

ILLINOIS POLLUTION CONTROL BOARD  
October 3, 1996

IN THE MATTER OF: )  
)  
PETITION OF COMMONWEALTH )  
EDISON COMPANY FOR ADJUSTED ) AS 96-10  
STANDARD FROM 35 ILL. ADM. CODE ) (Adjusted Standard-Water)  
302.211 (d) and (e) )

OPINION AND ORDER OF THE BOARD (by E. Dunham):

This matter comes before the Board on an adjusted standard petition filed by Commonwealth Edison Company (ComEd) on May 16, 1996. ComEd filed an amended petition on June 20, 1996 which was supplemented and corrected on July 11, 1996. The Illinois Environmental Protection Agency (Agency) filed its recommendation instanter on August 9, 1996. ComEd has published a request for waiver of hearing on the petition and no request for hearing was received from the public. Therefore, hearing is waived.

Based upon the record and review of the factors involved in consideration for alternate thermal standards and adjusted standards, the Board finds that ComEd has demonstrated that the adjusted standard is warranted. Therefore, the Board will grant the adjusted standard for temperature as proposed by ComEd.

ALTERNATE THERMAL STANDARD/ADJUSTED STANDARD PROCEDURE

ComEd requests that the Board grant alternate thermal standards for ComEd's Joliet, Will County, Crawford and Fisk generating stations in place of the requirements of 35 Ill. Adm. Code 302.211(d) and (e). The authority for granting alternate thermal standards is provided by 35 Ill. Adm. Code 304.141(c) and the Clean Water Act (CWA) at 316(a) (33 U.S.C. 1326(a)). The Board's rules at 35 Ill. Adm. Code 304.141(c) provides as follows:

The standards of this chapter shall apply to thermal discharges unless, after public notice and opportunity for hearing, in accordance with Section 316 of the CWA and applicable federal regulations, the Administrator and the Board have determined that different standards shall apply to a particular thermal discharge. (35 Ill. Adm. Code 304.141(c).)

Section 316(a) of the Clean Water Act provides:

With respect to any point source otherwise subject to the provisions of Section 306 of this Act, whenever the owner or operator of any such source, after opportunity for public hearing, can demonstrate to the satisfaction of the Administrator (or, if appropriate, the State) that any effluent limitation proposed for the control of the thermal component of any discharge from any such source

will require effluent limitations more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the body of water into which the discharge is to be made, the Administrator (or, if appropriate, the State), may impose an effluent limitation under such section on such plant, with respect to the thermal component of such discharge (taking into account the interaction of such thermal component with other pollutants), that will assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on that body of water.

USEPA's regulations establish the showing necessary to demonstrate alternate thermal limitations:

Existing dischargers may base their demonstration upon the absence of prior appreciable harm. . . . Any such demonstration shall show: (1) That no appreciable harm has resulted from the normal component of the discharge (taking into account the interaction of such thermal component with other pollutants and the additional effect of other thermal sources) to a balanced, indigenous community of shellfish and wildlife in and on the body of water into which the discharge has been made. . . .  
(40 C.F.R. 125.73(c).)

The Board's procedural rules do not specify the procedural requirements for an alternate thermal standard determination. In its June 20, 1996 order the Board determined to follow the procedures of Section 106. Subpart G for an adjusted standard.

The Board's responsibility in this matter arises from the Environmental Protection Act (Act) (415 ILCS 5/1 et seq. (1994)). The Board is charged therein to "determine, define and implement the environmental control standards applicable in the State of Illinois" (415 ILCS 5/5(b)(1994)) and to "grant . . . . an adjusted standard for persons who justify such an adjustment" (415 ILCS 5/28.1(a)(1994)). More generally the Board's responsibility is based on a system of checks and balances integral to Illinois environmental governance: the Board is charged with the rulemaking and principal adjudicatory functions, and the Agency is responsible for carrying out the principal administrative duties.

The adjusted standard provision of the Act, at Section 28.1 (415 ILCS 5/28.1 (1994)), was created by the legislature to provide an expedited alternative to site-specific rulemaking. The result of either an adjusted standard or a site-specific rule proceeding is the same (i.e., relief from a particular rule). In both a general rulemaking proceeding and a site-specific rulemaking proceeding, the Board, pursuant to Section 27 of the Act, is required to take the following factors into consideration: the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution. (See specifically, Section 27(a).)

Section 28.1 of the Act establishes the level of justification required for an adjusted standard and also requires the adjusted standard to be consistent with Section 27(a). The level of justification required, as set forth in Section 28.1(c), is that the petitioner present adequate proof that:

- 1) Factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner;
- 2) The existence of those factors justifies an adjusted standard;
- 3) The requested standard will not result in environmental or health effects substantially or significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and
- 4) The adjusted standard is consistent with any applicable federal law.

### BACKGROUND

ComEd is a public utility serving approximately eight million customers in the northern fifth of Illinois. (Pet. at 1.) Four of ComEd's generating stations (Joliet, Will County, Crawford and Fisk) discharge heat to the Des Plaines River or other waterways that ultimately combine with the Des Plaines River. (Am. Pet. at 4.) The discharges from these stations are subject to Secondary Contact and Indigenous Aquatic Life Water Quality Standards (35 Ill. Adm. Code 303.441.)

#### Joliet Station

Joliet Station is a steam-electric generating facility capable of producing 1,414 gross megawatts of electricity. (Am. Pet. at 9.) The station is located in Will County, approximately one mile southwest of the City of Joliet, Illinois, adjacent to the Des Plaines River. (Am. Pet. at 9.) Joliet Station consists of three coal-fired units, all of which utilize open cycle, once-through condenser cooling systems.

The station has two thermal discharges to the Des Plaines River; one from Station #9 on the east bank of the river and the other from Station #29 on the west bank. The maximum design temperature rise in the circulating cooling water is approximately 9.4°F, with a total circulating water flow rate of 2, 620 cubic feet per second. (Am. Pet. at 9.) Both thermal discharges flow into the Des Plaines River approximately one-half mile downstream of the Brandon Road Lock and Dam, at river mile 285, which is about seven miles upstream of the I-55 Bridge. (Am. Pet. at 9.)

### Will County, Fisk, and Crawford Stations

Will County, Crawford, and Fisk Stations (collectively, the "Canal Stations") are steam electric generating facilities capable of producing 1154, 581, and 342 gross megawatts of electricity, respectively. (Am. Pet. at 10.) Will County Station is located in Romeoville, Illinois, near the intersection of the Chicago Sanitary and Ship Canal and Romeo Road. (Am. Pet. at 10.) Crawford Station is located in Chicago, near the intersection of the Stevenson Expressway and Pulaski Avenue. (Am. Pet. at 10.) Fisk Station is located near downtown Chicago, at the intersection of Loomis Street and the Chicago Sanitary and Ship Canal. (Am. Pet. at 10.) The generating units of each Canal Station are coal-fired, and each utilizes open cycle, once-through condenser cooling systems

The Canal Stations discharge into the Chicago Sanitary and Ship Canal: Will County at river mile 295.5, Crawford at river mile 318.5, and Fisk at river mile 322. (Am. Pet. at 10.) The maximum design temperature rise in the circulating cooling water is approximately 11.1°F for Will County, 12.0°F for Crawford, and 12.2°F for Fisk. (Am. Pet. at 10.)

### APPLICABLE REGULATIONS

Each of the discharges from these four generating stations is subject to secondary contact and indigenous aquatic life water quality standards (35 Ill. Adm. Code 303.441). The temperature standard for secondary contact waters requires that temperature not exceed 34°C (93°F) more than 5% of the time, or 37.8°C (100°F) at any time. (35 Ill. Adm. Code 302.408.)

However, the lower Des Plaines River between the Interstate 55 Bridge and the head of the Illinois River (confluence of the Des Plaines River with the Kankakee River), a segment known as the "Five-Mile Stretch", is subject to the more stringent general use water quality standards. Among other requirements, the general use standards governing temperature require that maximum temperature rise above natural temperatures not exceed 2.8°C (5°F) and water temperature not exceed 16°C (60°F), during winter months (Dec. through Mar.) or 32°C (90°F), during summer months (Apr. through Nov.), more than 1% of the hours in a 12 month period ending in any month, and never exceed these temperatures by more than 1.7°C (3°F) (35 Ill. Adm. Code 302.211(d) and (e)).

### RELATED PROCEEDINGS

In 1987, ComEd requested that the Board determine, pursuant to 35 Ill. Adm. Code 302.211(f), that the thermal discharges from the Joliet Station have not caused and cannot reasonably be expected to cause significant ecological damage to the general use waters. The Board found that ComEd had made the requisite showing under 302.211(f). (In the Matter of: Proposed Determination of No Significant Ecological Damage for the Joliet Generating Station (November 15, 1989), PCB 87-93.)

In the course of PCB 87-93, the Sierra Club, participating as an intervenor, argued that ComEd had failed to make a sufficient showing of no significant ecological impact because, among other reasons, the Joliet plant contributed to violations of Section 302.211(d) and (e) in the waters of the Five-Mile Stretch. In response, ComEd argued that these provisions were inapplicable, principally because Joliet Station discharges into secondary contact waters. ComEd further committed to implement an operating plan for the Joliet Station which would ensure that the Joliet Station would limit its megawatt output as necessary to avoid exceedences of the monthly maximum temperature standard of Section 302.211(e).

In PCB 87-93, the Board addressed these issues as follows:

The Board finds that 302.211(d) and (e) do apply to the effect of [ComEd's] discharges. Although Secondary Contact Standards may govern at the point of a particular discharge, it is possible for an entity located upstream of the beginning of the General Use waters to cause or contribute to exceedences of the General Use Water Quality Standards. In fact, the reason the Board required [ComEd] to perform a thermal demonstration under subsection (f) is because the Board recognized that a source which discharges to Secondary Contact waters could affect downstream General Use waters.

The Board finds, however, that in this proceeding the issues of whether violations of the 302.211 standards have occurred in the Five-Mile Stretch and, if they have, whether [ComEd] is responsible for them, is at best ancillary to the matters at hand. The only proper forum for the Board to hear allegations of violation of the Board's rules is an enforcement action brought pursuant to Title VIII of the Illinois Environmental Protection Act. The Board cannot and will not here reach the issue of whether [ComEd] is in violation of any Board water quality standard.

Consideration of whether there is non-compliance of the waters of the Five-Mile Stretch with the Board's water temperature standards can enter the immediate case only where non-compliance stands as proof of significant ecological damage associated with [ComEd's] discharge.

The Board finds that there is no substantive indication that any of the observed temperatures in the Five-Mile Stretch have caused significant ecological damage. (PCB 87-93 at 19; 105 PCB Op. at 167.)

Regarding whether ComEd's operating plan was acceptable to satisfy the requirements of Section 302.211(e), the Board found:

The Board believes that [ComEd] has a viable monitoring program . . . which, although not field tested at the time of hearing, is capable of assuring adjustments to operations should they prove necessary to ensure compliance. (PCB 87-93 at 21.)

In PCB 87-93, the Board found that ComEd successfully demonstrated that the heat discharges from the Joliet Station have not caused and cannot be reasonably expected to cause significant ecological damage to the waters of the Five-Mile Stretch. In so doing, the Board also found that the temperature of the waters of the Five-Mile Stretch was not a factor limiting its quality, and that other factors continue to override the effect of temperature on the waterway. These overriding factors include loss of habitat due to channelization, disruption of habitat due to barge traffic, and the presence of heavy metals and other pollutants in the system. (PCB 87-93 at 20).

ComEd was granted a variance from the temperature standards of 35 Ill. Adm. Code 302.211(d) for these facilities for a period of five years. (Commonwealth Edison v. IPCB (November 21, 1991), PCB 91-29.) As part of the variance, ComEd agreed to initiate a study to establish thermal standards for the facilities. In 1991, ComEd initiated a study of the entire stretch of the Upper Illinois Waterway (UIW) into which its plants discharge. (Am. Pet. at 4.) ComEd has submitted the report from this study as Exhibit 1 of the petition.

### ENVIRONMENTAL IMPACT

The upstream reach of the South Branch of the Chicago River, the Chicago Sanitary and Ship Canal, and the Des Plaines River is greatly modified by use as a shipping channel with habitat limited to deep pools without shallows, structure, riffles of suitable substrates. (Ag. at 6.) The area affected by the proposed adjusted standard is heavily developed with industries, including a refinery, a chemical plant and a boatyard. (Ag. at 6.) The waterway is a very artificial and significantly modified waterway that is limited in terms of habitat. (Am. Pet. at 12, Exh. 1- Ch. 2.) Historical practices have caused substantial residual chemical contamination to be present in the sediments of the waterway. (Am. Pet. at 13, Exh. 1 Ch.4.)

The UIW study concludes that the above ambient water temperatures in the UIW during the winter months are due primarily to discharges from municipal treatment plants, limiting the organisms that can be maintained in the waterway. (Am. Pet. at 13, Exh.1 Ch. 10 Sec. 10.6.4.) The report also maintains that the organisms limited by the above conditions are tolerant of water temperatures warmer than those associated with rivers in the region. (Am. Pet. at 13, Exh. 1 Ch. 8, 9 and 10.)

ComEd contends that its proposed alternate thermal standards are compatible with protecting species in the UIW. (Am. Pet. at 14.) The proposed standards provide for a gradual, stair-step increase into the spring and decrease in the fall rather than the 30°F change that would be permitted by Section 302.211(e), were the requirements of 302.211(d) nonexistent. (Am. Pet. at 15.)

The task force that compiled the UIW study believe it is appropriate to continue to monitor and study various ecological aspects of the UIW. (Am. Pet. at 15.) ComEd has committed to conduct further investigations on the UIW in cooperation with the Sierra Club and the appropriate governmental agencies. (Am. Pet. at 16.)

## COMPLIANCE ALTERNATIVES

While ComEd maintains that compliance costs are not a factor to be considered for determining applicable thermal standards under the Clean Water Act, it has analyzed costs for cooling towers or derating its units to comply with the generally applicable thermal requirements. (Am. Pet. at 11.) ComEd estimates that the cost of installing cooling towers at Joliet would be \$68 million. (Am. Pet. at 11.) ComEd estimates that the cost of derating the plants to meet the thermal requirements would be in the range of \$3.5 to \$16 million annually. (Am. Pet. at 11.)

The Agency believes that it is technically feasible to reduce the temperature of the effluents by use of cooling towers and spray ponds. However, the Agency believes that the cost of providing this cooling may not be economically reasonable when compared to the likelihood of no improvement in the aquatic community. (Ag. at 7.)

## CONCLUSION

For all of the above reasons, the Board finds that petitioner has presented adequate proof of justification for the requested adjusted standard as set forth in Section 28.1(c) of the Act and the requested adjusted standard, as presented in this proceeding, is consistent with the factors set forth in Section 27(a) of the Act. Petitioner has also provided the necessary showing for alternate thermal standards pursuant to the Clean Water Act.

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

## ORDER

The following Alternate Thermal Standards shall apply at the I-55 Bridge as limitations for discharges from ComEd's plants (Joliet, Will County, Crawford and Fisk) in lieu of the requirements of Section 302.211 (d) and (e):

January	60°F	February	60°F
March	65°F	April 1-15	73°F
April 16-30	80°F	May 1-15	85°F
May 16-31	90°F	June 1-15	90°F
June 16-30	91°F	July	91°F
August	91°F	September	90°F
October	85°F	November	75°F
December	65°F		

The standards may be exceeded by no more than 3°F during 2% of the hours in the 12-month period ending December 31, except at no time shall ComEd's plants cause the water temperature at the I-55 Bridge to exceed 93°F. ComEd's plants continue to be subject to the Secondary Contact Standards at the point of discharge.

IT IS SO ORDERED.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1994)) provides for the appeal of final Board orders within 35 days of the date of service of this order. The Rules of the Supreme Court of Illinois establish filing requirements. (See also 35 Ill. Adm. Code 101.246 "Motions for Reconsideration.")

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the \_\_\_\_\_ day of \_\_\_\_\_, 1996, by a vote of \_\_\_\_\_.

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Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board