

ILLINOIS POLLUTION CONTROL BOARD
January 9, 1986

In the Matter of:)
)
JOINT PETITION OF THE VILLAGE) PCB 85-33
OF HARTFORD AND THE ILLINOIS)
ENVIRONMENTAL PROTECTION AGENCY)
FOR EXCEPTION TO THE COMBINED)
SEWER OVERFLOW REGULATIONS)

MR. WILLIAM M. COX APPEARED ON BEHALF OF THE VILLAGE OF HARTFORD.

MR. THOMAS DAVIS APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

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

This matter comes before the Board upon a March 20, 1985 joint petition filed on behalf of the Village of Hartford (Village) and the Illinois Environmental Protection Agency (Agency) for an exception to 35 Ill. Adm. Code 306.305(a) and (b) of the Board's combined sewer overflow (CSO) regulations as they apply to the proposed Hartford Regional Pump Station. These overflows will occur at the existing point of discharge when the maximum capacity of the screw pumps is exceeded. Since the existing overflows are presently allowed pursuant to 35 Ill. Adm. Code 306.306(d), the requested relief will only become necessary when the Village begins pumping its wastewater to the Wood River Regional Treatment Plant.

Sections 306.305(a) and (b) provide as follows:

- a) All dry weather flows, and the first flush of storm flows as determined by the Agency, shall meet the applicable effluent standards; and
- b) Additional flows [i.e. not dry weather flows or first flush storm flows], as determined by the Agency but not less than ten times the average dry weather flow for the design year, shall receive a minimum of primary treatment and disinfection with adequate retention time.

The Village alleges that its existing CSO discharges have minimal impact on the water quality of the Mississippi River (the receiving water), and that construction of CSO facilities at an estimated cost of \$603,000 is unjustified. Hearing was held on May 28, 1985, at which testimony and exhibits were presented only by the parties. There was no disagreement as to the facts. A proposed Order and motion to supplement the record were filed on June 20, 1985. That motion is hereby granted. The Board entered

an Interim Order on September 20, 1985, requesting additional information to which the Agency filed a reply on November 5, 1985.

The Village is located on the east bank of the Mississippi River along Illinois Route 3 about 7 miles north of Interstate 270. It is served by 7.2 miles of combined sewers and 0.7 miles of sanitary sewers which collect wastes from the Village's 2,450 people as well as run-off from 180 urban acres (approximately 95 percent of the Village's incorporated area). The entire collection system drains through a single 48-inch interceptor which has an estimated maximum capacity of 46.0 MGD and drains through the Corps of Engineers-maintained Mississippi River levee and stormwater pumping station and, thereafter, discharges into the Mississippi River. No other combined sewer overflows exist within the Village's sewer system. At the discharge point the Mississippi River is heavily used for barge traffic and repair facilities, including a petroleum barge mooring area, and a major barge and tugboat repair facility. A visual inspection of the river bank in the area surrounding the discharge point indicated that there was no visual effect of the discharge on the river or the river bank. As of March 20, 1985, the existing sewage treatment facility was inoperable and the combined sewer outfall was discharging the entire Hartford flow into the river with no visible effect.

The Village's present wastewater treatment facility (which consists of a grit chamber, lift pumps and Imhoff tank), was constructed in 1959 and operated until the early 1960's. At that time the Chain of Rocks Dam was constructed and the pool level of the Mississippi River upstream of the dam was raised, resulting in frequent flooding of the treatment facility. This flooding has made it impractical to operate the plant, and all wastes are now discharged directly into the Mississippi River without treatment.

The Village has been involved in the Construction Grants Program since 1975, and therefore qualifies for the exemption from effluent limitations and CSO requirements pursuant to 35 Ill. Adm. Code 304.140 and 306.306(d). In turn, the Village has been able to comply with the interim limits in its NPDES permit since those limits "reflect the inoperability of the existing primary treatment facility, thereby allowing the direct discharge of untreated wastes through the combined sewer overflow pipe." (Agency Reply, p. 2). If the Village were held to the generally applicable CSO standards it would have to treat all dry weather flows and the first flush of storm flows so as to meet applicable effluent standards and provide primary treatment and disinfection for some additional flows. [35 Ill. Adm. Code 306.305(A) and (b)].

The impact of the existing method of operation on the Mississippi River was examined in two reports: C.S.O. Study, Hartford, Illinois, May 22, 1981, and the First Flush Analysis,

Hartford, Illinois, February 1983. (Appendices A and B of the Petition). The First Flush Analysis found that the first flush has a volume of 675,000 gallons with a peak flow of 19,200 gpm (App. B.). Three alternatives to handle and treat this volume were considered:

- 1) Untreated discharge to Mississippi River.
- 2) Pump flow to Wood River Treatment Facility.
- 3) Construct holding facilities to store the flow, discharge to Hartford pumping station for pumping to Wood River.

Since the Agency would not accept the first alternative (presumably due to violation of Board rules), the study considered only the latter two alternatives. In order to pump the flow to Wood River a 48" diameter force main would have to be installed and the pump station structure enlarged to allow for two additional pumps. Capital costs are estimated at \$898,000. The construction of holding basins for later pumping to Wood River at a rate which would allow the use of presently proposed pumping and force main facilities would entail construction of a levee to avoid flooding, pumps to lift the flow to the holding basins, and the basins themselves. The cost is estimated at \$693,000.

The combined sewer overflow report looks at alternative storm treatment facilities and their effect on the BOD and SS discharged to the river. Annual costs were determined for storage and later treatment with the Village's domestic flow, use of a swirl concentrator prior to discharge to the Mississippi River and primary sedimentation prior to discharge. A swirl concentrator is a simple centrifugal device with no moving parts which removes grit and some organic materials and floatables prior to discharge. The separated material is stored and returned to the domestic flow pumping station once the storm flow subsides. Suspended solids can be expected to be reduced 20-50% while 0-25% removal efficiencies are expected for BOD. Primary sedimentation allows flows less than the design capacity to pass through the clarifier where settleable material would be captured and later returned to the domestic flow pump station while excess flows are chlorinated and discharged. Suspended solids removal efficiencies of 50-65% and BOD removal efficiencies of 25-40% can be anticipated. The report found:

The mean annual discharge for 52 years for the Mississippi River near Hartford is 98,920 C.F.S. (1065.5 MGD). BOD and suspended solids concentrations for the river are 4.7 mg/l and 303 mg/l respectively.

Hartford discharges 7,263,438 CF/yr. of storm flow into Mississippi River. This value was derived

using a run-off coefficient of 0.30 and an average annual rainfall of 37.22 inches. From a graph of storm volume vs. loading from the two storms which were monitored, the BOD and Suspended Solids loading was found to be 530 lbs. BOD/event and 2,200 lbs.SS/event.

Assuming a value of 118 rainfall events/yr. discharge loadings are 62,450 lbs. BOD/yr. and 259,600 lbs.SS/yr. Using the total discharge per year from Hartford, the concentration of BOD and Suspended Solids was found to be 138 mg/l and 572 mg/l, respectively.

Because Hartford contributes such minor flow to the Mississippi River, the BOD and Suspended Solids concentrations in the river would not be appreciably altered by Hartford's storm flow discharge.

The CSC study concludes that discharge without treatment would not appreciably alter the Mississippi River's BOD or TSS concentration and that storage and later treatment is the only means of meeting currently applicable effluent standards but is costly and will not significantly improve water quality. (App. B p. 24). The study further concludes that a swirl concentrator is the least costly, but also the least effective treatment method, and that primary sedimentation would be less effective and more costly than storage and later treatment. (id.).

The cost of storage facilities was investigated in greater detail in Appendix C of the Petition: "Combined Sewer Overflow Cost Effective Analysis," which looks at the costs of three potential sites. That study finds that "in order to construct, operate, provide equipment replacement and to treat the first flush volume, the cost per 1000 gallons would have to be increased by approximately \$0.89 to a total of \$2.33/1000 gallons of average daily flow." (App. C, p. 22). The study further finds that the "level of pollutant removals would allow a 5.34×10^{-5} percent improvement in the Mississippi Rivers (sic) BOD loading and a 3.43×10^{-6} percent improvement in the suspended solid loading." (App. C, p. 23). Therefore, the study recommends that the Village be allowed to continue to discharge without treatment, based upon its findings that "a) Hartford's untreated combined sewer overflow has little effect on the Mississippi River, b) the cost to Hartford to reduce this original minimal effect is prohibitively high." (App. C, p. 23).

The Village is a participant in the Wood River Regional Wastewater Treatment Project which involves the Village of South Roxana pumping its sewage to Hartford and Hartford pumping its and South Roxana's sewage to a regional treatment facility located in the City of Wood River. The effluent from the regional facility will be discharged to the Mississippi River.

The proposed Hartford Regional Pumping Station will consist of two 24-inch diameter screw pumps, one aerated grit collector, and four submersible pumps. The two screw pumps will transport Hartford's sewage flow to ground level where it will be combined with the discharge from South Roxana. This combined flow will be moved through the grit collector and into the submersible pump pit for transportation via the four submersible pumps and force main to the Wood River Regional Treatment Facility. Each of the proposed screw pumps has a rated capacity of 430 gpm, and with both operating 5.38 times the estimated normal domestic flow from the Village of Hartford can be removed from the sewer system.

The Wood River Regional Treatment Facility began providing secondary treatment on October 8, 1985, and the Village intends to solicit bids for construction of the Hartford Regional Pump Station in late 1985. (Agency Reply, p. 1). Presumably, therefore, this has already occurred, though the record does not establish whether that in fact has occurred. Connection to the Wood River Regional Treatment Facility should occur within one year of the commencement of construction. (id.). Thus, no relief will be needed for at least a year. However, such relief is necessary to give assurance to the Village that its intended course of action will result in ultimate compliance.

The Board is concerned that the granting of this CSO exception will permanently allow the dumping of untreated sewage into the Mississippi River. Unlike some, the Board does not ascribe to the theory that the Mississippi River is so large that it can assimilate any pollution discharged into it. For that reason at the May 28, 1985 public hearing the Board requested the Agency to provide data on the dissolved oxygen (D.O.) levels in the Mississippi River in the Metropolitan St. Louis area. The Agency did so in a June 20, 1985 response.

An Agency report "Mississippi River Water Quality Monitoring" describes a study conducted in the Metropolitan St. Louis area show violations of the D.O. standard on June 23, 1981, with some levels below 4.0 mg/l. Further, the Water Resource Data Books for these stations from 1978-1983 indicate that similar violations do occur at stations far removed from major sources of oxygen-demanding pollutants. Finally, the "Illinois Water Quality Report 1982-1983" indicates that D.O. violations in the South Central section of the Mississippi River are comparable in frequency to other large rivers in the State. However, the Agency also pointed out that loadings of BOD and SS should decrease dramatically in the near future in the Metropolitan St. Louis area since both East St. Louis and St. Louis, which presently discharge primary treated effluents, are committed to providing secondary treatment. The Agency then concludes that it "can be concluded with reasonable confidence is that the Village of Hartford is not a primary factor influencing water quality in the Mississippi River and that Hartford's proposed improvements are consistent with municipal wastewater control strategies being applied to other communities on the Illinois side of the Metropolitan area."

Based upon this assurance, the Board finds that the uncontroverted evidence in this record supports the granting of an exception to 35 Ill. Adm. Code 306.605(a) and (b). While 92.4% of the first flush flow will be discharged directly to the Mississippi River permanently, all other flows will be captured and treated. The economic cost of complete control is unreasonable. Further, the Board notes that the environmental impact on Mississippi River quality should be nearly insignificant. The Board presumes that the Village will meet all of its commitments to ensure expeditious completion of its pumping station and will condition the exception upon such participation and will require the construction, operation and maintenance of the proposed Hartford Regional Pumping Station. Finally, the Board will require the Village's sewer system to be maintained in optimal operating condition.

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

ORDER

The Village of Hartford is hereby granted an exception from 35 Ill. Adm. Code 306.305(a) and (b), for excess flows from the Hartford Regional Pumping Station, with discharge into the Mississippi River at River Mile 196.8, subject to the following conditions:

1. The Village shall participate in the Wood River Regional Wastewater Treatment Project.
2. The Village shall construct, operate and maintain the proposed Hartford Regional Pumping Station, consisting of two 24 inch diameter screw pumps, one aerated grit collector, and four submersible pumps.
3. The Village shall maintain its Municipal Sewer System in an optimal operating condition, ensuring maximum utilization of the pumping station and force main prior to and during any overflow event.
4. Within forty-five days of the date of this Order, the Village shall execute a Certification of Acceptance and Agreement to be bound to all terms and conditions of this exception. Said Certification shall be submitted to the Agency at 2200 Churchill Road, Springfield, Il 62706. The forty-five day period shall be held in abeyance during any period that this matter is being appealed. The form of said Certification shall be as follows:

CERTIFICATION

I, (WE) _____, hereby accept and agree to be bound by all terms and conditions of the Order of the Pollution Control Board in PCB 85-33, dated _____.

Petitioner

Authorized Agent

Title

Date

IT IS SO ORDERED.

Board Members B. Forcade and J. Theodore Meyer dissented.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 9th day of January, 1985 by vote of 5-2.

Dorothy M. Gunn
Dorothy M. Gunn, Clerk
Illinois Pollution Control Board