ILLINOIS POLLUTION CONTROL BOARD
May 9, 1986

IN THE MATTER OF:	)	
	)	
JOINT PETITION OF THE CITY OF CAIRO AND THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY FOR EXCEPTION TO THE COMBINED SEWER OVERFLOW REGULATIONS	)	PCB 85-225

MR. JOHN HOLLAND, SR. OF HOLLAND & HOLLAND APPEARED ON BEHALF OF THE CITY OF CAIRO;
MR. STEPHEN C. EWART APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

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

This matter comes before the Board upon the filing on December 31, 1985 of a joint petition for a combined sewer overflow ("CSO") exception from 35 Ill. Adm. Code 306.305 (a) and (b) by the City of Cairo ("City") and the Illinois Environmental Protection Agency ("Agency"). A public hearing was held in Cairo, Illinois on March 20, 1986. No members of the public attended and no public comments were received.

CSO REGULATIONS

The CSO regulations are contained in 35 Ill. Adm. Code 306.302 et seq. They were amended in R81-17, 51 PCB 383, March 24, 1983. Section 306.305 provides as follows:

> All combined sewer overflows and treatment plant bypasses shall be given sufficient treatment to prevent pollution, or the violation of applicable water standards unless an exception has been granted by the Board pursuant to Subpart D.

Sufficient treatment shall consist of the following:

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, as determined by the Agency but not less than ten times to [sic] average dry weather flow for the design year, shall receive a minimum of primary

treatment and disinfection with adequate retention time; and

c) Flows in excess of those described in subsection (b) shall be treated, in whole or in part, to the extent necessary to prevent accumulations of sludge deposits, floating debris and solids in accordance with 35 Ill. Adm. Code 302.203, and to prevent depression of oxygen levels; or

d) Compliance with a treatment program authorized by the Board in an exception granted pursuant to Subpart D.

Subpart D allows the discharger to file a petition for an exception either singly, or jointly with the Agency as the City had done. The joint petition seeks an exception based on minimal discharge impact as provided in Section 306.361(a).

Wastewater System

The City is located at the confluence of the Ohio and Mississippi Rivers at the southernmost tip of Illinois. The Ohio flows along the east side of the City while the Mississippi flows along the west side. The City with its population of 6,000 is surrounded by a levee system. The wastewater system is composed of combined sewers, pump stations, and a primary wastewater treatment plant (WWTP).

The City holds NPDES permit IL0023825. The sewer system was constructed prior to 1900 and consists of 33 miles of 8" to 72" diameter combined sanitary and storm sewers, including the main trunkline sewer and the interceptor sewers. Waste from the sanitary sewer system in Future City, to the north of Cairo, flows to a pump station and is pumped through a force main to a manhole located at Sycamore and Union Streets, in Cairo (R. 13).

Another component of the wastewater system is the three CSO's with the three CSO pump stations located at 38th, 28th and 10th Streets. The 38th street pump station is used as a backup only in emergencies and is considered abandoned by the U.S. Army Corps of Engineers (Corps). The other pump stations, recently constructed by the Corps, have five pumps each with a capacity of 60 cubic feet per second (cfs) at each station. These two pump stations were designed to handle all possible stormwater conditions (R. 14).

The two CSO's currently used discharge approximately 200 to 220 days/year to the Ohio River when the river stage reaches 25 feet [295 mean sea level (MSL)] or above. Their flow capacity is approximately 38.75 MGD apiece and the maximum biochemical oxygen demand (BOD) effluent concentration, using 1972 data, was 11.14 mg/l BOD (R. 25; Exh. B to Exh. 3).

The mean annual flow of the Ohio River is 307.5 million gallons/minute (MGM). During normal dry weather (below 25 foot stage) the river's flow ranges from 60 to 200 MGM. During highwater (above 25 foot stage) the flow ranges from 200 to 735 MGM (Petition at 4).

There is another pump station at 10th Street which handles dry weather flow. It consists of two pumps with a capacity of four million gallons per day. This station pumps directly to the WWTP.

The WWTP, has a design average flow (DAF) of 1.3 million gallons per day (MGD) and 1.9 MGD design maximum flow (R. 14). The existing plant, built in 1963 (Petition at 6), includes a bar screen, grit removal and a settling base. Solids are digested in an aerobic digester and discarded in a sludge lagoon.

The influent BOD loading to the WWTP is between 60 to 100 mg/1 or slightly less; usually about 60 to 70 mg/1 BOD (R. 68-9). The WWTP has a BOD removal rate of between 50 and 60 percent and its effluent consistently meets the 30 mg/1 BOD and 37 mg/1 total suspended solids effluent standards (R. 65-6, Agency Exh. 1).

When the Ohio River is below 25 on the gauge (295 MSL), the outflow flood gates are open at each overflow. When a flash flood rainfall of two to three inches per hour occurs during this period, any flow over 1.9 MGD flows directly by gravity into the Ohio River at 10th Street. Gauge readings below 25 (295 MSL) occur on an average of 150 days per year and flash floods occur approximately ten times during this period (R. 15-16).

When the Ohio River reaches a stage of 25, the outflow flood gates are closed. When the river stage is between 25 and 34 (304 MSL), the WWTP treats 1.9 MGD. In addition, the 10th Street CSO pump station is turned on approximately three times a day for ½ hour periods. The pump station at 28th Street is activated only during flash floods (R. 16).

Between a river stage of 34 and 40, the WWTP treats 1.9 MGD, the 10th Street CSO pump station operates approximately three times per day for one hour periods, and the 28th Street pump station is activated during flash floods (R. 16-17).

At a river stage above 40, the WWTP treates 1.9 MGD. The 10th Street CSO pump station operates three times per day for one-and-a-half to two-and-a-half hour periods. The 28th Street pump station is activated during flash floods. Gauge readings above 25 occur approximately 200 days per year (R. 17).

Existing CSO Impact

The City offers 1972 data from the Corps asserting that the CSO discharges have negligible impact on the Ohio River. The Corps data shows that once the CSO's discharge to the river, the maximum BOD residual concentration in the Ohio River from the CSO discharge, assuming full mixing was 0.00188 mg/l at a river stage of 30 (300 MSL). In most cases, this BOD residual ranged from 0.0035 to 0.000089 mg/l BOD [R. 25; Exh. C to Exh. 3 (Petition)].

The City alludes to a 1977 variance petition in PCB 77-256 which allegedly contains Agency sampling data one mile up and downstream of the WWTP showing no increase in BOD, suspended solids and fecal coliform in the Ohio River due to the City's discharges. While the City introduced two Board Opinions and Orders into evidence (Exh. 7), it failed to include a copy of the 1977 variance petition. Other data in the instant record shows compliance with the effluent standards for the WWTP and a very small BOD residual in the Ohio River due to the CSO discharges. The bar screens at the pump stations remove any floatables (R. 45). Although fecal coliform counts are not given, the Board would expect that the counts would be low for the CSO discharges due to the amount of infiltration and inflow in the sewer system. Any residual amounts in the Ohio river due to CSO discharges would be negligible due to the relatively large flow of the Ohio River.

CSO Resolution Plan

Two alternatives are available to the City to achieve compliance with the CSO regulations. The first, the construction of a 7 MG stormwater retention lagoon, would cost $2.5 million. This alternative was considered not feasible for many reasons: sufficient land was unavailable; sandy soil and high groundwater conditions necessitated a liner in the lagoon, increasing the cost substantially; and because of the amount of flow involved in high water CSO events, a 7 MG lagoon would be filled in a very short time (R. 21-2).

The second alternative would be the separation of the combined sewers at a total cost of $30 million. The City cannot afford this alternative because the City would exceed its debt limit (R. 47-8). Ill. Rev. Stat. 1985, ch. 24, par. 8-5-1.

The City has chosen instead to upgrade its WWTP facilities, which in turn would be able to treat more flow, thereby reducing the extent of CSO discharges. A diagram of the upgrade is in the petition (Exh. D to Exh. 3). The WWTP, once upgraded, will be an advanced primary treatment facility based on physical/chemical rather than biological treatment. The upgrade will add a primary clarifier, a chemical mixing basin, one additional digester, three new blowers, two chlorine contact tanks, two chlorinators,

and a coil sludge filter. Associated process piping, pumping and controls will be in accordance with Illinois Recommended Standards for Sewerage Works (Exh. 9; Exh. D to Exh. 3). The upgraded WWTP DAF will be 1.3 MGD and the peak flow capacity will be increased from 1.9 to 3.0 MGD (R. 29-30).

The capital cost of the WWTP upgrade is $1,700,000 (R. 26-7). Operation and maintenance costs will increase from $150,000 to $190,000 per year (Petition at 5). The City is currently in project priority range for a 55 percent USEPA construction grant and a 15 percent state grant. If both grants are awarded, the City's share of the project would be $510,000; with only the federal grant, $765,000; with only the state grant, $1,445,000 (R. 26-7). The City does not anticipate exceeding its debt limit.

City Programs

The City currently has active street sweeping and sewer cleaning programs. Streets are cleaned about once a month (R. 42). Any blockages in smaller sewers are cleaned as well as pump stations (R. 43). The City also has an ordinance which mandates separated sewer connections in new buildings (R. 36), as well as outlawing connections of roof drains to the sewers (R. 37). The City plans to continue these programs.

Conclusion

Having considered the evidence and the factors enumerated in Section 306.361(a), the Board finds that the Cairo CSO discharges, after implementation of the WWTP upgrade, will have minimal impact. The upgrade will increase the treatment capacity of the WWTP, thereby reducing the extent of the CSO discharges.

The Board will grant an exception with language similar to that recommended by the City and the Agency. The City will be required to certify acceptance of the Order.

The Board notes that the relief is restricted only to those substantive requirements for effluent treatment of CSO's, and not to relief from water quality standards. To insure that this issue is clear, the Board will introduce into the Order language identifying the scope of the exception as granted.

Finally, in order not to give the City a total exemption from treating dry weather flows under Section 306.305(a), language has been added to limit dry weather flow relief to those dry weather flows beyond the capabilities of its WWTP.

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

ORDER

The City of Cairo (City) is hereby granted an exception from 35 Ill. Adm. Code 306.305(a) as such provision relates to first flush of storm flows and dry weather flows beyond the capabilities of its wastewater treatment plant and Section 306.305(b) for combined sewer overflows to the Ohio River, subject to the following conditions:

1. The City shall construct and operate the improvements to its wastewater treatment plant as described in Group Exhibit 9 no later than November 1, 1987.

2. The City shall follow the operation and maintenance procedures identified in Group Exhibit 9, specifically street cleaning, pump station cleansing and outflow structure cleansing, as well as those procedures in paragraph (3) below.

3. The City, for a period of two years after the date for completion of the wastewater treatment plant upgrade identified in paragraph (1) above, shall submit an annual report to the Agency at the address below on inspections of the discharge areas for sludge deposits.

4. This grant of exception does not preclude the Agency from exercising its authority to require as a permit condition a CSO monitoring program sufficient to assess compliance with this exception and any other Board regulations, including Section 306.305(c), and other controls if needed for compliance, including compliance with water quality standards.

5. This grant of exception is not to be construed as affecting the enforceability of any provisions of this exception, other Board regulations, or the Environmental Protection Act.

6. Within forty-five (45) days of the date of this Order, the City shall execute a Certification of Acceptance and Agreement to be bound by all terms and conditions of the exception granted. This Certification shall be submitted to the Agency at 2200 Churchill Road, Springfield, Illinois 62706. 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 85-225, dated _____.

Petitioner

Authorized Agent

Title

Date

IT IS SO ORDERED.

J.D. Dumelle and J. Anderson concurred.

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 May, 1986, by a vote of 7-0.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board