

Attachment E

MDNR Correspondence

Minnesota Department of Natural Resources

500 Lafayette Road • St. Paul, MN • 55155-40



November 19, 2010

Brent Kuhl, Environmental Analyst
Xcel Energy
414 Nicollet Mall MP7
Minneapolis, MN 55401

RE: Prairie Island Nuclear Generating Plant Uprate – Draft Lake Pepin Thermal Discharge Study

Dear Mr. Kuhl:

Minnesota Department of Natural Resources (DNR) staff have reviewed the Draft Lake Pepin Thermal Discharge Study for the Prairie Island Nuclear Generating Plant (PINGP). This report is required as a compliance filing in accordance with the site permit for the extended power uprate project at the PINGP, permit condition IV. G (PUC Docket Number: E002/GS-08-690). The report is required to include 1) a review and analysis of previous studies and current data, and 2) a detailed plan of action if additional data collection is deemed necessary. The permit condition also requires Xcel Energy to seek advice from the Minnesota Pollution Control Agency (PCA) and to submit the report to the DNR at the time the compliance filing is made. Xcel Energy has provided a draft version of the Lake Pepin Thermal Discharge Study to the PCA, DNR, Office of Energy Security (OES), and Public Utilities Commission (PUC) and has met with staff from these agencies for discussion of the draft document. DNR staff appreciate early inclusion in draft document review prior to the compliance filing. The following comments are included to suggest how the draft can be revised to best meet the PUC permit requirements by reviewing previous studies, current data and additional data collection. Review of the Thermal Discharge Study also helps to inform the DNR regarding the Water Appropriations Permit (see enclosure P.A. 69-170 and P.A. 69-172) and Permit to Change the Course, Current, or Cross Section (see enclosure Permit 80-5081 and Permit 80-5082) for the PINGP, which both include permit provisions regarding changes to facilities or operations, changes in discharge, public safety, conservation of water resources, public surface uses of the Mississippi River (Water Appropriations Permit) and thermal discharge (Permit to Change the Course, Current, or Cross Section).

A principal concern for the DNR is the effect of the thermal discharge regime on the ice cover conditions of Lake Pepin, and the fact that ice conditions are not regulated by, or the result of violations of the state water quality standards for temperature enforced by the PCA. The DNR has commented regarding this concern during various stages of state environmental review and permitting for the PINGP Uprate Project, and has commented regarding this concern in the federal environmental review for plant relicensing. Lake Pepin has historically been an important resource for winter recreation. However, the ice conditions on the upper 6 miles of Lake Pepin have been impaired since 1983 when modification of the NPDES permit allowed discontinuation of cooling tower use during the winter. Our field staff observations, and U.S. Army Corps of Engineers monitoring of ice thickness show that open water conditions are now typical for the upper 2-3 miles and commonly occur for miles 3-5 on the Minnesota side of the lake. This area of the lake is shallower and does not effectively allow for the past projections of a sinking plume of the warmer inflow. Popular fishing destinations downstream of this upper extent of lake, such as major points and bars, have also become hazardous locations where warmer bottom waters are deflected towards the surface. The uprate project would increase temperature of the thermal discharge by 10% and there is concern that there would be additional affects to ice conditions.

The Draft Lake Pepin Thermal Discharge Study thoroughly describes the effects of air temperature and regional effects of climate change on ice thickness, with a focus on existing data from mid to lower (southern) segments of Lake Pepin. The DNR acknowledges that air temperature and climate changes affect ice thickness and that the report provides detailed information regarding the importance of these affects. However, for DNR reviewers to determine how this segment of the Mississippi River and Lake Pepin are affected specifically by the thermal



discharge from the PINGP, regardless of other factors occurring regionally, it is necessary to compare the temperature of Lake Pepin to the temperature immediately upstream of the PINGP and thermal discharge. The Draft Lake Pepin Thermal Discharge Study provides other comparisons to regional lakes that may be useful additional information. However, DNR reviewers find that the points immediately upstream and downstream of the thermal discharge provide the best available understanding of how the thermal discharge is affecting this specific reach of the Mississippi River and Lake Pepin. These points also focus on the specific area of concern to the DNR regarding affects to public resources and safety concerns. This comparison was not part of the Draft Lake Pepin Thermal Discharge Study. Relevant data is available, and this comparison should be included in revisions to the study.

Temperature data from these points has been provided by Xcel Energy through the Draft Thermal Discharge Study and appendices and to the PCA as part of ongoing monitoring. Temperature measurements at these data points are available for an appropriate mid-winter time period of January 1, 2010 – February 28, 2010 with average flows. The DNR has conducted an analysis of this data. A summary of temperature data immediately above the plant and in the area of concern to public resources from January 1, 2010 to February 28, 2010 is shown by three figures and a table of the data used to create figures (see enclosures Figures 1, 2 and 3 and Table 1). Similar data is also available from the federally coordinated Long Term Resource Monitoring Program reflecting the period January – February 1994 - 2009 (see enclosures).

It is our finding that the attached data provides clear temperature change information showing an increase in temperature occurring after the thermal discharge is introduced, resulting in temperatures well above freezing, which would cause the open water and thin ice concern within the specific public use area of focus articulated in previous comments. The similar data from the Long Term Resource Monitoring Program is included to illustrate that similar results are present over more than the one year analyzed below. This analysis does not include consideration of the additional 10% temperature increase in the thermal discharge expected as part of the Uprate Project.

Figure 1 provides the most straightforward explanation of how temperature changes recorded from January 1, 2010 – February 28, 2010 result in open water and thin ice at the upper reaches of Lake Pepin (see Figure 1):

1) The average* water temperature measured at Diamond Bluff (upstream of the plant):

32.26 Degrees F

2) The average water temperature at Lock and Dam 3 (immediately downstream of the plant):

34.84 Degrees F

3) The average water temperature measured at the Head of Lake, data logger #5 (second location downstream of the plant):

34.34 Degrees F

4) The average water temperature measured within Lake Pepin at River Mile 782, data logger #6 (third location downstream of the plant):

34.04 Degrees F

Note: Average air temperature: **15.73 Degrees F**

*Average = Two month average of daily averages.

Additional analysis of 2010 temperature data is included in Figures 2 and 3. Also, Table 1 is the data table used to create Figures 1-3. Table 1 was adapted from Xcel Energy's Draft Lake Pepin Thermal Discharge Study and appendices from the data logger #6 table (which also includes data logger #5), and additional monitoring data submitted by Xcel to the PCA for the Diamond Bluff Monitoring Site. Figure 2 shows water temperature data

collected at each observation point and air temperature data each day for January 1, 2010 – February 28, 2010. Figure 3 shows the temperature changes (delta T) between Diamond Bluff and monitoring locations downstream of the thermal discharge. These figures show daily temperature averages rather than two month averages of daily averages (Figure 1), and provide an opportunity to observe the how air temperature is related to water temperature at each location. Figures 2 and 3 also show how much temperature changes with increased distance from the thermal discharge.

We find that the above measurements show that water temperature changes after the thermal discharge is added to the system. By comparing Lake Pepin water temperatures to the water temperature immediately upstream of the plant, the number of variables to consider are minimized and a relatively simple comparison, targeted to specific ice thickness concerns, is possible. When a temperature change such 2.58 degrees F happens between the location upstream of the plant and downstream of the plant in an area that is used for public recreation dependent on ice conditions, and the change happens when the water temperature is around the freezing point, then there is evidence of the thermal discharge affecting public recreation and safety. This change is shown prior to the addition of the 10% temperature increase in the thermal discharge expected as part of the Uprate Project.

This data should be included clearly in the final version of the Lake Pepin Thermal Discharge Study because it is an important comparison for the OES and PUC to consider for administration of the PINGP Uprate Project Site Permit. This information is also important for the administration of DNR permits. Currently, the 2010 available data appears to adequately describe how the thermal discharge is specifically affecting Lake Pepin ice thickness and winter open water in comparison to an upstream location. It may also be useful to consider further analysis of biological or other effects resulting from an increased thermal discharge, though that seems to be outside of the scope of this specific report. A basic analysis of 2010 data and Long Term Resource Monitoring Program data is provided at this time in order to quickly provide input to Xcel Energy. However, more detail can be discussed or provided regarding the attached information if necessary as Xcel Energy finalizes the Lake Pepin Thermal Discharge Study for the PUC compliance filing. Thank-you again for providing the DNR with an opportunity to review the draft version of the thermal discharge document and for the opportunity to provide input.

Sincerely,
Jamie Schrenzel

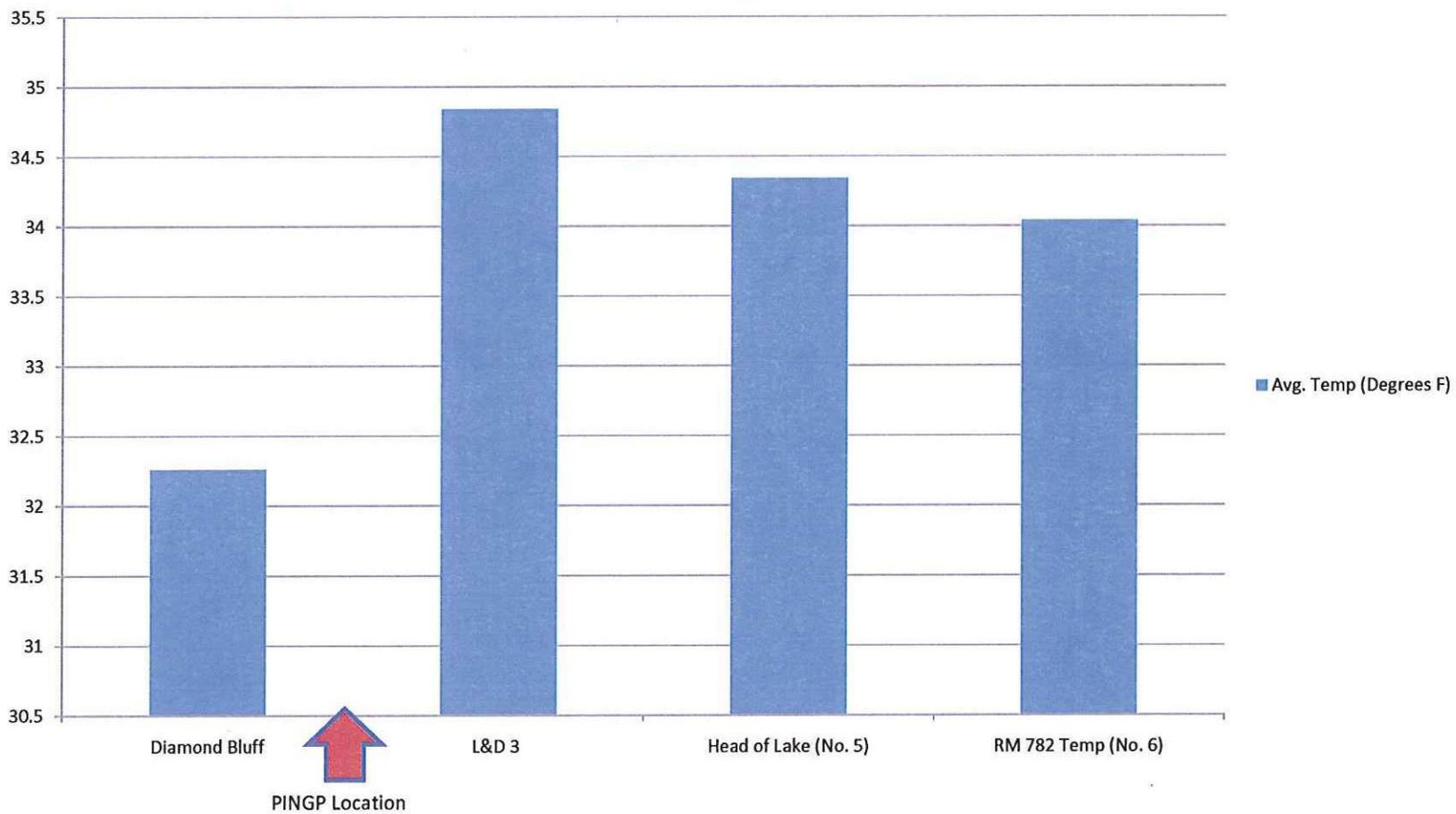


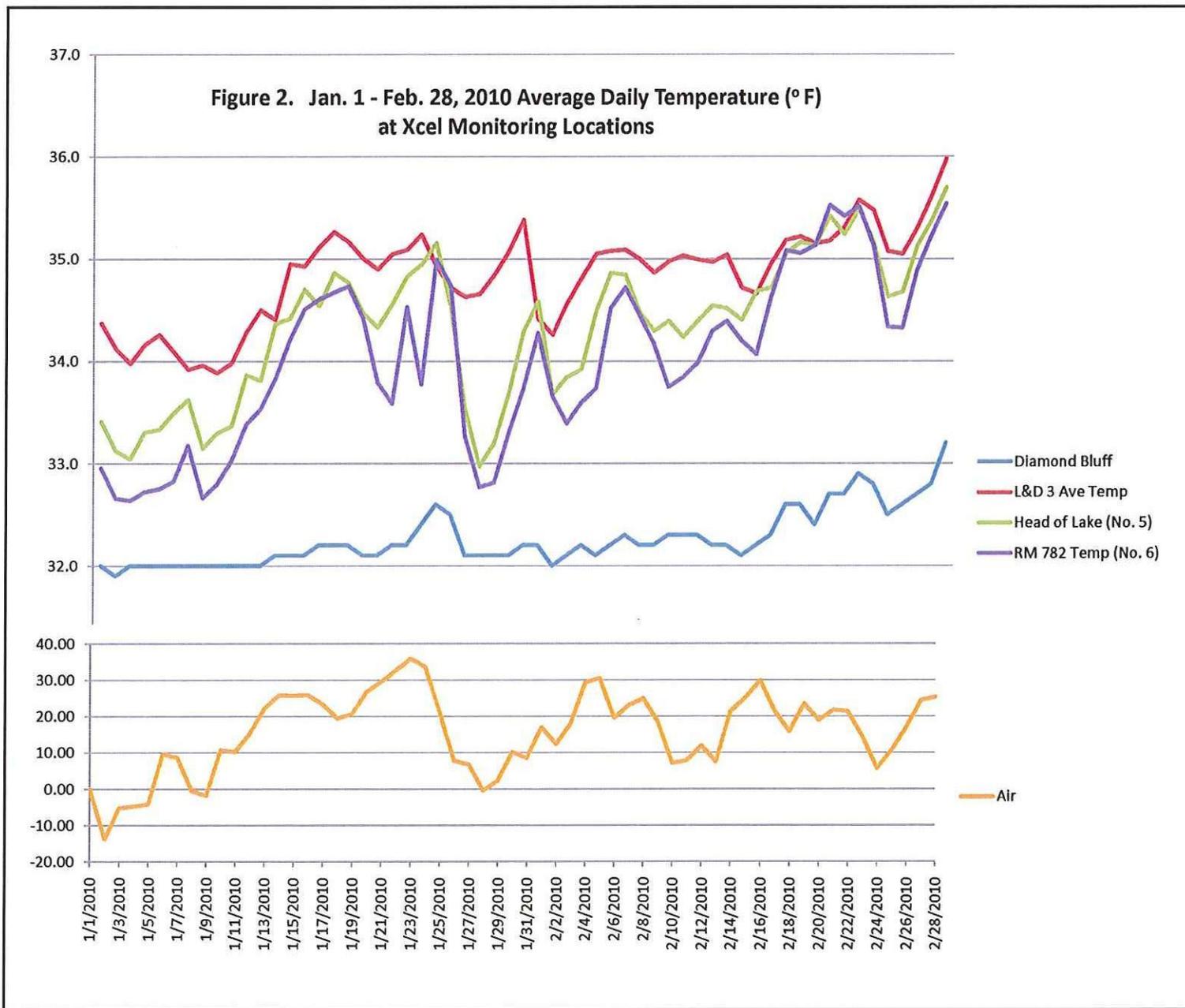
Principal Planner
Environmental Review Unit
(651) 259-5115

Enclosures: 8

C: Brandon Smith, Minnesota Pollution Control Agency
Bill Storm, Minnesota Office of Energy Security
Mike Kaluzniak, Minnesota Public Utilities Commission
Scot Johnson, Minnesota Department of Natural Resources

Figure 1. Average Temperature (° F) for the Period, Jan. 1, 2010 through Feb. 28, 2010, for Monitoring Sites Upstream of PINGP (Diamond Bluff) and Downstream (L&D 3, and Data Loggers No. 5 and No. 6).





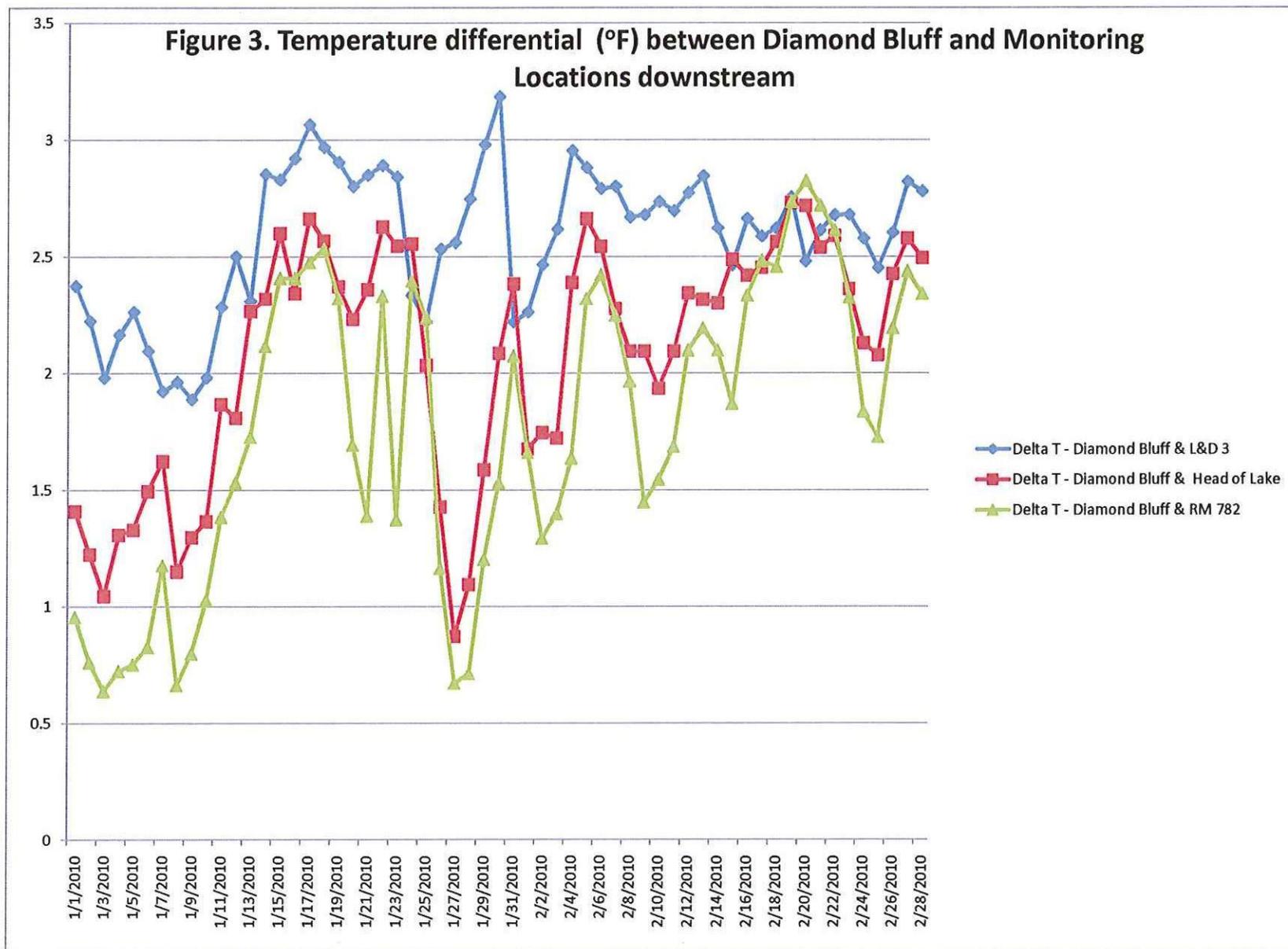
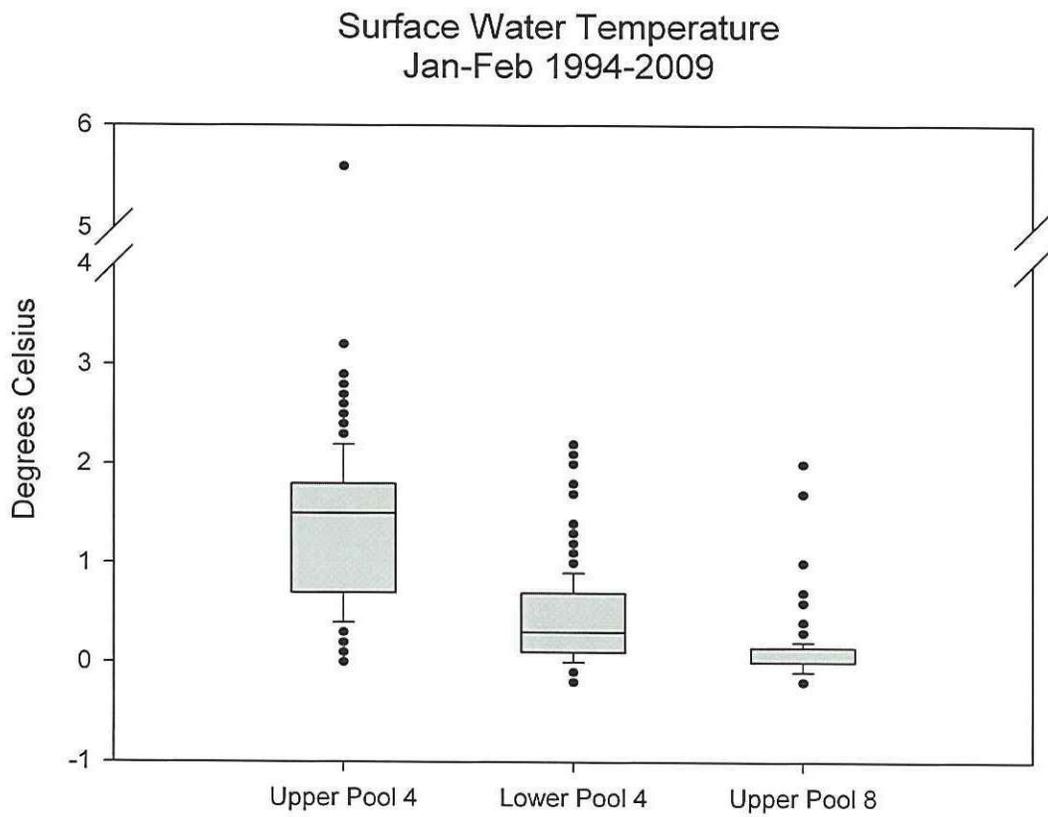


Table 1. River Data for January /February 2010 from Xcel Thermal Study Analysis for L&D 3, data logger sites No. 5 and No. 6, and River Temperature Report for Diamond Bluff.

	Air	Diamond Bluff ¹	L&D 3	Diamond Bluff & L&D 3	Head of Lake (No. 5)	Diamond Bluff & Head of Lake	RM 782 Temp (No. 6)	Diamond Bluff & RM 782 (No. 6)	L&D 3 and RM 782	L&D 3	PINGP	PINGP
Date	Temp (° F)	Temp (° F)	Temp (° F)	Temp (° F)	Temp (° F)	Temp (° F)	Temp (° F)	Temp (° F)	Temp (° F)	CFS	Temp (° F)	CFS
	Average	Average	Average	Delta T	Average	Delta T	Average	Delta T	Delta T	River Flow	Discharge Temp	Discharge Flow
1/1/2010	0.08	32.0	34.37	2.37	33.41	1.41	32.95	0.95	1.42	9800	75.92	738
1/2/2010	-13.71	31.9	34.12	2.22	33.12	1.22	32.66	0.76	1.46	9900	75.12	738
1/3/2010	-5.21	32.0	33.98	1.98	33.05	1.05	32.64	0.64	1.34	9800	75.12	738
1/4/2010	-4.75	32.0	34.16	2.16	33.31	1.31	32.72	0.72	1.44	9300	75.65	738
1/5/2010	-4.17	32.0	34.26	2.26	33.33	1.33	32.75	0.75	1.51	9800	75.74	738
1/6/2010	9.67	32.0	34.09	2.09	33.49	1.49	32.83	0.83	1.27	10100	76.11	738
1/7/2010	8.67	32.0	33.92	1.92	33.62	1.62	33.18	1.18	0.75	10700	76.15	738
1/8/2010	-0.46	32.0	33.96	1.96	33.15	1.15	32.66	0.66	1.30	10600	76.27	738
1/9/2010	-1.83	32.0	33.89	1.89	33.30	1.30	32.80	0.80	1.09	10400	76.14	738
1/10/2010	10.75	32.0	33.98	1.98	33.37	1.37	33.03	1.03	0.95	10400	76.48	738
1/11/2010	10.29	32.0	34.28	2.28	33.87	1.87	33.38	1.38	0.90	10400	76.85	738
1/12/2010	15.33	32.0	34.50	2.50	33.81	1.81	33.53	1.53	0.97	9800	76.66	738
1/13/2010	22.17	32.1	34.41	2.31	34.37	2.27	33.83	1.73	0.58	9300	77.16	743
1/14/2010	25.88	32.1	34.95	2.85	34.42	2.32	34.22	2.12	0.74	9500	77.07	745
1/15/2010	25.75	32.1	34.93	2.83	34.70	2.60	34.51	2.41	0.42	9600	76.75	745
1/16/2010	25.92	32.2	35.12	2.92	34.54	2.34	34.61	2.41	0.51	9500	76.13	750
1/17/2010	23.33	32.2	35.26	3.06	34.86	2.66	34.67	2.47	0.59	9200	76.27	753
1/18/2010	19.46	32.2	35.17	2.97	34.77	2.57	34.73	2.53	0.43	9300	76.05	753
1/19/2010	20.67	32.1	35.00	2.90	34.47	2.37	34.42	2.32	0.58	9400	75.82	753
1/20/2010	26.79	32.1	34.90	2.80	34.33	2.23	33.79	1.69	1.11	9400	75.42	753
1/21/2010	29.58	32.2	35.05	2.85	34.56	2.36	33.59	1.39	1.46	9500	76.26	753
1/22/2010	32.67	32.2	35.09	2.89	34.83	2.63	34.53	2.33	0.56	9500	76.41	753
1/23/2010	35.92	32.4	35.24	2.84	34.95	2.55	33.77	1.37	1.47	9200	75.43	748
1/24/2010	33.75	32.6	34.93	2.33	35.16	2.56	34.99	2.39	-0.06	9600	75.98	745
1/25/2010	21.17	32.5	34.72	2.22	34.53	2.03	34.74	2.24	-0.02	11500	76.10	745

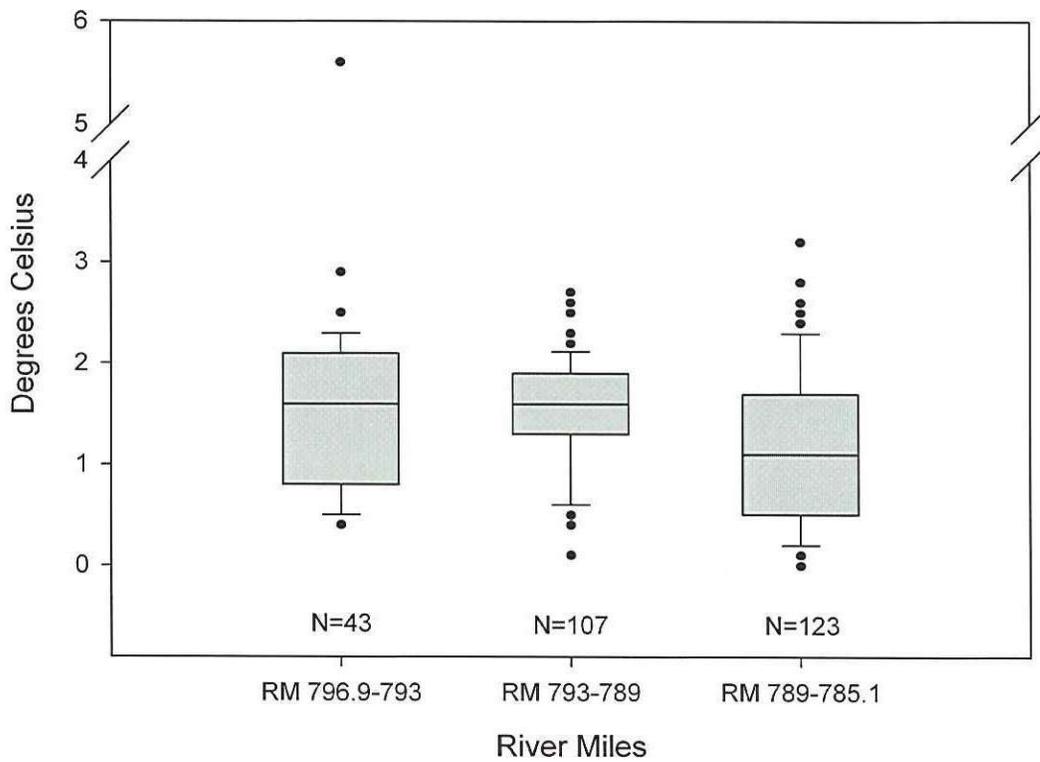
1/26/2010	7.79	32.1	34.63	2.53	33.53	1.43	33.26	1.16	1.37	11400	75.24	740
1/27/2010	6.79	32.1	34.66	2.56	32.97	0.87	32.77	0.67	1.89	9700	75.40	738
1/28/2010	-0.42	32.1	34.85	2.75	33.20	1.10	32.81	0.71	2.03	9100	75.63	742
1/29/2010	2.29	32.1	35.08	2.98	33.69	1.59	33.30	1.20	1.78	8500	75.85	745
1/30/2010	10.17	32.2	35.38	3.18	34.29	2.09	33.73	1.53	1.65	7500	76.37	745
1/31/2010	8.61	32.2	34.42	2.22	34.58	2.38	34.27	2.07	0.14	10400	76.57	745
2/1/2010	17.00	32.0	34.26	2.26	33.68	1.68	33.66	1.66	0.60	12800	76.53	745
2/2/2010	12.42	32.1	34.56	2.46	33.85	1.75	33.39	1.29	1.17	12500	77.33	745
2/3/2010	17.92	32.2	34.82	2.62	33.92	1.72	33.60	1.40	1.22	11000	76.81	745
2/4/2010	29.33	32.1	35.05	2.95	34.49	2.39	33.74	1.64	1.32	9200	77.47	745
2/5/2010	30.58	32.2	35.08	2.88	34.86	2.66	34.52	2.32	0.56	9700	77.62	734
2/6/2010	19.63	32.3	35.09	2.79	34.84	2.54	34.72	2.42	0.37	9900	77.53	722
2/7/2010	23.08	32.2	35.00	2.80	34.48	2.28	34.45	2.25	0.55	10300	77.03	722
2/8/2010	25.00	32.2	34.87	2.67	34.29	2.09	34.17	1.97	0.70	10300	77.00	732
2/9/2010	18.63	32.3	34.98	2.68	34.39	2.09	33.75	1.45	1.23	10200	76.95	738
2/10/2010	7.17	32.3	35.03	2.73	34.24	1.94	33.84	1.54	1.19	9900	77.04	738
2/11/2010	7.88	32.3	34.99	2.69	34.39	2.09	33.99	1.69	1.01	9400	76.82	738
2/12/2010	12.00	32.2	34.97	2.77	34.54	2.34	34.30	2.10	0.67	9700	77.48	738
2/13/2010	7.54	32.2	35.04	2.84	34.52	2.32	34.39	2.19	0.65	9600	76.91	738
2/14/2010	21.38	32.1	34.72	2.62	34.40	2.30	34.20	2.10	0.52	9700	76.72	738
2/15/2010	25.25	32.2	34.66	2.46	34.69	2.49	34.07	1.87	0.59	9900	77.28	738
2/16/2010	29.92	32.3	34.96	2.66	34.72	2.42	34.63	2.33	0.33	10300	77.42	738
2/17/2010	21.38	32.6	35.19	2.59	35.05	2.45	35.08	2.48	0.10	10100	77.83	738
2/18/2010	15.88	32.6	35.22	2.62	35.16	2.56	35.06	2.46	0.16	9300	77.50	738
2/19/2010	23.54	32.4	35.15	2.75	35.13	2.73	35.13	2.73	0.02	9400	77.42	742
2/20/2010	19.00	32.7	35.18	2.48	35.42	2.72	35.52	2.82	-0.35	9500	77.52	745
2/21/2010	21.79	32.7	35.31	2.61	35.24	2.54	35.42	2.72	-0.11	9500	76.88	745
2/22/2010	21.38	32.9	35.58	2.68	35.49	2.59	35.51	2.61	0.06	9600	77.08	745
2/23/2010	14.42	32.8	35.48	2.68	35.16	2.36	35.13	2.33	0.35	9500	76.66	745
2/24/2010	5.75	32.5	35.08	2.58	34.63	2.13	34.34	1.84	0.74	9600	76.65	745
2/25/2010	10.67	32.6	35.05	2.45	34.68	2.08	34.33	1.73	0.72	9400	76.32	745
2/26/2010	16.88	32.7	35.30	2.60	35.13	2.43	34.89	2.19	0.41	9000	76.58	745
2/27/2010	24.46	32.8	35.62	2.82	35.38	2.58	35.24	2.44	0.38	9000	76.62	745
2/28/2010	25.32	33.2	35.98	2.78	35.70	2.50	35.54	2.34	0.44	9000	76.85	745
AVG	15.73	32.26	34.84	2.58	34.34	2.08	34.04	1.78	0.80	9820.34	76.54	741.72

¹ Data as provided by MPCA - River Temperature Report, PINGP - ERCS1 - CPUB (Daily average of 5 minute temperature intervals used).



Box plots of winter water temperature in main channel and side channel stratum collected during winter stratified random sampling from 1994 through 2009. Box plots represent the median, 10th, 25th, 75th, and 90th percentiles.

Surface Water Temperature Upper Pool 4 Jan-Feb 1994-2009



Box plots of winter water temperature in main channel and side channel stratum collected during winter stratified random sampling from 1994 through 2009. Box plots represent the 10th, 25th, 50th, 75th, and 90th percentiles.

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

In the matter of the application of Northern States Power Company for permits to appropriate surface water to change the course, current or cross section of the Mississippi River and to construct and operate dams, dikes, diversion channels, a submerged intake crib, reservoirs, pipelines and pumping facilities necessary to collect, store and control the water to be appropriated, all for the purpose of operating a nuclear electric generating power plant near Red Wing, Goodhue County, Minnesota. (P.A. 69-170 and P.A. 69-172)

FINDINGS OF FACT,
CONCLUSIONS,
ORDER AND PERMIT

Pursuant to due notice and in accordance with the applicable Statutes, a public hearing was held on June 8, 1971, in the Community Room, First National Bank Building, Red Wing, Minnesota, before Clarence B. Buckman, Deputy Commissioner of Natural Resources, referee for the hearing, upon the application of Northern States Power Company for a permit to appropriate surface water from the Mississippi River and to change the course, current or cross section of the Mississippi River in the operation of a nuclear electric power generating plant located in the East Half (E 1/2) of Section Five (5), Township One Hundred Thirteen (113) North, Range Fifteen (15) West, Goodhue County, approximately six miles upstream from Red Wing, Minnesota. The applicant was represented through its attorneys, Raymond A. Haik, Arthur R. Renquist and Joseph D. Bizzano, Jr. William G. Peterson, Special Assistant Attorney General, appeared on behalf of the Commissioner of Natural Resources. No appearances were made in opposition to granting the permit. Said matter having been duly heard and all evidence and testimony presented at said hearing having been duly

considered, the Commissioner of Natural Resources now makes the following:

FINDINGS OF FACT

1. The Mississippi River, approximately six miles upstream from Red Wing, Goodhue County, Minnesota, is a public navigable body of water of the State of Minnesota.

2. The applicant serves a multistate area; 75% of its customers reside in Minnesota; the metropolitan Twin Cities area requires two-thirds of applicant's generating capacity.

3. Applicant Northern States Power Company proposes to construct and operate a nuclear power plant approximately six miles upstream from Red Wing, Minnesota, on the Mississippi River with an electric power producing capacity of 530 million watts.

4. Applicant proposes to appropriate water for cooling purposes by pumping from the Mississippi River at the proposed power plant site at a rate not to exceed 1,360 cubic feet per second nor to exceed an annual appropriation of five hundred twenty thousand (520,000) acre feet of water.

5. The power plant will be equipped with a water appropriation and plant cooling system capable of being utilized for the following modes of operation: "open cycle" which is designed to use river water without use of cooling towers and results in little water consumption; "closed cycle" in which the appropriated water is recycled and in which cooling towers will be used continually resulting in the consumption of an average of about 38 cubic feet of water per second; "helper cycle" in which water is returned to the river but in which the cooling towers are used periodically resulting in the consumption of about 28 cubic feet of water per second.

6. Applicant proposes to return all water so appropriated and used into the Mississippi River at its discharge site, except for water consumed as indicated herein.

7. Applicant must employ cooling towers in the operation of its Prairie Island Plant in order to comply with the standards for temperature of discharge water established by the Minnesota Pollution Control Agency.

8. Reliable Data based on stream flow records for 1940 through 1965 indicate that river flow in the vicinity of the proposed plant could be expected to exceed 11,000 cubic feet per second 50% of the time, 5,700 cubic feet per second 90% of the time, and 4,500 cubic feet per second 97% of the time.

9. The lowest median flow for any month is approximately 7,000 cubic feet per second during the month of February.

10. The highest median flow is approximately 36,000 cubic feet per second during the month of April.

11. Applicant's proposal to construct and install an intake canal, an intake crib, a discharge canal and appurtenant structures will alter the course, current, and cross section of the Mississippi River at the site of the proposed plant.

12. The maximum recorded flood stage in the vicinity of the proposed plant was 688.3 feet MSL* which occurred in 1965.

13. The thousand year flood stage at the plant site is calculated to be at an elevation of 691.8 feet MSL and the discharge is estimated to be 335,000 cubic feet per second.

14. Applicant proposes to provide flood protection for the structures at the plant site, including the entire power

*Mean sea level 1929 adjustment

house, to elevation 703.6 feet MSL.

15. The waters of the Mississippi River in the vicinity of the proposed power plant are used extensively by the public for commercial navigation and for recreational purposes including boating, canoeing, and fishing.

Based upon the foregoing Findings of Fact, the Commissioner makes the following

CONCLUSIONS

A. The applications of the Northern States Power Company (P.A. 69-170 and P.A. 69-172) and the proceedings of the Commissioner thereon in all manner conformed to the requirements of Minnesota Statutes, Chapter 105.

B. The proposed plant is reasonably necessary for the applicant to meet the power requirements of domestic and commercial users in its service area.

C. The proposed construction and appropriation of water will not unreasonably impede public surface uses of the Mississippi River in the vicinity of the proposed plant.

D. The proposed appropriation will not cause any appreciable effect on river elevations as a result of withdrawal or discharge of waters at the plant.

E. The Mississippi River at the proposed plant site provides adequate flows to consistently meet the needs of the plant without noticeable diminution of flows so as to cause injury to other public or private uses of the River.

F. The plans of the applicant constitute the most practical use of such waters consistent with the discharge temperature requirements of the Minnesota Pollution Control Agency.

G. The proposed work and structures in and upon the bed of the Mississippi River, to wit; an intake canal, an intake crib, a discharge canal, and appurtenant structures, as set forth in the Company's application as amended, are necessary to implement the proposed appropriation, use, and discharge of water.

H. Applicant's proposal to install flood protection devices for the power house and appurtenant structures to elevation 703.6 feet MSL provides adequate flood protection in the public interest.

I. The appropriation and use of the waters of the Mississippi River as set forth in the Company's application as amended are necessary and conducive to the public welfare.

J. Applicant's conformity with the permit provisions hereafter stated, will provide adequate protection for the public safety.

K. A permit should issue to the applicant to change the course, current, and cross section of the Mississippi River and to appropriate and use public waters of the state for the construction and operation of a power generating plant at Prairie Island.

Based upon the foregoing Findings of Fact and Conclusions, the Commissioner makes the following

ORDER AND PERMIT

A permit is hereby issued to the Northern States Power Company pursuant to Minnesota Statutes, Chapter 105, to appropriate and use water from the Mississippi River at a variable rate from 188 cubic feet per second to 1,360 cubic feet per second for a maximum total annual appropriation not to exceed 520,000 acre feet and to construct and operate dikes, diversion channels, a submerged

intake crib, a pipeline and pumping facilities necessary to collect, store and control the waters to be appropriated all for the purpose of construction and operation of a nuclear steam electric generating plant comprising two 550 megawatt units to be located in the East Half (E 1/2) of Section Five (5), Township One Hundred Thirteen (113) North, Range Fifteen (15) West, Goodhue County, approximately six miles upstream from the City of Red Wing, Minnesota.

This permit shall be subject to the following terms and conditions:

I. Permittee shall keep records of the amount of water appropriated from and returned to the Mississippi River under this permit, the temperature, flow, and level of the river at the plant site, and the corresponding modes of operation utilized, and shall report same to the Commissioner in such form and at such frequency as he shall require. Permittee shall make such records available to the Commissioner or his authorized representatives upon his request at all reasonable times.

II. Permittee shall install such measuring devices and utilize such measuring techniques as may be required by the Commissioner of Natural Resources to determine quantities of water appropriated and discharged, temperatures of ambient and appropriated waters, and the level and flow of the river at specified locations at the plant site.

III. Permittee shall comply with all rules, regulations, requirements, and standards of the Minnesota Pollution Control Agency and all other applicable state or federal rules, regulations, requirements, or standards.

IV. Permittee shall, in cooperation with the Department of Natural Resources, Division of Game and Fish, provide for the maximum preservation of fish life which may enter the screen house from the intake canal and shall take such measures as may be reasonably necessary to prevent destruction of any trapped fish in the screening process.

V. Permittee shall not deposit any material excavated by authority of this permit below the ordinary high water level of the Mississippi River, except as required for construction of the three discharge canal dikes described in permittee's application.

VI. Permittee shall grant access to the site to the Commissioner or his authorized representative upon his request at all reasonable times during and after construction for the purposes of inspection of the operation authorized hereby.

VII. After completion of the construction authorized hereby, permittee shall undertake grading and plantings so as to screen the plant from view from the river as much as reasonably possible and otherwise cause the excavation and structures to blend with existing surroundings. Permittee shall submit a plan to the Commissioner for his approval and shall undertake such landscaping in cooperation with the Department.

VIII. This permit shall not release the permittee from any liability or obligation imposed by Minnesota Statutes or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law.

IX. In the event that any acts authorized by this permit involve the taking, using, or damaging of any property rights or other interests of any persons, private or public corporations or of any publicly owned lands or improvements thereon or interests

therein, the permittee before proceeding therewith, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property rights and interests necessary therefor.

X. This permit is permissive only. No liability shall be imposed upon or be incurred by the State of Minnesota or any of its officers, agents, or employees, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claim or right of action of any person against the permittee, its agents, employees, or contractors, for damage or injury resulting from any such act or omission, or estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees, or contractors for violation or failure to comply with the provisions of this permit or applicable provisions of law.

XI. This permit shall not be construed as establishing any priority of use.

XII. Permittee shall make no changes in any facilities or operation of said plant which in any way affects the appropriation, use, or discharge of the water involved herein or make any additional changes in the course, current, or cross section of the Mississippi River without the written permission of the Commissioner of Natural Resources previously obtained.

XIII. This permit is not assignable except upon the written consent of the Commissioner of Natural Resources.

XIV. This permit may be modified, suspended, revoked,

A

...or otherwise terminated by the Commissioner of Natural Resources
at any time he deems it necessary or conducive to the conservation
of the water resources of the state or in the interests of public
health, safety and welfare, or for violation of any of the
provisions of this permit.

Dated at Saint Paul, Minnesota, this 17th day of August,
1971.

ROBERT L. HERBST, COMMISSIONER
Department of Natural Resources
State of Minnesota

BY C. B. BUCKMAN
C. B. BUCKMAN
Deputy Commissioner



STATE OF
MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

BOX 32, CENTENNIAL OFFICE BUILDING • ST. PAUL, MINNESOTA • 55155

DNR INFORMATION
(612) 296-6197

March 17, 1981

FILE NO. _____

Mr. G. V. Welk, Manager
Regulatory Compliance & Services
Northern States Power Company
414 Nicollet Mall
Minneapolis, MN

MAR 20 1981

Dear Mr. Welk:

PERMITS 80-5081 & 80-5082, PRAIRIE ISLAND NUCLEAR GENERATING PLANT

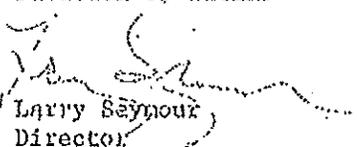
Enclosed are Permits 80-5081 and 80-5082 issued to Northern States Power Company under the provisions of Chapter 105 of Minnesota Statutes, for the construction and installation of discharge and intake facilities respectively for the Prairie Island Nuclear Generating Plant at Red Wing, Minnesota. It is our understanding Northern States Power Company will continue to assist the DNR in establishing an access to the Mississippi River either downstream of Lake Pepin or upstream of Lock and Dam #3.

Please note the provisions under which these permits have been issued. You have the right to appeal this decision by demanding a public hearing on the matter, provided that the demand is received in writing within thirty (30) days of service hereof and that such demand is accompanied by bond or equivalent security in the amount of five hundred dollars (\$500.00). Bond forms will be supplied to you upon request.

If you have any questions regarding these permits, please contact Jim Cooper at (612) 296-0510.

Sincerely,

DIVISION OF WATERS


Larry Seymour
Director

LS/JFC:jel

Enclosures

cc: J.N. Alexander
G.R. Burrows
Regional Administrator
Regional Hydrologist
Goodhue County SRGD
City of Red Wing Zoology

Conservation Officer Dava Mador
Area Fisheries Manager Bruce Hawkinson
EPCA - Mark Lahtinen
U.S.C.E. - Denise Blackwell
U.S.F.W.S. - Cary Wege

ATTACHMENT #1

ADDITIONAL SPECIAL PROVISIONS

- XIV. Permittee shall comply with all rules, regulations, requirements, and standards of the Minnesota Pollution Control Agency, the U.S. Corps of Engineers and all other applicable state or federal rules, regulations, requirements, or standards.
- XV. Permittee shall make no changes in any facilities or operation of said plant which in any way affects the appropriation, use, or discharge of the water involved herein or make any additional changes in the course, current, or cross section of the Mississippi River without the written permission of the Commissioner of Natural Resources previously obtained.
- XVI. This permit may be modified (including but not limited to resumption of operation of the cooling towers), suspended, revoked, or otherwise terminated by the Commissioner of Natural Resources at any time he deems it necessary or conducive to minimizing the impact of the thermal discharge to the conservation of the water resources of the state or in the interests of public health, safety and welfare; or for violation of any of the provisions of this permit.
- XVII. After completion of the construction authorized hereby, permittee shall undertake grading and plantings so as to screen the discharge basin dikes from view from the river as much as reasonably possible and otherwise cause the excavation and structures to blend with existing surroundings. Permittee shall submit a plan to the Commissioner for his approval and shall undertake such landscaping in cooperation with the Department.

ATTACHMENT #2

Prairie Island Generating Plant
Department of Natural Resources
Working in Beds of Public Waters
PA #80-5081 and PA #80-5082
Applications dated January 18, 1980

Ice Thickness and Temperature Profile Monitoring Program

Objective:

Monitor ice thickness and temperature profiles in Lake Pepin to aid in determining long-term effects of Prairie Island discharge modification; Study would gather preoperational data and operational data with new Prairie Island discharge configuration and new operational modes.

Study:

1. Location (per attached sketch)

* Five transects across lake body

* Three stations per transect

2. Frequency

* Once every two weeks

3. Parameters

* Ice thickness

* Temperature profile (per meter)

4. Data Reporting

Submitted annually within Prairie Island Generating Plant Annual Environmental Monitoring Report. Submitted monthly upon initiation of the operation of the discharge facilities.

Note: Monitoring is subject to access and safe ice conditions.



STATE OF
MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

PHONE NO.

FILE NO.

P. O. Box 6247
St. Paul, MN 55055

November 30, 1987

Mr. G. V. Welk, Manager
Regulatory Compliance and Services
Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401

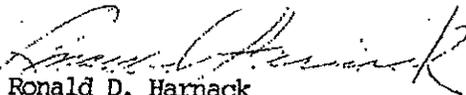
Dear Mr. Welk:

PERMIT 80-5081, PRAIRIE ISLAND NUCLEAR GENERATING PLANT, GOODHUE CO.

Special Provision #12 of the above referenced permit to monitor the ice cover of Lake Pepin is no longer required. Analysis of the data collected over the five year period does not indicate continued monitoring of the ice cover of Lake Pepin will necessarily identify the impact of the thermal discharge into Lake Pepin even during extreme periods of low flow or occurrence of high flow. Should uncharacteristic areas of open water or ice thinness develop and become prevalent, modeling may be required to determine if thermal discharge from Prairie Island is the cause.

We appreciate your compliance with this provision and cooperation with this Department. If you have any questions, please contact Area Hydrologist, Jim Haertel at (507) 285-7430.

Sincerely,


Ronald D. Harnack
Administrator
Permit and Land Use Section

cc: Lee Eberly, NSP ✓
Larry Gates, Fisheries, Lake City
Goodhue County Sheriff
Waters, Rochester
Greg Turner, C. O.
U. S. Army Corps of Engineers
U. S. Fish and Wildlife Service
MPCA, St. Paul

File Copy
PI Lab

Pepin, Iowa

SF-00008-05 (4/88)

DEPARTMENT : Natural Resources, Waters

STATE OF MINNESOTA

Office Memorandum

DATE : November 23, 1987

TO : Ronald D. Harnack, Administrator
Permits and Land Use Section

FROM : James F. Cooper, Regional Hydrologist
Jim Haertel, Area Hydrologist *J.F.C.*

PHONE : 285-7430

SUBJECT : PERMIT 80-5081, PRAIRIE ISLAND NUCLEAR GENERATING PLANT

Special Provision #12 of the above referenced permit requires NSP to monitor the ice cover of Lake Pepin for 5 years. In October of 1986, after 5 years of monitoring, NSP requested to discontinue the ice cover monitoring. We required NSP to analyze the data and requested a consultant be contacted. Dr. H. G. Stefan of the St. Anthony Falls Hydraulic Lab analyzed the data and prepared a report titled "Residual Heat Input From the Mississippi River to Lake Pepin During the Winters of 1981/82 to 1985/86". Dr. Stefan's conclusions were, in essence, that no statistically significant impacts on ice cover resulted from the thermal discharge of the plant.

Dr. Stefan did indicate that it is still unknown what impact the heated flow discharged into Lake Pepin would have during periods of extreme low flow or for flows higher than those monitored during the last five years. Continued monitoring would not necessarily result in meaningful data being collected for extreme flow events in the near future since it is unknown when such events will occur. If uncharacteristic ice conditions become prevalent which adversely affect the resource, modeling may be the best way to determine if the adverse conditions are caused by thermal discharge.

We met with Dr. Stefan, officials from NSP and DNR Fisheries staff. Dr. Stefan explained his report in detail. DNR Fisheries had no negative comments. Our analysis of the data in this office does not support continuance of the monitoring program. Based on the above, we recommend that Special Provision #12 not be required any longer.

JC:JH:jp

cc: ~~Lee Beery, NSP~~
Larry Gates, Fisheries - Lake City
Waters, Rochester
U. S. Army Corps of Engineers
U. S. Fish & Wildlife Service
Greg Turner C. O.
MPCA, St. Paul
Goodhue County Sheriff

File Copy
PI Lab