.1301 and 10 CFR 72.104. The NRC determined that the proposed action is more favorable than the no-action alternative. The proposed action is the modification of the TN-40 cask to the TN-40HT cask, which stores higher initial uranium-235 enriched and higher burnup

fuel. The enhancement of the casks will allow for storage of spent fuel throughout the remainder of the plant life.

The NRC staff has prepared this EA in support of the proposed action to amend materials license SNM-2506. Based on this EA, NRC has concluded that there are no significant environmental impacts and the license amendment does not warrant the preparation of an Environmental Impact Statement. Accordingly, it has been determined that a Finding of No Significant Impact is appropriate.

7.0 LIST OF PREPARERS

The following NRC staff prepared this Environmental Assessment:

Kellee L. Jamerson, Project Manager, Environmental Review Branch, Division of Waste Management and Environmental Protection, Office of Federal and State Materials and Environmental Management Programs

8.0 LIST OF ACRONYMS

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
EA	Environmental Assessment
FRN	Federal Register Notice
ISFSI	Independent Spent Fuel Storage Installation
LDE	Lens Dose Equivalent
GWd/MTU	Giga Watt-day/Metric Ton of Uranium
NRC	Nuclear Regulatory Commission
NSP	Northern States Power Company Minnesota
PIIC	Prairie Island Indian Community
PIISFSI	Prairie Island Independent Spent Fuel Storage Installation
PINGP	Prairie Island Nuclear Generating Plant
SER	Safety Evaluation Report
TEDE	Total Effective Dose Equivalent
TLD	Thermo Luminescent Dosimeters
TODE	Total Organ Dose Equivalent
USACE	United States Army Corps of Engineers

9.0 LIST OF REFERENCES

E-mail from Gary Wege, FWS to Kellee Jamerson, NRC, RE: Response to Letter Requesting List of Federal Threatened and Endangered Species in the Project Area, January 26, 2009, ML090260631.

Northern States Power Company Minnesota (NSP), "License Amendment Request to Modify TN-40 Cask Design (Designated as TN-40HT)," March 2008, ML081190039.

NSP, "Prairie Island Independent Spent Fuel Storage Installation TN-40HT Cask Design Updated Safety Analysis Report," March 2008.

NSP, "Prairie Island Independent Spent Fuel Storage Installation Environmental Report," August 2008.

NRC, "Environmental Assessment Related to Construction and Operation of the Prairie Island Independent Spent Fuel Storage Installation," July 1992, ML072760561.

NRC, NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs" Washington, D.C. August 2003.

Title 10 Code of Federal Regulations, Part 20, Subpart D, Section 1301, "Radiation Dose Limits for Individual Members of the Public".

Title 10 Code of Federal Regulations, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions".

Title 10 Code of Federal Regulations, Part 72, Subpart E, Section 104, "Criteria for Radioactive Materials in Effluents and Direct Radiation from an ISFSI or MRS".

Title 10 Code of Federal Regulations, Part 72, Subpart E, Section 106, "Controlled Area of an ISFSI or MRS".