

ILLINOIS POLLUTION CONTROL BOARD
February 7, 2002

IN THE MATTER OF:)
)
PETITION OF BORDEN CHEMICALS) AS 01-6
AND PLASTICS OPERATING) (Adjusted Standard - Water)
LIMITED PARTNERSHIP FOR AN)
ADJUSTED STANDARD FROM)
35 ILL. ADM. CODE 304.105 AS IT)
APPLIES TO 35 ILL. ADM. CODE)
302.211(B)-(E))

OPINION AND ORDER OF THE BOARD (by R.C. Flemal):

This matter comes before the Board upon a “Petition for Adjusted Standard” (Pet.) filed on October 31, 2000, by the petitioner, Borden Chemical and Plastics (Borden). Borden requests an adjusted standard that would allow for discharge of heated waters to the unnamed ditch which currently receives Borden’s treated industrial effluent.

The Board’s responsibility in this matter arises from the Environmental Protection Act (Act) (415 ILCS 5/1 *et seq.* (2000)). The Board is charged to “determine, define and implement the environmental control standards applicable in the State of Illinois” (415 ILCS 5/5(b) (2000)), and to “grant . . . an adjusted standard for persons who can justify such an adjustment” (415 ILCS 5/28/1(a) (2000)). More generally, the Board’s responsibility in this matter is based on the checks and balances integral to Illinois environmental governance: the Board is charged with the rulemaking and principal adjudicatory functions, and the Illinois Environmental Protection Agency (Agency) is responsible for carrying out the principal administrative duties.

The Act also provides that “the Agency shall participate in [adjusted standard] proceedings.” 415 ILCS 5/28.1(d)(3) (2000). On January 29, 2001, the Agency filed a recommendation. On October 25, 2001, the Agency filed an amended recommendation. The Agency supports grant of an adjusted standard.

Based upon the record before it and upon review of the factors involved in the consideration of adjusted standards, the Board finds that Borden has demonstrated that grant of an adjusted standard is warranted.

PROCEDURAL HISTORY

In 1997 Borden petitioned the Board for a variance to allow discharge of heated effluent to its receiving waterway. On November 6, 1997, the Board granted that request as a 5-year variance from 35 Ill. Adm. Code 302.211(b)-(e) and 35 Ill. Adm. Code 304.105, subject to certain conditions. Borden Chemicals and Plastics Operating Limited Partnership, PCB 97-102 (Nov. 6, 1997). The conditions included conducting a fish survey, temperature monitoring, and

assessing compliance options including technical and economic feasibility. The Board's order also included a timeline for achieving compliance with Sections 302.211(b)-(e) and 304.105.

On October 7, 1999, the Board granted Borden's request to modify the variance schedule. The schedule, in part, provided that Borden install equipment to implement its chosen compliance option and/or file an adjusted standard petition by August 30, 2000. Borden filed an adjusted standard petition on August 30, 2000, but failed to cause timely publication of the notice in accordance with Section 28.1(c) of the Act. 415 ILCS 5/28.1(c)(2000). The Board dismissed the petition on October 19, 2000. Consequently, Borden filed the instant petition on October 31, 2000.

On January 29, 2001, the Agency filed its initial recommendation. The Agency recommended grant of an adjusted standard, including temperature caps on both effluent and in-stream temperatures. The Agency also recommended that procedurally the adjusted standard be to the General Use Water Quality Standards for temperature at Section 302.211(b)-(e) and not include the provision relating to violations of water quality standards at Section 304.105.

In its October 25, 2001 amended recommendation, the Agency continued to support grant of relief, with some modification in the particulars in which that relief be fashioned. On October 30, 2001, Borden filed a response (Resp.) to the amended recommendation. In its response, Borden states that it accepts the Agency amended recommendation, and waives hearing in this matter.

NATURE OF THE SITE

Borden's plant is located in a rural area one mile west of Illiopolis, Sangamon County. Pet. at 4. It produces polyvinyl chloride (PVC) suspension and dispersion resin for the vinyl film, fabric, flooring, plastic pipe and wire insulation industries. Pet. at 4. The plant has operated since 1949 and employs approximately 240 people. Pet. at 4.

The plant discharges its wastewater pursuant to a National Pollutant Discharge Elimination System (NPDES) permit. Pet. at 4, Exh. C.¹ The discharge enters an unnamed ditch that has a seven-day, ten-year low flow of zero. Pet. at 4. Because of the low flow, a mixing zone is prohibited and the plant's effluent must comply with the water quality standards for temperature. Pet. at 5.

The unnamed ditch drains into Long Point Slough (slough). Pet. at 5. The slough flows into a portion of Old River, which drains into the Sangamon River. Pet. at 5. No water is withdrawn from the unnamed ditch or the slough for drinking water, or for agricultural or industrial purposes. Pet. at 5. Various aquatic species live in the unnamed ditch and the slough, but the waters are not used for recreational or other purposes because of the low and variable flows. Pet. at 5.

¹ Exhibits attached to Borden's petition will be cited as "Exh. ___ at ___."

The slough, like the unnamed ditch, receives a significant quantity of its dry weather flow from effluent discharges. Pet. at 6. The Illiopolis sewage treatment plant discharges into the slough several miles upstream of the confluence of the slough with the unnamed ditch. Pet. at 6. Also, the slough received permitted discharges from four other sources. Pet. at 6.

The plant's wastewater results from three main waste streams that the plant generates. Pet. at 7. Some of the streams are provided treatment for suspended solids, biochemical oxygen demand (BOD), and ammonia. Pet. at 7. Each stream carries an elevated heat load because of the nature of the plant's production process, and in winter, due to the need to maintain the temperature of the wastewater in its biological treatment system at approximately 30°C (86°F) to assure optimum treatment for ammonia nitrogen. Pet. at 7, 12.

The first waste stream includes wastewaters from the PVC plants, paste plant wastewaters, vinyl chloride air pollution control wastewater stripper effluent, and boiler blowdown. Pet. at 8. Among the treatment processes applied to this waste stream is equalization, primary clarification, and activated sludge treatment. Pet. at 8-9. For optimum nitrification, the plant maintains an average temperature between 28°C and 32°C in the activated sludge system. Pet. at 9. The plant's effluent exceeds winter temperatures standards because of the need to maintain the biologically-treated wastewater at a temperature approximately 30°C. Pet. at 9.

The second waste stream consists of wastewater from PVC Plant No. 2. Pet. at 11. The wastewater is routed to a tank for suspended solids reduction. Pet. at 11. The supernatant is pumped to a reactor clarifier where lime and polymer are added to coagulate and settle turbidity. Pet. at 11. The flow of this stream is seasonably variable, but averages 0.184 million gallons/day (mgd). Pet. at 11.

The third waste stream sources include the vinyl chloride afterburner control scrubber/neutralizer, discharges from the boiler plant water treatment process, including filter backwash water, Zeolite regeneration and rinse waters and demineralizer regeneration and rinse waters and boiler plant lime softening sludges. Pet. at 11. The waters are collected in a pond for pH stabilization and suspended solids reduction. Pet. at 11. The steam's flow averages 0.193 mgd. Pet. at 11.

Borden acknowledges that in the winter some wastewater cooling occurs in the serpentine stream before discharge, but notes that the cooling does not sufficiently bring the wastewater below the 16°C (60°F) standard. Pet. at 12. During the summer, little cooling of the final effluent occurs, and temperatures may increase depending on ambient temperature and cloud cover. Pet. at 12.

Borden argues that the data submitted in Borden Chemicals and Plastics Operating Limited Partnership, PCB 97-102 (Nov. 6, 1997), indicated that there were large natural variations in the temperature in portions of the unnamed ditch and slough that are unaffected by Borden's discharge. Pet. at 13. Some of the variations were greater than the 2.8°C (5°F) temperature rise standard. Pet. at 13. Borden notes that for the variance petition, it compiled all of its historical temperature data (from November 1985 through September 1996) for the discharge and the unnamed ditch. Pet. at 13. Although the data could not be validated, Borden

asserts that this data, together with more recent data is useful to determine whether there have been any trends in effluent and receiving stream temperatures over the years. Pet. at 14.

Borden compiled a table that compares the winter and summer average temperatures in both the unnamed ditch and the effluent from 1986-1996. Pet. at 14. The data reveals, among other things, that the average temperatures at all the sampling points were well below the summer maximum and absolute standards of 32°C (90°F). Pet. at 14. The effluent exceeded the summer maximum standard 24% of the time. Pet. at 15. The downstream temperature exceeded the summer maximum standard 5% of the time. The further downstream temperature exceeded the summer maximum standard less than 1% of the time. Pet. at 15. The temperature rise standard was exceeded by the difference between downstream and upstream temperatures 70% of the time. Pet. at 15.

Pursuant to a condition of the variance, Borden collected one year of temperature data for its effluent and six monitoring stations on the unnamed ditch and slough. Pet. at 16. The locations of the monitoring stations are found at Exhibit M. Borden contends that among the conclusions that can be drawn from the collected data is that the impact of Borden's discharge on compliance with the maximum and absolute temperature standards in winter is limited to a short distance between Borden's outfall, and that the discharge causes exceedences at this station infrequently. Pet. at 16. Also, although the exceedences of the temperature rise standard are substantially more frequent, the impact is generally confined to the unnamed ditch. Pet. at 19-20.

STATUTORY AND REGULATORY FRAMEWORK

In determining whether to grant an adjusted standard, Section 28.1 of the Act (415 ILCS 5/28.1 (2000)) requires the Board to determine whether a petitioner has presented adequate proof that: factors relating to the petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulations applicable to that petition; the existence of these factors justifies an adjusted standard; the requested standard will not result in environmental or health effects substantially more adverse than the effects considered by the Board in adopting the rule of general applicability; and the adjusted standard is consistent with federal law. 415 ILCS 5/28.1(c) (2000). In granting an adjusted standard, the Board may impose such conditions as may be necessary to accomplish the purposes of the Act. 415 ILCS 5/28.1(a) (2000).

Borden seeks an adjusted standard that provides that:

35 Ill. Adm. Code 302.211(b)-(e), shall not apply to the unnamed ditch which receives wastewater from Borden Chemicals & Plastics Operating Limited Partnership's chemical manufacturing facility located near Illiopolis, Sangamon County, Illinois from the point of the wastewater discharge to the confluence of the unnamed ditch with Long Point Slough. In addition, 35 Ill. Adm. Code 302.211(d) shall not apply to the impact of the temperature of unnamed ditch on the temperature of Long Point Slough. In lieu of these provisions, the temperature of the wastewater

discharge from Borden Chemicals & Plastics Operating Limited Partnership's chemical manufacturing facility shall not exceed the maximum limitations in the following table more than 2% of the hours in each calendar year. Compliance with these standards shall be determined based on the average of two temperature readings per day. Temperature readings shall be taken on three days of each calendar week. Pet. at 48.

Section 302.211(b)-(e) states that:

- b) There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions.
- c) The normal daily and seasonal temperature fluctuations which existed before the addition of heat due to other than natural causes shall be maintained.
- d) The maximum temperature rise above natural temperatures shall not exceed 2.8°C (5°F).
- e) In addition, the water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than one percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 1.7°C (3° F).

	° C	° F		° C	° F
JAN.	16	60	JUL.	32	90
FEB.	16	60	AUG.	32	90
MAR.	16	60	SEPT.	32	90
APR.	32	90	OCT.	32	90
MAY	32	90	NOV.	32	90
JUNE	32	90	DEC.	16	60

Borden also seeks an adjusted standard from Section 304.105 of the Board's regulations (35 Ill. Adm. Code 304.105) which provides:

In addition to the other requirements of this Part, no effluent shall, alone or in combination with other sources, cause a violation of any applicable water quality standard. When the Agency finds that a discharge which would comply with effluent standards contained in this Part would cause or is causing a violation of water quality standards, the Agency shall take appropriate action under Section 31 or Section 39 of the Act to require the discharge to meet whatever effluent limits are necessary to ensure compliance with the water quality standards. When such a violation is caused by the cumulative effect of

more than one source, several sources may be joined in an enforcement or variance proceeding, and measures for necessary effluent reductions will be determined on the basis of technical feasibility, economic reasonableness and fairness to all dischargers.

ADJUSTED STANDARD PROCEDURE

In both a general rulemaking and a site-specific rulemaking, the Board is required to take the following factors into consideration: the existing physical conditions, the character of the area involved, including the character of the surrounding land uses, zoning classifications, the nature of the receiving body of water, and the technical reasonability and economic reasonableness of measuring or reducing a particular type of pollution. 415 ILCS 5/27(a) (2000). The general procedures that govern an adjusted standard proceeding are found at Section 28.1 of the Act and the Board's procedural rules at 35 Ill. Adm. Code 104. Section 28.1 also requires that the adjusted standard procedure be consistent with Section 27(a).

Borden seeks an adjusted standard from rules of general applicability. In determining whether an adjusted standard should be granted from a rule of general applicability, the Board must consider, and Borden has the burden to prove, the factors at Section 28.1(c) of the Act (415 ILCS 5/28.1(c) (2000)):

- 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 the petitioner;
- 2) the existence of those factors justifies an adjusted standard;
- 3) the requested standard will not result in environmental or health effects substantially and 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. 35 Ill. Adm. Code 104.426(a) and 415 ILCS 5/28.1.

ARGUMENT

Substantially Different Factors

Borden believes that the factors relating to it are substantially and significantly different from those factors relied upon by the Board in adopting Sections 302.211(b)-(e). Pet. at 24. Borden argues that the temperature standard was established to ensure the protection of fish from harmful rapid increases in water temperature, to avoid large unnatural day-to-day fluctuations in temperature, to maintain a natural seasonal cycle, and to assure that the annual spring and fall temperature changes were gradual. Pet. at 24.

Borden contends that because of the nature of the plant's receiving stream, it is not necessary for the protection of aquatic life that the general use water quality standards for temperature apply to the unnamed ditch or Borden's discharge. Pet. at 24. Borden argues that an extensive review of the scientific literature and three fish and habitat assessments conducted over 13 years show that Borden's effluent is not having any significant adverse effects on fish communities in the unnamed ditch and slough. Pet. at 24-25. Borden attaches Exhibit N as a summary of the fish known to occur in the unnamed ditch or slough and their corresponding upper and lower lethal threshold thermal limits or avoidance temperatures for three separate acclimation temperatures. Pet. at 27, Exh. N. Borden further argues that the Agency sponsored a study that indicates Borden's effluent is not having a significant adverse impact on fish communities in the unnamed ditch and slough. Pet. at 33, Exh. J.

The Agency agrees that the general water quality use standards for temperature are designed to protect native ecosystems from harmful rapid increases in water temperature, to avoid large unnatural day-to-day fluctuations in temperature, to maintain a natural seasonal cycle and to assure that annual spring and fall temperatures are gradual. Rec. at 12. The Agency agrees that the fish and habitat assessments and the data from the fisheries show that Borden's discharge has no significant adverse effects on the native ecosystem. Rec. at 12. The Agency also agrees that the receiving water is an unnamed tributary that is neither used as a source of irrigation water nor drinking water. Rec. at 12. The Agency concludes that this is a fundamentally different fact than what the Board considered in adopting Section 302.211(b)-(e). Rec. at 12.

Justification

Borden contends it cannot comply with the temperature standards in winter and argues there are no economically reasonable treatment technologies that would allow Borden to attain the maximum and absolute temperature standards and the temperature rise standard in the final effluent. Pet. at 36. Borden also argues that Borden exceeds the maximum temperature standards in the summer because of heat sources that are integral to the plant's manufacturing and pollution control activities. Pet. at 36.

Borden considered eight alternatives to attain the maximum and absolute temperature standards and the temperature rise standard in the final effluent, but they are either technically infeasible or would have adverse environmental consequences. Pet. at 36-37. Among the options Borden considered were: aeration of the serpentine stream; installation of a final effluent heat exchanger with cooling tower and chiller; installation of an effluent chiller system with a heat exchanger system; installation of an effluent cooling or holding pond; expansion of the existing wastewater treatment plant; flow augmentation using groundwater; utility stream cooling; and methods to achieve compliance with the temperature rise standard. Pet. at 37.

Additionally, Borden contends that the alternatives that are technically feasible and without environmental consequences are costly. Pet. 36-37. Namely, the two options that involve cooling the plant's final effluent using a cooling tower and/or water chiller, although technically feasible and environmentally acceptable would incur capital costs of \$2,200,000 or \$1,810,000. Annually, it would cost \$240,000 or \$220,000 to operate and maintain one of the two alternatives. Pet. at 47, Exh. R and S.

The Agency agrees that the lack of a technically feasible and economically reasonable alternative justifies granting the adjusted standard. Rec. a 12.

Environmental Effect

As mentioned previously, Borden contends that an extensive review of the scientific literature and three fish and habitat assessments conducted over 13 years show that Borden's effluent is not having any significant adverse effects on fish communities in the unnamed ditch and slough. Pet. at 24-25. Furthermore, neither the ditch nor the slough are used for drinking water, or agricultural or industrial purposes. Pet. at 5.

The Agency concurs with Borden's contention that the fish and habitat assessments show that Borden's discharge has no significant adverse effects on the native fish communities in the unnamed tributary and Long Point Slough. Rec. at 9. Also, the Agency generally agrees with Borden's conclusion that no substantial or significant adverse effects on the environment or native fish communities would occur in the unnamed ditch and the slough if the adjusted standard is granted. Rec. at 9.

Consistency with Federal Law

Borden argues the proposed adjusted standard is consistent with federal law. Pet. at 51. Borden contends that because the ditch and slough's temperature would be maintained under the adjusted standard, and would not interfere with any of the existing or reasonably likely future uses of the waters, the adjusted standard would not alter the ditch or slough's classification as general use waters. Pet. at 52.

The Agency states that the portion of the adjusted standard requested for temperature standards at 35 Ill. Adm. Code 302.211(b)-(e) is consistent with federal law. Rec. at 13. The Agency contends, however, that the relief from 35 Ill. Adm. Code 304.105 is both unnecessary and contrary to federal law. Rec. at 13.

FINDINGS

Based on its review of the record in this matter, and the showings requisite for grant of an adjusted standard, the Board finds that grant of an adjusted standard in the instant case is warranted.

Substantially Different Factors

The Board first finds that Borden has shown that the factors relating to the site are substantially and significantly different from those factors relied upon by the Board in adopting 35 Ill. Adm. Code 302.211(b)-(e). The studies presented by Borden show that Borden's wastewater temperatures are not adversely affecting the aquatic life in the unnamed ditch and slough. The Agency agrees.

Justification

The Board finds that Borden has sufficiently shown that there are no economically reasonable treatment technologies that would allow Borden to attain the maximum and absolute temperature standards and the temperature rise standard in the final effluent.

Environmental Effect

The Board finds that Borden has adequately shown that an adjusted standard from 302.211(b)-(e) would not adversely impact the aquatic community.

Consistency with Federal Law

The Board agrees with the Agency that granting an adjusted standard from 302.211(b)-(e) is consistent with federal law.

Scope of Relief

The specific relief the Board will grant is that which the Agency recommends in its Amended Recommendation of October 25, 2001 and which Borden accepted in its response of October 30, 2001.

The Board notes that this relief focuses on the water quality standard for temperature at 35 Ill. Adm. Code 302.211(b)-(e). The Board finds that this focus is consistent with Board precedent in adjusted standards applicable to small, sole-discharge waterways. *In re Petition of Abbott Laboratories for an Adjusted Standard From 35 Ill. Adm. Code 302.208 and 304.105*, AS 99-5 (July 8, 1999). In this circumstance, adjustment of the standard at 35 Ill. Adm. Code 304.105 is unnecessary. *In re Petition of Abbott Laboratories for an Adjusted Standard From 35 Ill. Adm. Code 302.208 and 304.105*, AS 99-5 (July 8, 1999).

SUMMARY

For the reasons detailed above, the Board grants Borden an adjusted standard from 35 Ill. Adm. Code 302.211(b)-(e) for the unnamed ditch with flows into Long Point Slough.

This opinion constitutes the Board's findings of fact and conclusions of law.

ORDER

The Board grants an adjusted standard to Borden Chemicals & Plastics Operating Limited Partnership from 35 Ill. Adm. Code 302.211(b)-(e), subject to the following conditions:

- 1) 35 Ill. Adm. Code 302.211(b), (c), (d), and (e) do not apply to the unnamed ditch from the Borden discharge point to the confluence of Long Point Slough;
- 2) The water temperature at representative locations in the unnamed ditch tributary to Long Point Slough from the discharge of Borden Chemicals & Plastics Operating Limited Partnership's Chemical manufacturing facility located near

Illiopolis, Sangamon County, Illinois, to the confluence of Long Point Slough, may not exceed the maximum limits in the following table during more than 2% of the hours in the 12-month period ending with any month. Moreover, at no time will the water temperature at such locations exceed the maximum limits in the following table by more than 1.7°C (3°F)

	° C	° F		° C	° F
JAN.	24.5	76.1	JUL.	36.0	96.8
FEB.	24.5	76.1	AUG.	36.0	96.8
MAR.	25.0	77.0	SEPT.	34.5	94.1
APR.	32.0	89.6	OCT.	32.0	89.6
MAY	32.5	90.5	NOV.	32.0	89.6
JUNE	36.0	96.8	DEC.	24.8	76.6

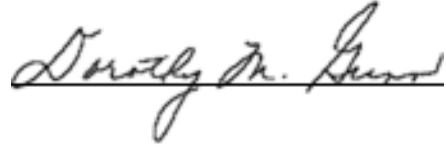
- 3) The water temperature of the Borden discharge may not exceed the maximum limits in the following table during more than two percent of the hours in the 12-month period ending with any month. Moreover, at no time may the water temperatures of the Borden discharge exceed the maximum limits in the following table by more than 1.7°C (3°F):

	° C	° F		° C	° F
JAN.	24.5	76.1	JUL.	36.0	96.8
FEB.	24.5	76.1	AUG.	36.0	96.8
MAR.	25.0	77.0	SEPT.	34.5	94.1
APR.	32.0	89.6	OCT.	32.0	89.6
MAY	32.5	90.5	NOV.	32.0	89.6
JUNE	36.0	96.8	DEC.	24.8	76.6

IT IS SO ORDERED.

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2000); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, 102.702.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the Board adopted the above opinion and order on February 7, 2002, by a vote of 7-0.

A handwritten signature in cursive script, reading "Dorothy M. Gunn", written over a horizontal line.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board