UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 11, 2010

Mr. Timothy J. O'Connor
Site Vice President
Monticello Nuclear Generating Plant
Northern States Power Company - Minnesota
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT (MNGP) - FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO THE PROPOSED EXTENDED POWER UPRATE (TAC NO. MD9990)

Dear Mr. O'Connor:

Enclosed is a copy of the Final Environmental Assessment (EA) and Finding of No Significant Impact related to your request for an amendment dated November 5, 2008, as supplemented on January 29, 2009 (on environmental issues) for MNGP. The draft EA was transmitted to you on August 28, 2009, and published in the Federal Register on September 15, 2009 (74 FR 47281). No comments on the draft EA were received from any source.

Your proposed amendment would permit Northern States Power Company to increase the maximum power level of MNGP from 1,775 megawatts thermal (MWt) to 2,004 MWt. This change represents a power increase of approximately 13.0 percent.

The enclosed final EA is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Peter S. Tam, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosure:
As stated

cc w/encls: Distribution via ListServ

7590-01-P

NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY, LLC

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

FINAL ENVIRONMENTAL ASSESSMENT AND

FINDING OF NO SIGNIFICANT IMPACT

The Nuclear Regulatory Commission (NRC) has prepared a final Environmental Assessment (EA) as part of its evaluation of a request by Northern States Power Company (NSPM) for a license amendment to increase the maximum thermal power at the Monticello Nuclear Generating Plant (MNGP) from 1,775 megawatts thermal (MWt) to 2,004 MWt. This represents a power increase of approximately 13 percent over the current licensed thermal power. As stated in the NRC staff's position paper dated February 8, 1996, on the Boiling-Water Reactor Extended Power Uprate (EPU) Program, the NRC staff will prepare an environmental impact statement if it believes a power uprate would have a significant impact on the human environment. The NRC published a draft EA and finding of no significant impact on the proposed action for public comment in the *Federal Register* on September 15, 2009 (74 FR 47281). No comments were received on the draft EA. The NRC staff did not identify any significant impact from the information provided in the licensee's EPU application for MNGP or during the NRC staff's review of other available information; therefore, the NRC staff is documenting its environmental review in this final EA.

ENVIRONMENTAL ASSESSMENT

Plant Site and Environs:

The MNGP site is located in Monticello, Minnesota, along the southern bank of the Mississippi River at River Mile (RM) 900, approximately 30 miles (48 kilometers) northwest of Minneapolis/St. Paul, and east of Interstate Highway 94. The 2,150-acre (870-hectare) site consists of 2 miles (3 kilometers) of frontage on both banks of the Mississippi River, within portions of Wright and Sherburne Counties. The plant and its supporting facilities occupy approximately 50 acres (20 hectares) in Wright County.

MNGP is a single-unit boiling water reactor that has been designed to allow operation using four water circulating modes to cool the system, and draws water from and discharges water to the Mississippi River. These four water circulating modes include an open-cycle (once-through) system, a closed cycle system using two mechanical draft cooling towers, a helper cycle system, and a partial recirculation of the cooling water. The helper cycle cools water using both the open cycle to withdraw water from and discharge the water back to the Mississippi River, and the cooling towers to cool water prior to discharge to the river. The helper cycle is used when the discharge canal temperature approaches permit limits and upstream river temperatures are consistently at or above 68 °F. MNGP operates in open cycle or helper cycle approximately 98 percent of the time. In the partial recirculation mode, 75 percent of the Mississippi River flow is withdrawn and the cooling towers are operating. A portion of the cooled water is recirculated to the intake and the remainder is discharged to the river. The partial recirculation mode is used when river flow is less than 860 cubic-feet-per-second (cfs) but greater than 240 cfs, and the river temperature is elevated.

Identification of the Proposed Action:

By application dated November 5, 2008, as supplemented on January 29, 2009 (on environmental issues only) the licensee requested an amendment for an EPU for MNGP to increase the licensed thermal power level from 1,775 MWt to 2,004 MWt, which is an increase

of 13 percent over the current licensed thermal power and a 20 percent increase over the original licensed thermal power. The Atomic Energy Commission (predecessor of the NRC) issued the Final Environmental Statement (FES) in November 1972, for the original license for MNGP. The NRC previously approved a 6.3 percent stretch power uprate in September 1998, increasing the power output from 1,670 MWt to 1,775 MWt. The NRC EA for that action resulted in a finding of no significant impact and was published in the *Federal Register* on September 1, 1998 (63 FR 46489). In addition, the NRC issued a Supplemental Environmental Impact Statement, NUREG-1437, Supplement 26 (SEIS-26) in August 2006, associated with renewing the operating license for MNGP for an additional 20 years. This proposed amendment for an EPU would result in an increase in production of electricity and the amount of waste heat delivered to the condenser, requiring an increase to the amount of water withdrawn from the Mississippi River for cooling purposes, and a subsequent increase in the temperature of the water discharged back to the Mississippi River.

The licensee plans to implement the proposed EPU in two phases to coincide with two refueling outages. The first refueling outage is scheduled for late 2009, with a corresponding increase in power of approximately 50 MWt to a total of 1,825 MWt. The second refueling outage is scheduled for 2011, and the power level will be increased to the maximum of 2,004 MWt.

The Need for the Proposed Action:

The need for the additional power generation is based upon NSPM's 15-year Resource Plan that includes a forecast of an average annual increase of peak electrical demand of 1.2 percent through NSPM's 2008-2022 planning period. This forecast for increased energy includes NSPM's resource obligations for summer peak net demand, minimum reserve requirements, its committed resources, and other contracted obligations. This increase in

power demand would partially be met by the increased amount of power output proposed for MNGP along with other energy sources.

Environmental Impacts of the Proposed Action:

At the time of issuance of the operating license for MNGP in 1972, the NRC staff noted that any activity authorized by the license would be encompassed by the overall action evaluated in the FES for the operation of MNGP. In addition, the NRC published the SEIS-26 in 2006, which evaluated the environmental impacts of operating MNGP for an additional 20 years, and determined that the environmental impacts of license renewal were small. The sections below summarize the non-radiological and radiological impacts in the environment that may result from the proposed action of the proposed EPU.

Non-radiological Impacts

Land Use and Aesthetic Impacts:

Potential land use and aesthetic impacts from the proposed EPU include impacts from plant modifications at MNGP. While some plant components would be modified, most plant changes related to the proposed EPU would occur within existing structures, buildings, and fenced equipment yards housing major components within the developed part of the site. No new construction would occur outside of existing facilities and no expansion of buildings, roads, parking lots, equipment storage areas, or transmission facilities would be required to support the proposed EPU, although some transmission and distribution equipment may be replaced or modified.

Existing parking lots, road access, lay-down areas, offices, workshops, warehouses, and restrooms would be used during plant modifications. Therefore, land use conditions would not change at MNGP. Also, there would be no land use changes along transmission lines (no new lines would be required for the proposed EPU), transmission corridors, switch yards, or substations.

Since land use conditions would not change at MNGP, and because any land disturbance would occur within previously disturbed areas, there would be little or no impact to aesthetic resources in the vicinity of MNGP. Therefore, the NRC staff concludes that there would be no significant impact from EPU-related plant modifications on land use and aesthetic resources in the vicinity of MNGP.

Air Quality Impacts:

During implementation of the EPU at the MNGP site, some minor and short duration air quality impacts would likely occur. Emissions from the vehicles of workers would be the main sources of these air quality impacts. Wright County, where MNGP is located, is designated as a maintenance area for carbon monoxide. The licensee indicated that an additional 500 temporary employees would be needed for the duration of the project. The majority of the workforce would reside within the county where MNGP is located. The screening analysis performed by the licensee for the proposed Monticello EPU projects that annual average vehicular traffic would increase by approximately 2 percent. The majority of the EPU-associated activities would be performed inside existing buildings and will not cause additional atmospheric emissions. Therefore, the NRC staff concludes that there would be no significant impact on air quality during and following implementation of the proposed EPU.

Water Use Impacts

Groundwater:

MNGP uses groundwater for domestic-type water uses and limited industrial use. Groundwater is obtained from six on-site wells, two of which are permitted and regulated by the Minnesota Department of Natural Resources (MDNR) through the State's water appropriation permit program. These two wells produce 100 gallons per minute each and provide domestic water to restrooms, showers, and laundries and industrial use water to the MNGP reverse osmosis system, and to pump seals at the plant intake structure. Four additional small capacity

wells that do not require an MDNR permit are used to supply domestic use water to buildings not connected to the permitted system. The proposed EPU will not significantly increase the use of domestic groundwater, and the volume of additional groundwater needed for industrial use is within the limits of the existing appropriations permit. Therefore, the NRC staff concludes that there would be no significant impact on groundwater resources following implementation of the proposed EPU.

Surface Water:

MNGP uses surface water for plant condenser cooling, auxiliary water systems, service water cooling, intake screen wash, and fire protection. Under MDNR water appropriation permit number PA 66-1172-S, MNGP may withdraw up to 645 cubic feet per second (cfs) from the Mississippi River. Surface water consumption under EPU conditions is expected to be maintained within permitted limits. The upper limit of the permit is 8,700 ac-ft per year, which would not be reached because the cooling towers are typically operated in combination with the once-through cooling system. As part of its environmental review for license renewal, the NRC staff stated in SEIS-26 that "the consumptive loss due to evaporation from the cooling towers represent 4 percent of the river flow, which is not considered significant." The increased volume of circulation water will continue to have an insignificant effect on the total consumptive use of surface water at MNGP. The issue of discharge temperatures is regulated by the National Pollutant Discharge Elimination System (NPDES) permit discussed in the following section. Therefore, the NRC staff concludes that there would be no significant impact on surface water resources following implementation of the proposed EPU.

Aquatic Resources Impacts:

The potential impacts to aquatic biota from the proposed action include impingement, entrainment, and thermal discharge effects.

Since MNGP operates most of the time in open-cycle mode, an increase in river water appropriation for the EPU from the current consumptive rate of 509 cfs to 645 cfs may increase impacts from entrainment and impingement of fish and shellfish in their early life stages. However, in a Section 316(a) Clean Water Act (CWA) Demonstration project in 1975, for MNGP that included an evaluation of plant impacts on aquatic organisms, the evidence indicated that operations of MNGP had not produced appreciable harm to the aquatic organisms in the Mississippi River in the vicinity of MNGP. In addition, in the SEIS-26, the NRC staff concluded in its assessment of the relicensing activities of MNGP that MNGP was in compliance with its current State of Minnesota NPDES permit, and in compliance with Section 316(b) of the CWA regarding the use of best available technology for the minimization of adverse environmental impacts from entrainment and impingement, and further mitigation measures would not be warranted. Further, river water appropriation under EPU operation will not increase beyond the current maximum MNGP NPDES Permit limit of 645 cfs. Therefore, the NRC staff concludes that there would be no significant adverse impacts from entrainment or impingement for the proposed action.

According to the licensee, at the proposed EPU conditions, the temperature of the water entering the discharge canal is expected to increase by a maximum of 4.5 $^{\circ}$F over the current discharge canal temperature, which ranges from 66 $^{\circ}$F to 95 $^{\circ}$F depending upon the season. This can lead to changes to the length, width, and duration of the thermal plume across the Mississippi River. However, the licensee states in the application that when canal discharge temperatures have approached the limits of the NPDES permit, MNGP will reduce power in order to comply with NPDES thermal discharge requirements. The NRC staff previously noted in its SEIS-26 and review of MNGP's license renewal application that, despite several periods of non-compliance with the NPDES permit, there have been no indications of adverse impacts to the aquatic biota within the vicinity of the discharge plume. Therefore, the NRC staff concludes

that there would be no significant adverse impacts to aquatic biota from thermal discharges for the proposed action.

The licensee stated in the application that an increase of up to 4.5 °F for the effluent at the discharge canal over the current temperature would not result in a significant increase in the production of harmful thermophilic organisms in the discharge canal. The maximum temperature at the discharge canal would remain within the limits of the NPDES permit, and this temperature is also well below the temperature for maximum growth rate of thermophilic organisms. The NRC staff determined, in SEIS-26, that thermophilic organisms are not likely to occur as a result of discharges by MNGP into the Mississippi River. No further mitigation was deemed necessary by the NRC staff in SEIS-26. Based upon the information provided in the application for EPU and SEIS-26, the NPDES permit requirements for water temperature, and the Section 316(b) requirements of the CWA, the NRC staff concludes that the impact of thermophilic microbiological organisms from the proposed EPU would not be significant.

Terrestrial Resources Impacts:

According to the application and the previous discussion regarding land use, the proposed action will not affect any lands located outside of the inner security fence at MNGP. Therefore, the NRC staff concludes that there would be no significant impacts on terrestrial biota associated with the proposed action.

Threatened and Endangered Species Impacts:

Few Federal- or State-listed aquatic species are known to exist in the four counties (Wright, Sherburne, Hennepin, and Anoka counties) in which MNGP and the related transmission lines are located, and no Federal or State-listed aquatic species have been identified near MNGP. Similarly, no Federal-listed terrestrial species occur within the subject four counties. There are six State-listed species that occur or potentially occur in the vicinity of MNGP. However, because no changes are proposed to terrestrial wildlife habitat on the MNGP

site or its vicinity from the proposed EPU, the NRC staff concludes that there would be no significant impacts to any threatened or endangered species for the proposed action.

Historic and Archaeological Resources Impacts:

Historic and archaeological resources have been identified in the vicinity of MNGP, but not at MNGP. The licensee has no plans to construct new facilities or modify existing access roads, parking areas, or laydown areas for EPU operation. The licensee stated that onsite transmission and distribution equipment could be replaced or modified to support EPU activities, however, these activities would be limited to previously disturbed areas. Therefore, the NRC staff concludes that there would be no significant impact from the proposed EPU on historic and archaeological resources at MNGP. However, should ground-disturbing activities occur on undisturbed portions of the plant site or in transmission line right-of-ways, an archaeological investigation would be conducted by a qualified archaeologist in consultation with the Minnesota State Historic Preservation Office.

Socioeconomic Impacts:

Potential socioeconomic impacts from the proposed EPU include temporary increases in the size of the workforce at MNGP and associated increased demand for public services and housing in the region. The proposed EPU could also increase tax payments due to increased power generation.

Currently, there are approximately 327 full-time workers employed at MNGP, residing primarily in Wright County and Sherburne County, Minnesota. During refueling outages (approximately every 24 months) the number of workers at MNGP increases by as many as 600 workers for 30 to 40 days.

The proposed EPU is expected to temporarily increase the size of the workforce at MNGP during two refueling outages. Approximately 250 additional workers would be needed during the 2009, refueling outage, and up to 500 additional workers would be needed during the

2011, refueling outage to support EPU-related activities at MNGP. Once completed, the proposed EPU would not increase the size of the MNGP workforce during future refueling outages.

Most of the EPU plant modification workers would likely relocate temporarily to Wright and Sherburne counties, resulting in short-term increases in the local population along with increased demands for public services and housing. Because plant modification work would be short-term, most workers could stay in available rental homes, apartments, mobile homes, and camper-trailers. Since MNGP is located in a high population area and the number of available housing units exceeds demand, any temporary changes in plant employment would have little or no noticeable effect on the availability of housing in the region. Due to the short duration of plant outages and the availability of housing, there would be no significant employment-related housing impacts.

NSPM currently pays annual real estate taxes to public School District 882, Wright County, and the City of Monticello. The proposed EPU could increase property tax payments because the total amount of tax money paid would increase as power generation increases and because the proposed EPU could increase the assessed market value of MNGP. Due to the short duration of EPU-related plant modification activities, there would be little or no noticeable effect on tax revenue streams from the temporary MNGP workers residing in Wright County and Sherburne County. Therefore, the NRC staff concludes that there would be no significant adverse socioeconomic impacts from EPU-related plant modifications and operations under EPU conditions in the vicinity of MNGP.

Environmental Justice Impacts:

The environmental justice impact analysis evaluates the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from activities associated with EPU operation at MNGP. Such

effects may include ecological, cultural, human health, economic, or social impacts. Some of these potential effects have been identified in resource areas discussed in this EA. For example, increased demand for rental housing during plant modifications for the EPU could disproportionately affect low-income populations. Minority and low-income populations are subsets of the general public residing around MNGP, and all are exposed to the same health and environmental effects generated from activities at MNGP.

Environmental Justice Impact Analysis:

The NRC staff considered the demographic composition of the area within a 50-mile radius of MNGP to determine the location of minority and low-income populations and whether they may be affected by the proposed action. According to U.S. Census Bureau data for 2000, the largest minority group was Black or African American (178,000 persons or 6.5 percent), followed by Asian (132,000 or about 4.8 percent). Low-income populations in the vicinity of MNGP were identified as living below the 1999 Federal poverty threshold of $17,029 for a family of four. According to census data, Wright County and Sherburne County had higher median household income averages ($67,391 and $67,634) and lower percentages (both 5.0 percent) of individuals living below the poverty level, respectively.

Potential impacts to minority and low-income populations would mostly consist of environmental and socioeconomic effects (e.g., noise, dust, traffic, employment, and housing impacts).

Noise and dust impacts would be short-term and limited to onsite activities. Minority and low-income populations residing along site access roads could experience increased commuter vehicle traffic during shift changes. Increased demand for inexpensive rental housing during EPU-related plant modifications could disproportionately affect low-income populations, but there are a sufficient number of rental housing units available to accommodate the increase of workers at MNGP during the outages. Due to the short duration of the EPU-related work and

the availability of rental properties, impacts to minorities and low-income populations would be short-term and limited.

Based on this information and the analysis of human health and environmental impacts presented in this EA, the NRC staff concludes that the proposed EPU operation would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations residing in the vicinity of MNGP.

Non-radiological Impacts Summary:

As discussed above, the proposed EPU would not result in any significant non-radiological impacts. The NRC staff also anticipates that there would be no significant non-radiological cumulative impacts related to the proposed EPU. Table 1 summarizes the non-radiological environmental impacts of the proposed EPU at MNGP.

Table 1. Summary of Non-radiological Environmental Impacts

Land Use	No significant impact on land use conditions and aesthetic resources in the vicinity of MNGP.
Air Quality	Temporary short-term air quality impacts from construction activities and vehicle emissions related to travelling of the workforce required to complete EPU modifications; no significant air quality impacts from such temporary increase in workforce.
Water Use	Water use changes resulting from the EPU would be relatively minor. No significant impact on groundwater or surface water resources.
Aquatic Resources	No significant impact to aquatic resources due to impingement and entrainment or thermal discharge.
Terrestrial Resources	No significant impact to terrestrial resources.
Threatened and Endangered Species	No significant impact to Federal- or State-listed species.

Historic and Archeological Resources	No significant impact to historic and archaeological resources on site or in the vicinity of MNGP.
Socioeconomics	No significant socioeconomic impacts from EPU-related temporary increase in workforce or EPU operation.
Environmental Justice	No disproportionately high and adverse human health and environmental effects on minority and low-income populations in the vicinity of MNGP.

Radiological Impacts

Radioactive Gaseous and Liquid Effluents, Direct Radiation Shine, and Solid Waste:

Nuclear power plants use waste treatment systems to collect, process, recycle, and dispose of gaseous, liquid, and solid wastes that contain radioactive material in a safe and controlled manner within NRC and EPA radiation safety standards.

Radioactive Gaseous and Liquid Effluents:

During normal power plant operation, the gaseous effluent treatment system processes and controls the release of radioactive gaseous effluents into the environment.

Implementation of the proposed EPU would increase the production and activity of gaseous effluents by approximately 13 percent, which is in proportion to the proposed increase in power level. As reported by the licensee for the 2001 - 2006 period, the average annual calculated maximum total body dose to an offsite member of the general public from gaseous effluents was 1.62E-02 mrem (1.62E-04 mSv). This dose is well below the 5 mrem (0.05 mSv) dose design objective in Appendix I to 10 CFR Part 50, Section II.B.2. Using the average annual maximum total body dose (provided by the licensee) to an offsite member of the general public from gaseous effluents, and assuming that the 13-percent EPU will result in a corresponding increase in dose, the NRC staff projects that the average annual calculated maximum total body dose to an offsite member of the general public from gaseous effluents

would be 1.83E-02 mrem (1.83E-04 mSv). Thus, the maximum offsite dose to a member of the public under the conditions of the EPU would remain well within the radiation standards of 10 CFR Part 20 and the design objectives of Appendix I to 10 CFR Part 50. Therefore, the NRC staff concludes that the potential increase in offsite dose due to gaseous effluent release following implementation of the EPU would not be significant.

MNGP is authorized by the NRC to release a qualified amount of radioactive liquid effluent into the environment; however, by its own policy the licensee operates the plant as a zero radioactive liquid release plant. Therefore, there are no routine periodic releases of liquid radioactive effluents from the plant. MNGP's liquid radioactive waste management system collects and processes the liquid waste, and then either recycles the clean liquid within the plant or solidifies the waste for off-site disposal. The proposed EPU operation will not change the zero radioactive release policy at MNGP. No modifications to the liquid radioactive waste system would be needed to handle the increased liquid waste following implementation of the proposed EPU.

In the EPU application, the licensee estimated that the proposed EPU would slightly increase the volume of radioactive liquid waste generated from 11,000 gals/day to 11,250 gals/day. This is a small increase in volume and can be accommodated by the radioactive liquid waste system capacity. Although the licensee strives to operate the plant as a zero liquid release plant, there were some radioactive liquid discharges in 2001, 2003, and 2004. As reported by the licensee for the 2001 - 2006 period, the average annual calculated maximum total body dose to an offsite member of the general public from liquid effluents was 2.72E-06 mrem (2.72E-08 mSv). This annual dose is well below the 3 mrem (0.03 mSv) dose design objective in Appendix I to 10 CFR Part 50, Section II.A.. Based on the licensee's ability to maintain a near zero liquid discharge status for several years, and because the resulting dose

from the few releases was well within NRC dose standards, there is reasonable assurance that the proposed EPU will not have a significant impact on future liquid discharges.

In addition to the dose impact from gaseous and liquid radioactive effluents, the licensee evaluated the impact of the proposed EPU on the direct radiation (gamma radiation) from plant systems, liquid storage tanks, the turbine, and components containing radioactive materials.

Based on the licensee's evaluation, the annual offsite dose to members of the public from direct radiation under EPU conditions would be approximately 6 mrem. Thus, the annual cumulative average calculated maximum total body dose to an offsite member of the general public from all sources of radiation from the facility (i.e., gaseous and liquid effluents, and direct radiation) following implementation of the proposed EPU would be less than 7 mrem. This dose is well below the radiation dose limits and standards set forth in 10 CFR Part 20, and 40 CFR Part 190. Therefore, the NRC staff concludes that the potential increase in offsite radiation dose to members of the public would not be significant.

Radioactive Solid Wastes:

The radioactive solid waste system collects, processes, packages, monitors, and temporarily stores radioactive dry and wet solid wastes prior to shipment offsite for disposal. The licensee reported in its environmental assessment that MNGP shipped annually, on average, approximately 706 ft^3 of solid radioactive waste consisting of spent resin, filter sludge, evaporator bottoms, etc., during the 2001 – 2006 time period. The licensee projects that implementation of the proposed EPU would cause an annual increase of 106 ft^3 in the volume of the resins and result in one additional annual shipment. No modifications to the solid radioactive waste system would be needed to handle the increase in liquid waste following implementation of the proposed EPU. The total long-lived activity contained in the waste is expected to be bounded by the percentage of the EPU, and the increase in the overall volume of waste generated during operation under EPU conditions is expected to be minor. Therefore,

the NRC staff concludes that the impact from the increased volume of solid radwaste generated under conditions of the proposed EPU would not be significant.

Spent fuel from MNGP is stored in the spent fuel pool and the newly constructed Independent Spent Fuel Storage Installation (ISFSI). The licensee estimates that the number of discharged assemblies would increase from 150 assemblies per cycle to approximately 170 assemblies per cycle following implementation of the proposed EPU. The storage capacity of the spent fuel pool and the ISFSI is sufficient to accommodate the expected small increase in discharged fuel assemblies. Therefore, the NRC staff concludes that there would be no significant impact resulting from storage of the additional fuel assemblies.

Occupational Doses:

Implementation of the proposed EPU would result in the production of more radioactive material and higher radiation dose rates in the restricted areas at MNGP. Occupational exposures from in-plant radiation primarily occur during maintenance and refueling operations. Implementation of the proposed EPU is not expected to significantly change the amount of radiation exposure received by plant personnel, as the licensee has a radiation protection program that monitors radiation levels throughout the plant to establish work controls, shielding, and protective equipment requirements so that worker doses will remain within the dose limits of 10 CFR Part 20 and as low as is reasonably achievable. Therefore, the NRC staff concludes that there would be no significant increase in the radiation exposure received by plant personnel due to implementation of the proposed EPU.

Postulated Accident Doses:

Implementation of the proposed EPU would increase the core inventory of radionuclides, which is dependent on power level. The concentration of the radionuclides in the reactor coolant may also increase in proportion to power level increase; however, this concentration is limited by the MNGP Technical Specifications. Therefore, the reactor coolant concentration of

radionuclides would not be expected to increase significantly. Some of the radioactive waste streams and storage systems evaluated for postulated accidents may contain slightly higher quantities of radionuclides. For those postulated accidents where the source term has increased, the calculated potential radiation dose to individuals at the exclusion area boundary, at the low population zone, and in the main control room, as well as in the technical support center for the loss-of-coolant accident, remain below the requirements of 10 CFR 50.67.

The licensee has submitted analyses of calculated doses under accident conditions for the EPU amendment application. These analyses show that the proposed EPU will not have significant radiological impacts under accident conditions. The NRC staff has reviewed the licensee's analyses to independently verify the licensee's calculated doses under accident conditions, and has concluded that the radiological consequences of design-basis accidents will meet applicable acceptance criteria. The NRC staff's evaluation results will be presented in the safety evaluation that will be issued concurrently with the proposed EPU amendment, if approved by the NRC staff. However, for the purpose of this EA, the NRC staff concludes that, based on the information provided by the licensee, the proposed EPU would not significantly increase the radiological consequences of postulated accidents.

Radiological Impacts Summary:

As discussed above, the proposed EPU would not result in any significant radiological impacts. Because of existing regulatory requirements regarding limits to exposure, the NRC staff also anticipates that there would be no significant radiological cumulative impacts related to the proposed EPU, as the licensee is required to continue to comply with such regulatory requirements. Table 2 summarizes the radiological environmental impacts of the proposed EPU at MNGP.

Table 2. Summary of Radiological Environmental Impacts

Radioactive Gaseous Effluents	Doses from increased gaseous effluents would remain within NRC limits and dose design objectives.
Offsite Radiation Doses	Radiation doses to members of the public would remain small, well below NRC and EPA Federal radiation protection standards.
Radioactive Liquid Effluents	EPU would not change routine liquid radioactive effluent releases from MNGP; the doses from discharges, if any, would remain within NRC limits and dose design objectives.
Radioactive Solid Wastes	Amount of solid waste generated would increase by approximately 15 percent (i.e., approximately 1 additional truck shipment per year).
Occupational Doses	Occupational doses would continue to be maintained within regulatory limits.
Postulated Accident Doses	Calculated doses for postulated design-basis accidents would remain within NRC limits.

Alternatives to the Proposed Action:

As an alternative to the proposed action, the NRC staff considered denial of the proposed EPU (i.e., the "no-action" alternative). Denial of the application would result in no change in the current environmental impacts. However, if the EPU were not approved for MNGP, other agencies and electric power organizations may be required to pursue other means, such as fossil fuel power generation, of providing electric generation capacity to offset future demand. Construction and operation of such a fossil-fueled plant may create impacts in air quality, land use, and waste management significantly greater than those identified for the proposed EPU at MNGP. Conservation programs such as demand-side management could possibly replace the proposed EPU's additional power output. However, the regional forecasted future energy demand calculated by the licensee may exceed conservation savings and still require additional generating capacity. Alternative energy sources such as wind energy have been incorporated into NSPM's regional energy forecast.

Furthermore, the proposed EPU does not involve environmental impacts that are significantly different from those originally identified in the MNGP FES.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the FES.

Agencies and Persons Consulted:

In accordance with its stated policy, on August 7, 2009, the NRC staff consulted with the State of Minnesota official regarding the environmental impact of the proposed action. The Minnesota State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

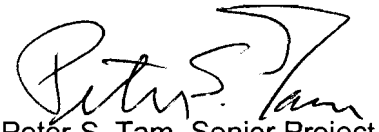
On the basis of the EA, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's application dated November 5, 2008, and its supplement dated January 29, 2009 (on environmental issues).

Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland 20852. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the NRC Web site, http://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff at 1-800-397-4209, or 301-415-4737, or send an e-mail to pdr.Resource@nrc.gov.

Dated at Rockville, Maryland, this 11th day of January 2010.

FOR THE NUCLEAR REGULATORY COMMISSION



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Mr. Timothy J. O'Connor
Site Vice President
Monticello Nuclear Generating Plant
Northern States Power Company - Minnesota
2807 West County Road 75
Monticello, MN 55362-9637

January 11, 2010

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT (MNGP) - FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO THE PROPOSED EXTENDED POWER UPRATE (TAC NO. MD9990)

Dear Mr. O'Connor:

Enclosed is a copy of the Final Environmental Assessment (EA) and Finding of No Significant Impact related to your request for an amendment dated November 5, 2008, as supplemented on January 29, 2009 (on environmental issues) for MNGP. The draft EA was transmitted to you on August 28, 2009, and published in the Federal Register on September 15, 2009 (74 FR 47281). No comments on the draft EA were received from any source.

Your proposed amendment would permit Northern States Power Company to increase the maximum power level of MNGP from 1,775 megawatts thermal (MWt) to 2,004 MWt. This change represents a power increase of approximately 13.0 percent.

The enclosed final EA is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Peter S. Tam, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosure:
As stated

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