ILLINOIS POLLUTION CONTROL BOARD
October 5, 1982

DEERE AND COMPANY, JOHN DEERE FOUNDRY, Petitioner, v. ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, Respondent.	)	PCB 81-163

OPINION AND ORDER OF THE BOARD (by D. Anderson):

This matter comes before the Board upon a petition for variance first filed October 19, 1981 by Deere and Company, John Deere Foundry (Deere). The petition, and subsequent amendments, requests a variance from water quality standards for temperature, total dissolved solids and iron, as they relate to discharges from Deere's foundry near East Moline, Rock Island County. The Illinois Environmental Protection Agency (Agency) now recommends that the variance be granted with conditions. No hearing was held and the Board has received no public comment.

Because this has become somewhat confused, it is worthwhile to set forth the essential pleadings:

October 19, 1981	Variance Petition
November 19, 1981	Recommendation
June 1, 1982	First Amended Petition
July 22, 1982	First Amended Recommendation
July 23, 1982	Second Amended Petition: "Addendum to Petition for Variance"
July 26, 1982	Third Amendment to Petition
August 24, 1982	Second Amended Recommendation

The original petition requested a variance for thermal discharges only. The Agency recommended denial on the basis of inadequate information on environmental impacts. Deere requested a continuance in which to develop additional information.

The first amended petition provided additional information and expanded the request to include total dissolved solids (TDS) and total iron. The Agency amended its recommendation to a conditional grant. The following is a summary of the provisions involved:

35 Ill. Adm. Code	Chapter 3	Description
302.208	203(f)	Water quality standard of 1.0 mg/l for iron (total)
302.208	203(f)	Water quality standard of 1000 mg/l for TDS
302.211(d)	203(i)(3)	Maximum temperature rise of 5° F above natural temperature
302.211(e)	203(i)(4)	General use water quality temperature standard of 60° F winter, 90° F summer
303.331	203(i)(4)	Temperature standards for Mississippi River (North) main stem
304.105	402	Requirement that effluents not cause violation of water quality standards

The second amendment indicated Deere was requesting a variance only for the time required to pursue a site specific rule change (R81-26). Merit hearings in the rulemaking were completed on August 24, 1982.

On July 26 Deere filed its third amendment, which would be more correctly described as a response to the first amended recommendation of July 22. This objected to proposed condition 12(f) which recommended an interim water quality standard of 2 mg/l total iron. On August 24, 1982 the Agency amended its recommendation to suggest a variance from the requirement to comply with water quality standards rather than the standard itself (Section 304.105).

The facility in question is a nodular iron foundry, with a potential output of 150,000 tons per year. It employs 1,070 persons and is located northwest of Silvis, on a 145 acre tract bordered by the former Rock Island Railroad and State Highway 84. It is about 1.25 miles southeast of the Mississippi River.

The foundry draws process and noncontact cooling water from the Jordan aquifer. It discharges, pursuant to NPDES permit IL 0002992, via 3 outfalls to two unnamed tributaries of Sugar Creek, a direct tributary of the Mississippi River. The discharge is about 1.9 million gallons per day (MGD) dry weather flow. This is 75 to 96% of the flow of the unnamed tributaries and 75% of the flow of Sugar Creek at low flow.

The discharge is about 62% noncontact cooling water and 38% process water. The following is a summary of the outfalls:

001 Cooling water from air conditioners and roof and parking lot runoff

002 API oil separator, floor drains and some cooling water

003 Main cooling water, clarifier effluent and cooling tower blowdown.

IRON

Deere's discharge is 1.03 mg/l iron (total), based on a long-term average. This is well within the 2.0 mg/l effluent standard of Section 304.124, and about equal to the 1.0 mg/l water quality standard of Section 302.208. However, the natural background of iron in the area appears to be in excess of the water quality standard, apparently in the form of suspended solids from soils with high iron content. As noted above, the Agency at one time recommended an interim water quality standard of 2.0 mg/l, although this was withdrawn when Deere questioned whether it could guarantee even this level. The Agency now recommends a variance from the requirement to comply with water quality standards.

TOTAL DISSOLVED SOLIDS

The source of total dissolved solids is the background in Deere's well water:

	Range (mg/l)
Chloride	500-600
Sulfate	250-350
TDS	1700-1900

This is well in excess of 1000, the water quality standard for TDS (Section 302.208). There is no longer an effluent standard for TDS (R76-21, 6 Ill. Reg. 563, effective December 24, 1981).

TEMPERATURE

The major portion of the variance request involves the thermal component of the discharges. Included in the June 1 amended petition is data indicating maximum temperatures of 89.6° F and 96.8° F summer, which would cause violation of the 60/90° F standards of Section 302.211(e) under low flow conditions. In addition, the discharges show differentials of as

much as 37.8° F above background, in excess of the 5° F standard of Section 302.211(d). There is no indication of thermal violations in the Mississippi River itself.

Deere has investigated several options to discharge to Sugar Creek and tributaries. These include:

1. Deep well injection, viewed as prohibited because of chemicals added to water to prevent scale, corrosion and microbial growth.

2. Direct discharge to the Mississippi, costing about $988,000 for 9000 feet of piping.

3. Total cooling tower/process water recirculation, costing some $3,115,000 to develop.

The environmental impact study submitted by Deere indicates that, although Sugar Creek is "semi-polluted" under Agency standards, it supports healthy populations of benthic macro-invertebrates. Carp, blugills and shiners were also present. The thermal discharge was not the limiting factor and dissolved oxygen levels were near saturation. Elimination of the Deere flow, as required by the compliance alternatives, would result in near elimination of present available habitat.

There appears to be an impact associated with sudden changes in temperature in the receiving stream. The Agency has recommended minimization of these. The Agency has also recommended other minor operational conditions which Deere has not objected to.

The Board finds that considering the minimal net environmental damage, it would impose arbitrary or unreasonable hardship on Deere to require immediate compliance or cessation of the discharge. Conditions will be imposed on the variance similar to those recommended by the Agency. As noted above, the receiving stream has background levels of iron in excess of the water quality standards. An alternative water quality standard would make Deere's compliance subject to circumstances beyond its control. Rather than grant the variance from the water quality standards themselves, the Board will grant a variance from Section 304.105, as recommended by the Agency. The variance will be conditioned on discharge standards.

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

ORDER

Petitioner, Deere and Company, John Deere Foundry, is granted a variance from 35 Ill. Adm. Code 304.105 as it applies to the water quality standards for iron, total dissolved solids and temperature contained in 35 Ill. Adm. Code 302.208, 302.211(d) and 302.211(e), subject to the following conditions:

1. This variance will expire January 1, 1986, or 125 days after entry of a final order in R81-26, whichever happens first.

2. Petitioner shall comply with the following effluent limitations at discharges 001, 002 and 003:

Constituent	Monthly Average	Daily Average	Grab Sample
Iron (total)	2 mg/l	4 mg/l	10 mg/l
Total Dissolved Solids	1800 mg/l	3600 mg/l	9000 mg/l

Temperature	Average Temperature	Maximum Temperature
December through March	79° F	90° F
April through November	84° F	98° F

3. Petitioner shall minimize the number of cooling water shutdown periods or devise some other method to avoid fluctuating temperatures in its effluent.

4. Petitioner shall operate the API oil skimmers so as to avoid the discharge of oil through outfall 002 and shall maintain a daily log of their operation. Petitioner shall eliminate the flow of oil to the skimmers by December 31, 1984.

5. Petitioner shall eliminate the diversion of effluent from 003 to 001.

6. The Illinois Environmental Protection Agency shall modify NPDES permit IL 0002992 consistent with this Order.

7. Within forty-five days of the date of this Order, Petitioner shall execute and forward to the Illinois Environmental Protection Agency, Variance Section, 2200 Churchill Road, Springfield, Illinois 62706, a certificate of acceptance and agreement to be bound to all terms and conditions of this variance. This forty-five day period shall be held in abeyance

for any period this matter is being appealed. The form of the certificate shall be as follows:

CERTIFICATION

I, (We), _____, having read and fully understanding the Order in PCB 81-163, hereby accept that Order and agree to be bound by all of its terms and conditions.

SIGNED _____

TITLE _____

DATE _____

IT IS SO ORDERED.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order were adopted on the 5th day of October, 1982 by a vote of 5-0.

Christan L. Moffett, Clerk
Illinois Pollution Control Board