ILLINOIS POLLUTION CONTROL BOARD
April 24, 1986

IN THE MATTER OF:	)	
	)	
JOINT PETITION OF THE CITY OF MATTOON AND THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY FOR EXCEPTION TO THE COMBINED SEWER OVERFLOW REGULATIONS	)	PCB 85-215

MR. M. JOHN HEFFNER, JR., APPEARED ON BEHALF OF THE CITY OF MATTOON;
MS. KATHLEEN C. BASSI 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 27, 1985 of a joint petition for a combined sewer overflow (CSO) exception from 35 Ill. Adm. Code 306.305 (a) (first flush of storm flow only) and (b) (additional flows) by the City of Mattoon (City) and the Illinois Environmental Protection Agency (Agency). A public hearing was held in Mattoon, Illinois on February 20, 1986. A few members of the public attended but presented no comments. The City's March 19, 1986 motion to supplement the petition is granted.

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 has done. The joint petition seeks an exception based on minimal discharge impact as provided in Section 306.361(a)

Wastewater System

The city sewage system consists of 110 miles of sewers, including 31 miles of separate sanitary and 79 miles of combined sewers. In the inner city, the sewers are combined and the area experiences surface flooding, sewer surcharging and basement flooding. To relieve the flooding, the City has constructed at least 27 overflow diversion structures with 15 direct bypasses to 3 different watersheds. These 15 CSO outfalls discharge to 3 different watersheds as follows: 2 to the Little Wabash River, 7 to Kickapoo Creek and 6 to Riley Creek. Annual biochemical oxygen demand (BOD) loadings from the CSO outfalls to the streams is as follows (Exh. A, Table 4.4; Exh. B, Table 4.9):

Little Wabash:	66,315 lbs. based on an average of 21 precipitation events/year
Kickapoo:	207,720 lbs. based on an average of 21 precipitation events/year.
Riley:	92,550 lbs. based on an average of 21 precipitation events/year.

The wastewater system also includes a wastewater treatment plant (WWTP). The existing WWTP consists of a primary pumping station with bar screens, a grit removal system, primary settling, an activated sludge process, secondary settling, a secondary pump station, tertiary filtration, final chlorination and effluent discharge to Kickapoo Creek.

Sludge handling facilities consist of two separate systems: primary sludge from the primary settling tanks pumped to the anaerobic digestor and waste activated sludge from the secondary settling tanks, pumped to the aerobic digestors. The

solids from both digestion systems are pumped to sand drying beds for drying prior to final disposal by trucking to a landfill. Sludge collected from two 60 foot and two 40 foot diameter storm tanks is pumped either to the headworks of the grit chamber or the anaerobic digestor.

Flows in excess of 12 million gallons per day (MGD) up to 26.5 MGD are diverted to the two 60 foot and two 40 foot diameter storm tanks where the excess flows are chlorinated and receive primary sedimentation. The 60 and 40 foot storm tanks are capable of providing primary treatment for 10 MGD and 4.5 MGD, respectively, with a chlorine contact time of forty-five minutes. Overflow from the tanks is discharged to Kickapoo Creek.

City Programs

The City has a sewer cleaning program. Two vacuum-type catch basin and sewer cleaning trucks are used almost everyday in good weather (R.19). Another notable program is the City's street sweeping program. Two street sweepers are used five days a week (R. 21). The City contends that this otherwise greatly reduces the volume of solids that are deposited in the sewer system and that would be flushed by stormflow into the receiving streams (R. 19).

The City also forbids by ordinance the connection of downspouts to the City's sewer system. If complaints are received or violations are discovered by City crews, the violations are simply noted. Enforcement in most areas is not carried out because inflow and infiltration into the sewer system is minimal in most subareas (R. 21-2).

Existing CSO Impact

The City addressed the environmental impact of the CSO discharges on each of the three receiving streams. Each of the streams have mainly agricultural land uses adjacent to them except for Kickapoo. Kickapoo passes through residential areas in the City and through a golf course. Outside the City, the land uses adjacent to Kickapoo are mainly agricultural with limited commercial development. An industrial use, the General Electric plant, discharges cooling water which comprises a large portion of Kickapoo flow during dry weather. Petitioners contend that for all three streams there are no recreational uses (R. 8, 14).

The stream biological survey for all three streams is found in Exhibit A, Appendix 1. The 1982 survey was structured to obtain results during dry weather conditions (August) and after a substantial rainfall (October). Water quality as well as benthos, fish and plankton were examined.

In the Little Wabash River, considerable biological disruption was found. During dry weather, organic and fecal pollution was evident while it was less so during wet weather. Nitrates and dissolved oxygen (DO) were high during wet weather. Tubificid (sludge) worms dominated at three of the four sampling stations in the Little Wabash. Benthic populations indicated disturbed conditions (Exh. A at 4 through 54). A follow up study in April 1985 showed the Little Wabash River was still disturbed (R. 40).

In Riley Creek, the water quality indicated organic enrichment other than human wastes. Values for turbidity, suspended solids (SS) and nitrates suggested possible effects from one or two nearby landfills. Downstream of the landfills, a small drainage ditch joins Riley Creek and it has flow only when a CSO occurs (R. 36). In the ditch, the concentrations of DO and nitrates are low during dry weather while high for BOD, ammonia nitrogen, turbidity, SS, phosphates and fecal contamination. During wet weather flow, the water quality of the ditch improved dramatically (Exh. A, App. 1, pp 25-26, 31-32; R. 36-37). Flushing of the streams occurs during wet weather flow while stream conditions during dry weather are stagnant, low flow conditions.

Different benthic communities in portions of Riley Creek indicate water quality differences. In the upper reaches of the creek study area, there are diverse benthic communities, predominantly chironomids. After the juncture of the ditch and creek and the emergence of several field tiles, the water quality declines. Oil spills from nearby wells are probably a contributing factor to the poorer water quality. The area also shows disturbed benthic communities. The stream reaches below the golf course and the WWTP had organically enriched bottoms and some sludge beds were noted 75 meters downstream of the WWTP. These reaches improved in the April 1985 follow up study, which was after the 1984 upgrade of the sand filter. While the sludge beds have disappeared, the benthos was still indicative of a disturbed area (Exh. A, App 1 at 6 through 58).

The water quality in Kickapoo Creek similar to that in Riley Creek, shows high ammonia nitrate levels during wet flow, probably from golf course runoff. Turbidity and SS values are high downstream of the WWTP. During low flow, there is some fecal contamination. The large numbers of tubificids and the presence of leeches show a disturbed effect on the stream. Below the WWTP outfall, however, the stream quickly recovers.

Kickapoo Creek experienced a fish kill in August 1982 during the survey. The DO concentration at the time was 2.4 mg/l. That week there had been fertilizer applied at the golf course with

subsequent watering. The City's expert testified that the fertilizer runoff could affect the stream DO (R. 38, 39, 44-45).

CSO Resolution Plan

The CSO control alternatives considered by the City are listed in Exhibits A and B.* Alternatives 1 through 4 are found on pages 4-20 through 4-32 of Exhibit A while alternatives 5 through 7 are listed in Exhibit B, pages 4-26 through 4-32. Exhibit E lists the proposed plan, alternative number 8 (Figures 4, 5; see 6.2). Alternative 8 will provide transport, storage and treatment of first flush flow to the capacity of the existing interceptor sewers or a six month storm, whichever is smaller, at the overflow points for the Little Wabash and Kickapoo Drainage Basins. It will and provide flow control, transport and treatment of 12.5 times the dry weather flow at the overflow points in Riley Creek Basin (Exh. E at 12). This alternative will eliminate all CSO in the Little Wabash Basin, protecting water quality in Lakes Paradise and Mattoon, the City's water supply sources. Alternative 8 consists of the following:

- Sewer separation in two combined sewer areas in the Little Wabash basin by constructing about 22,000 lineal feet of new sanitary sewer and converting existing combined sewers to storm sewers. Three diversion points will be eliminated.

- A new 42-inch to 84-inch diameter interceptor of 17,250 lineal feet will be constructed from the southwest corner of the City to the treatment plant. This will eliminate combined sewer overflows in the Little Wabash basin and reduce the frequency and extent of overflows in the Kickapoo Creek basin.

- Two new storm sewers will be constructed in the Kickapoo Creek basin to prevent the surface drainage from a total of 231 acres from entering the combined sewer system.

- Dams in diversion structures in the Riley Creek Basin will be raised to surcharge the 14 MGD capacity pump station. This will increase the flow to the treatment plant from 12.5 to 38.8 times dry weather flow tributary to the pump station.

- A 12.5 million gallon basin will be constructed near the sewage treatment plant for storage of first flush storm flows from the proposed interceptor and for equalization of wet weather

*Exhibit B is an amendment to Exhibit A, the Facilities Plan. Exhibit B contains the corrected text of Chapters 1, 6, 7, 8, 9 and 10 of Exhibit A and additions to Chapters 4 and 5.

flows. This basin will be concrete lined and will include aeration for mixing and odor control (Petition at 8, 9, 10).

The Mattoon plant consistently meets its NPDES permit limitations for 10 mg/l BOD and 12 mg/l suspended solids and needs no additional facilities to achieve compliance with the limitations for treatment of dry weather flows. Treatment plant improvements that the City proposes to construct at its own expense to correct operational problems and conserve energy are described in Section 6.2 of Exhibit E and include:

- Replacement of the existing submerged turbine aerators with a fine bubble aeration system for the activated sludge process;

- Construction of a wet weather flow equalization basin coordinated with the storage requirements for CSO control;

- Modifications to the stormwater pumps and controls;

- Installation of baffles and a positive scum removal system in the existing secondary clarifiers;

- Electrical control modifications to improve operational flexibility and reduce the frequency of electrical failure due to lightning; and

- Piping, valves and site improvements related to the above (Petition at 8).

The construction cost for alternative 8 is $7,633,000 with total CSO project cost being $9,132,000 (Exh. E, Table 4; see petition at 11). Annual operating and maintenance (O&M) costs for the CSO alternative will approximate $70,000 (Exh. D, Table 6.1-8). The capital costs for total compliance alternatives 2 and 3 are $14,500,000 and $24,765,000 respectively (Petition at 7) with capital savings to the City approximating $5.4 million and $15.6 million, respectively.

The City is hoping to obtain grant funding for the Alternative 8 project. A 50 percent Build Illinois grant for part of the project has been applied for as well as a 55 percent USEPA grant. The City has grant priority number 1,010 for the USEPA grant. Assuming a 55 percent USEPA grant, the City's share of the capital costs of the proposed plan would approximate $4.5 million (Exh. B, Table 8.1 and at 9-2).

Current sewer charges are $1.43 per 100 cubic feet. Assuming no grants are forthcoming but CSO relief is granted by the Board, the basic sewer user's charge would increase to $2.82 per 100 cubic feet, which includes debt service (Exh. E, Table 13). If CSO relief is granted and a grant is obtained, the basic

user charge would be $2.24 per 100 cubic feet (Id., Table 12 R. 24). With no CSO exception and no grant, the estimated charge would be $4.15 per 100 cubic feet (R. 18). These charges do not include the usual billing and collection charge of $0.56 per bill.

With CSO relief but without grants, annual sewer costs to an average household would approximate $200. If there are no grants and no CSO relief, the annual figure will approximate $300 using the least costly full compliance option (R. 18, 19, 23, 29).

Conclusion

Having considered the evidence and the factors enumerated in Section 306.361(a), the Board finds that the Mattoon CSO discharges, after implementation of alternative 8, will have minimal impact. The project will eliminate all CSO discharges in the Little Wabash Basin and increase the treatment of CSO discharges in the Riley and Kickapoo Creek Basins. The plan will increase the CSO capture from 12 times the dry weather flow to 37 times the dry weather flow (R. 7). Additionally, 58 percent of the BOD in Kickapoo Creek will be eliminated (R.8). Plan implementation will also help alleviate flooding (R. 77, 78).

The Board will grant an exception with language similar to that recommended by the City and the Agency. In order to insure that this Order is not construed as authorizing the City to abandon its other efforts to reduce its CSO discharges, the Board will add some conditions. The Board will require the City to certify the acceptance of these added conditions. One condition requires separate sanitary and non-sanitary sewer discharge pipes from new buildings. This condition will make it easier to separate flows in the future when sewer work occurs. A condition to prohibit new connections of residential downspouts to sewers carrying sanitary wastes (includes combined sewers) has been added to reduce the amount of storm flow into these sewers. The Board notes that even though water from downspouts often enters combined sewers, removing the direct connections delays the arrival of the flow. This in turn allows a higher percentage of contaminated water to be treated. The City shall continue its street and sewer cleaning programs. The City will be required to separate storm and sanitary sewers to the extent feasible when streets are reconstructed and when area redevelopment occurs. The Board recognizes that in certain situations such separation may not be feasible from an engineering point of view. However, separation should receive careful consideration when major redevelopments are planned in areas with combined sewers.

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.

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

ORDER

1. The City of Mattoon (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 (b) for combined sewer overflows, subject to the following conditions:

   a) The City shall modify and upgrade the existing Wastewater Treatment Plant (WWTP), including the construction of a wet weather flow/storage basin as identified in Exhibit E, Municipal Compliance Plan (October, 1985), pages 10, 11 and 14.

   b) The City shall repair and maintain the existing diversion structures tributary to Riley Creek. At such time as storage capacity is available at the WWTP, these diversion structures shall be raised to a height adequate to achieve optimal utilization of interceptor sewers prior to and during any overflow event.

   c) In conjunction with sewer separation work as described in Exhibit E, page 12, the City shall construct interceptor sewers which shall transport all combined flows tributary to the Little Wabash River Basin and reduce the frequency and extent of overflows in the Kickapoo Creek Basin, all as described in Exhibit E, pages 12 and 13.

   d) The City shall have constructed and in operation all of the above conditions and associated appurtenance work by July 1, 1988.

   e) Within three years of completion of these improvements, the City shall perform an evaluation of their effectiveness, including chemical and biological assessment of the affected portions of Kickapoo Creek, Riley Creek and Little Wabash River. The results of this evaluation shall be reported to the Agency.

2. The City of Mattoon shall, in addition to the plan outlined above:

   a) Prohibit new connections of residential downspouts to sewers carrying sanitary waste;

b) Require separate sanitary and non-sanitary sewer discharge pipes from new buildings;

c) Construct separate storm and sanitary sewers to the extent feasible when streets are reconstructed and when area redevelopment occurs.

d) Continue street and sewer cleaning efforts so as to minimize the bypassing of solid materials.

3. 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 Sec. 306.305(c) and b) other controls if needed for compliance, including compliance with water quality standards.

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

5. 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 85-215, dated

_____.

_____
Petitioner

_____
Authorized Agent

_____
Title

_____
Date

IT IS SO ORDERED.

Board Members J.D. Dumelle, J. Anderson and B. Forcade concurred.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 24th day of April, 1986, by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board