

ILLINOIS POLLUTION CONTROL BOARD

September 21, 1978

CITY OF SPRINGFIELD,)	
)	
Petitioner,)	
)	
v.)	PCB 78-23
)	PCB 78-52
)	<u>CONSOLIDATED</u>
)	
ENVIRONMENTAL PROTECTION)	
AGENCY,)	
)	
Respondent.)	

MR. ROBERT H. WHEELER, OF ISHAM, LINCOLN AND BEALE, APPEARED ON BEHALF OF PETITIONER;
MR. REED NEUMAN, OF THE OFFICE OF THE ILLINOIS ATTORNEY GENERAL, APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by Mr. Goodman):

The City of Springfield (City) submitted a Petition for Specific Thermal Standard pursuant to Rule 203(i)(10) of the Board's Water Pollution Regulations (Chapter 3) on February 2, 1978. The Petition was docketed PCB 77-23. On February 24, 1978, the City submitted a Rule 203(i)(5) Petition, which was docketed PCB 78-52. The Board consolidated the two proceedings on March 2, 1978. A consolidated hearing was held on June 12, 1978, in Springfield. No citizen witnesses appeared.

The subject of these proceedings is the thermal discharges from the City's Lakeside and Dallman electric generating facilities to Lake Springfield, a man-made, 4,234 acre cooling lake with 57 miles of shoreline. These facilities include Lakeside I, a 35 megawatt (MW) facility scheduled for retirement in 1981, Lakeside II, a 106 MW facility which is to be placed on cold stand-by when Lakeside I is retired, and Dallman, a plant with two existing boilers each with approximately 80 MW capacity and a third 180 MW unit scheduled to begin service in July of this year. All of these generating facilities are cooled using lake water on a once-through cooling cycle. There are separate intake and discharge facilities for the Lakeside plants and the Dallman plant.

Rule 203(i)(5) requires the owner of a source of thermal effluent to demonstrate to the Board that discharges from that source have not caused and cannot be reasonably expected to cause significant ecological damage to the receiving waters. Rule 203(i)(10) allows a source to obtain a thermal standard for discharges to a cooling lake different than the thermal water quality standards of Rule 203(i) if the source demonstrates that the cooling lake will be environmentally acceptable and within the intent of the Act. The City proposes that the following temperature limitation, based on historic and projected operating conditions, be applied to its thermal discharges:

The thermal discharge to Lake Springfield from the Lakeside plant shall not exceed 99° more than 5% of the hours in the 12-month period ending with any month and the discharge from the Dallman plant shall not exceed 99° more than 8% of the hours in the 12-month period ending with any month and at no time shall any discharge exceed 109°.

As part of its showing pursuant to both Rules 203(i)(5) and 203(i)(10), the City has submitted a thermal standard study of Lake Springfield dated August, 1977, by Betz Environmental Engineers, Inc. In addition, the City presented several witnesses at hearing. The Environmental Protection Agency (Agency) at hearing and in its brief supported the City's position.

The City's Exhibit 2 indicates that the temperatures in the discharges from seven separate condensers at Lakeside measure as high as 108°F and that condenser discharge temperatures from the 2 Dallman condensers measure as high as 113° (R.26). Condenser discharge temperatures at Lakeside have exceeded 100° as much as 7.6% of the year for one boiler, and at Dallman individual condenser discharges have exceeded 100° as much as 6.2% of the year. Temperatures exceeding 90° occurred in Lakeside condenser discharges 14.9% of 1976 and 24% of 1977, and in Dallman condenser discharges 20.2% of 1976 and 23.6% of 1977. Based upon these actual measured temperatures, the City alleges its proposed standard is representative of recent operating conditions at Lake Springfield. The City furthermore indicates that the addition of Dallman Unit 3 is not expected to cause higher temperatures than those experienced, although it may increase the 5° mixing zone (R.29, 58-59).

The record contains much information about the effect discharges at these temperatures have upon Lake Springfield. Mr. Charley Marbut, District Fish Biologist in Sangamon County for

the Department of Conservation, appeared at the hearing and entered into the record a letter containing the results of electro-fishing surveys of Lake Springfield conducted by the Department in 1963, 1972, 1975 and 1977 (R.9). The surveys evaluated five species of sport fishes: largemouth bass, bluegill, channel catfish, flathead catfish, and white crappie. The conclusion of the surveys was that the fish populations had remained stable throughout the years. The channel catfish and flathead catfish populations are considered to be among the top in the state. Mr. Marbut concluded that this fishery is growing and expanding and is expected to provide excellent fishing (R.14-15).

Dr. William Walker presented the results of the thermal study of Lake Springfield done by Betz Environmental Engineers. A study of the thermal plume indicated that both the Lakeside and Dallman heated effluents remain near the upper five feet of the lake water so that even though the 5° mixing zone may be exceeded occasionally, a safe zone of passage for fish is always maintained beneath the plume. Measurement indicated this zone of passage contains sufficient dissolved oxygen levels to allow fish to avoid undesirable temperature conditions. Dr. Walker also testified about surveys of existing aquatic populations on the lake conducted under his direction. The populations sampled were algae, zooplankton, benthic macroinvertebrates and fish. In addition, Dr. Walker compared data from Lake Springfield to that for 5 other Illinois lakes. He concluded that the overall aquatic ecosystem and water quality of Lake Springfield is in healthy condition for an aging lake and is without a general adverse environmental effect. He testified that there is no evidence of significant ecological damage due to the thermal discharges. In addition, Dr. Walker testified that because Dallman Unit 3 is designed to maintain a temperature change no higher than previously experienced in the North Basin of the lake, no detrimental effect is expected from the addition of the Dallman 3 discharge. Finally, his analysis of seven important fish species (including a stomach analysis) revealed that adequate spawning habitat is present, that fish were avoiding high temperatures and seeking the safe "zone of passage" beneath the warmer thermal plume, and that there was a wide and sufficient food source for fish in Lake Springfield (R.69-74).

Mr. Paul Bonansinga, with the City, testified about alternatives to establishing a specific thermal standard. These include cooling towers, a spray canal, an extended discharge pipe, or a modified discharge channel (R.32). Although all of these alternatives would allow the City to meet current mixing zone requirements, only cooling towers or a spray canal would

result in compliance with maximum discharge temperatures. However, both the cooling tower and spray canal, which would cost approximately \$13,500,000 and \$10,000,000, respectively, would create dangerous fogging and wet conditions on the interstate highway next to the plant and would create an acid mist when combined with SO₂ emissions from the plant.

Rule 203(i)(10)(cc) specifically provides that at hearing the discharger must demonstrate with respect to the lake:

- (1) ...conditions capable of supporting shellfish, fish, and wildlife, and recreational uses consistent with good management practices, and
- (2) control of the thermal component of the discharger's effluent by a technologically feasible and economically reasonable method.

The Board finds that the City has met its burden of proof. In addition, the Board finds that the City has met its Rule 203(i)(5) burden of proving that discharges from Lakeside and from Dallman 1 and 2 have not caused and cannot be reasonably expected to cause significant ecological damage to Lake Springfield. The Board notes, however, that the City will be required to comply with Rule 203(i)(5) with respect to Dallman Unit 3, a new source, within five to six years after commencement of operations.

This Opinion constitutes the findings of fact and conclusions of law of the Board in this matter.


ORDER

It is the Order of the Pollution Control Board that:

- 1) The thermal discharge to Lake Springfield from the Lakeside plant shall not exceed 99° more than 5% of the hours in the 12-month period ending with any month and the discharge from the Dallman plant shall not exceed 99° more than 8% of the hours in the 12-month period ending with any month and at no time shall any discharge exceed 109°.

- 2) The City of Springfield has complied with Rule 203(i)(5) of Chapter 3 in that it has proven that the thermal discharge from its Lakeside Plants I and II and from its Dallman Units 1 and 2 has not caused and cannot be reasonably expected to cause significant ecological damage to the receiving waters.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 21st day of September, 1978 by a vote of 4-0.



Christan L. Moffett, Clerk
Illinois Pollution Control Board