ILLINOIS POLLUTION CONTROL BOARD
September 8, 1988

IN THE MATTER OF:	)	
	)	
JOINT PETITION OF THE CITY OF DIXON AND THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY FOR EXCEPTION TO THE COMBINED SEWER OVERFLOW REGULATIONS	)	PCB 87-71

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

This matter comes before the Board on the May 28, 1987[1] joint petition of the City of Dixon ("Dixon") and the Illinois Environmental Protection Agency ("Agency") for exception to 35 Ill. Adm. Code 306.305 (a) and (b) to relieve Dixon from the requirement to construct and operate certain combined sewer overflow ("CSO") transport and treatment facilities. Hearing was held in Dixon on August 7, 1987.

For the reasons described below, the Board finds that Petitioners have made the showings requisite for granting the relief requested. The relief will accordingly be granted, subject to conditions as stipulated to by Petitioners and consistent with the Board's rules and regulations.

CSO REGULATIONS

The Board's CSO regulations are contained in 35 Ill. Adm. Code Subtitle C, Chapter I, Part 306. They were amended in R81-17, 51 PCB 383, March 24, 1983. Sections pertinent to the instant matter are Sections 306.305 and 306.361(a): 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.

[1] Dixon sought an extension of the filing date for its CSO exception until July 1, 1987, in PCB 85-217. This was granted by the Board by Order of June 5, 1986, 70 PCB 108.

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 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 Dixon has done. A joint petition may seek an exception based on minimal discharge impact as provided in Section 306.361(a):

> An exception justification based upon minimal discharge impact shall include, as a minimum, an evaluation of receiving stream ratios, known stream uses, accessibility to stream and side land use activities (residential, commercial, agricultural, industrial, recreational), frequency and extent of overflow events, inspections of unnatural bottom deposits, odors, unnatural floating material or color, stream morphology and results of limited stream chemical analyses.

Pursuant to 306.361(a) Dixon and the Agency assert that overflows from its combined storm and sanitary sewer system have minimal impact on the water quality and do not restrict the use of the Rock River (the receiving stream). Accordingly, they contend that the approximately $2,344,000 expenditure (R. at 18) which would be necessary to come into compliance via fully separating the Dixon sewer system is not justified.

FACILITIES

Dixon is located on north and south banks of the Rock River in the northeast part of Lee County, Illinois. The City is primarily residential in nature, although there are a number of light industries and commercial establishments. The 1980 population was 15,170.

Dixon owns and operates a municipal sewerage system, which includes a collection system, sewage pumping stations, and a 3.84 million gallons per day ("MGD"), average dry weather flow, activated sludge wastewater treatment plant ("WWTP"). The collection service area covers approximately 2,250 acres (3.5 sq. mi.) (Ex. 1, p. 2), approximately 85% of which is served by separate sewers and 15% by combined sewers (Petition at 2). Generally, the combined sewer service areas are located in the older, more fully developed residential-commercial areas of the central portion of the City.

Sewage flows on the north and south sides of the Rock River are collected in separate interceptors which run parallel to the river, and conveyed to the WWTP which is located on the west side of the City. Interceptors have the capacity for transporting from 3.1x to 9x average dry weather flow (Ex. 9 at 3-4), and the WWTP has the capability of providing at least primary treatment for all loads received.

There are presently nine CSOs listed on Dixon's NPDES permit (R. at 14), identified respectively as outfalls 002 through 005 and 007 through 011[2]. An additional, non-permitted outfall located on the Swissville Interceptor near Palmyra Avenue has also been recognized (R. at 16). There are thus a total of ten CSO outfalls, each of which is located along and discharges into the Rock River.

Of the ten known CSO outfalls, it is contended by Petitioners that only five remain active or potentially active (R. at 14). Inactivation has been caused by sewer separation activities undertaken to date. The five active or potentially active CSOs, and the side of the Rock River from which they discharge, are:

003	Madison Avenue (South)
007	Hennepin Avenue (North)
009	Ottawa Avenue (North)
010	Dement Avenue (North)
011	Assembly Place (North)

Two of the active CSOs, 010 and 011, discharge to the Rock River above the Dixon Dam, a hydroelectric structure. The remaining three discharge below the Dam.

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[2] The NPDES permit also lists various other overflow points, including bypasses at the WWTP (Ex. 1 at 1). Other overflow points include an emergency high-level overflow (006) located at a major sewage pump station (Reynoldswood Station); it is designed to activate only under emergency circumstances at the station (Ex. 8 at 2; R. at 62).

Land use in the area tributary to CSOs 003 and 007 is predominately commercial; land use in the areas tributary to CSOs 009, 010, and 011 is predominately residential (Ex. 1 at 4). In all five basins land is fully developed and no additional growth is projected (Id.). Additionally, there are no known industrial or other users tributary to the CSO overflows which could cause discharge of toxic or hazardous materials into the CSO system (Ex. 1 at 7).

PRESENT CSO SITUATION

Integral to an understanding of the present CSO situation in Dixon is awareness of a major change in the nature of the CSO discharges which occurred in 1985. Gathering of data on the Dixon CSO was begun as early as preparation of the 1977 Dixon Facilities Plan. In spite of the fact that these data indicated that even small rainfall events were capable of triggering CSO discharges at the majority of active outfall points, Dixon believed that the impact of the CSOs on the Rock River was sufficiently minimal such that a CSO exception could be justified. Accordingly, Dixon began preparation of a three-phase CSO exception study. Phase I of this study was submitted to the Agency in January 1985, Phase II was submitted to the Agency in August 1985, and Phase III was submitted to the Agency in October 1985[3].

However, coincident with the preparation of the CSO exception studies, Dixon discovered that the two interceptors were clogged with debris to as much as 1/2 to 3/4 of their diameters (R. at 12). When this debris was cleaned out in 1985, a dramatic decrease in the number of CSO events was immediately recognized. So rare did CSO events become that Dixon was able to record only a single small event (Ex. 7, p. 2) during the remainder of 1985 and prior to January 1, 1986, deadline for submission to the Board of CSO exception petitions. It was furthermore apparent that the CSO discharge quantity and quality which had existed prior to cleaning of the interceptors no longer prevailed. For this reason Dixon sought an extension of the filing deadline for their CSO exception to allow them to better document the CSO impact under the new, clean-interceptor regime; the extension was granted by Board Order of June 5, 1986 (70 PCB 108).

Illustrative of the change in the CSO condition occasioned by the interceptor cleaning is the status of CSO 007. This outfall was historically the most active of the CSOs, with

[3] The three phases of the CSO exception study are Exhibits 1, 3, and 5, respectively, in the instant record.

discharges occurring for 92% of rainfall events (Ex. 3 at 2). Subsequent to cleaning, there have been only a few isolated discharge events, and rainfalls as large as 1.6 inches in 6 hours have failed to cause overflows (Id.).

From mid-1985 through the time of filing of the instant petition, Dixon gathered data on their new CSO condition. These are incorporated into a revised Phase III report, which was submitted to the Agency in February 1987 and supplemented by submissions in April and May 1987[4].

At the time of hearing it was discovered that the outfall point for CSO 003 (Madison Avenue - South) had been incorrectly identified in the previous studies. Dixon accordingly undertook further studies directed toward clarifying the CSO situation at 003. Results of this work, plus reports on the general progress of the CSO control program, were filed with the Board on December 3, 1987 ("Status Report") and August 4, 1988 ("Final Submission").

Inflow and infiltration, other than as caused by flood backflow from the Rock River, has not been a significant problem for the Dixon sewer system (R. at 42-44). Upland infiltration is limited because most of the City's sewer lines are above the watertable (R. at 42).

DOCUMENTATION OF MINIMAL IMPACT

Section 306.361(a) requires that Petitioners seeking a CSO exception on the basis of minimal discharge impact, as is the case here, make a number of showings. Pursuant thereto, Petitioners provide the following information and observations.

Receiving Stream Ratios

Petitioners assert that the flow of the Rock River provides substantial dilution potential for its CSO discharges. The drainage area of the Rock River at Dixon is approximately 8,600 square miles (Ex. 1 at 3) and the average flow is approximately 3,000 MGD (R. at 18). The average discharge contrasts with the most recently estimated CSO discharge for the one-year storm of approximately 0.13 million gallons (Final Submission, Attachment, Letter of June 28, 1988).

[4] The revised Phase III study and its April and May supplement are Exhibits 7, 8, and 9, respectively, in the instant record.

Known Stream Uses

The primary use of the Rock River in the vicinity of Dixon is for water sports, including boating, water skiing, and fishing (Ex. 1 at 5; Ex. 3 at 1). Dixon also characterizes the area below the Dixon Dam as "one of the top fishing spots in northern Illinois for game fish species" (Ex. 3 at 1). It further notes that the "excellent quality of sport fishing" is a verification that even under past CSO regimes Dixon's CSOs "have had an insignificant effect on the Rock River in the City of Dixon" (Id.).

There are no public beaches on the Rock River in or immediately downstream from Dixon, and the Rock River is not utilized downstream for any potable water supply system (Ex. 1 at 5).

Accessibility to Stream Side Land Use Activities

Most of the north shore of the Rock River through Dixon is bordered by a strip park (R. at 68). However, under normal river conditions the park is separated from the river by a vertical river bank and rip-rap which does not allow ready access from the park into the river or to the river's edge (R. at 69-70). Swimming and launching of boats does not occur within the vicinity of any of the CSO outfalls (Id.).

The single active CSO outfall on the south shore, 003, occurs in a mainly industrial area. Shoals along the bank allow access to the river's edge, and are frequented by fishermen.

Frequency and Extent of Overflow Events

Early studies of the Dixon CSO situation had suggested that overflow events were relatively frequent. However, subsequent to the 1985 cleaning of the interceptors, data from which realistic estimates of the frequency of CSO events could be made became difficult to obtain. In part this reflected a real decrease in the frequency of events. However, data collection was also exacerbated by several abnormally dry periods, as during the summer months of 1988. Four minor events were recorded during the period May 1986 through October 1986, the smallest of which was triggered by a rainfall of 0.5 inches in one hour. The record indicates only two events in 1987, occurring on November 1 and November 16 (Status Report, Attachments, Letters of November 9 and 17). Several events were also recorded in early 1988 (Final Report). In most of the 1986 to 1988 events less than the full five active CSOs experienced actual overflow.

The most recent estimate of first flush capture for the one-year storm (Final Submission, Letter Attachment dated June 28, 1988) indicates that the Dixon sewer system captures and conveys

to the WWTP approximately 78% of the first flush BOD_5 load and 92% of the first flush TSS load. This estimate is based on the physical configuration of the system as of May, 1988. Accordingly, it does not reflect a decrease in the extent of CSO overflows expected to follow from increasing weir heights at the remaining active CSOs or from reconstruction of the 003 outfall.

Inspections of Outfalls (Bottom Deposits, Odors, etc.)

Phase II of the Dixon CSO Study (Ex. 3) contains results of field inspection, including detailed sketches and photographs, of all ten permitted CSO outfalls. The study indicates that near-shore bottom deposits range from rock, to sand and gravel, to sand and gravel mantled by thin silt deposits. Rock and/or coarse rock fragments prevail at the high velocity locations immediately downstream from the Dixon Dam. Gravel, sand, and silt-mantled coarse deposits prevail upstream from the Dam and downstream beyond the high-velocity zone.

The same study also observes that no sludge or sanitary debris was found at any of the ten permitted outfall points. An exception to this circumstance was subsequently discovered at outfall 003 (Final Submission at 1-2). Reconstruction of outfall 003 has subsequently occurred, and Joint Petitioners contend that the problem has been resolved (Id.). An Agency inspection conducted in August 1987 has also concluded that there are no problems at any of the other outfalls (Id.; Status Report, Attachment, August 13, 1987 Agency Reconnaissance Survey Report).

Stream Morphology

The Rock River in the vicinity of Dixon is characterized as a shallow, fast-flowing, high-discharge stream (Ex. 3 at 1). The fall caused by the Dixon Dam provides for added aeration of the stream, even under very low stream discharges (Id.).

Stream Chemical Analyses

Dixon provides results of water quality monitoring at U.S. Geological Survey water quality stations located on the Rock River above and below Dixon (Ex. 7, Attachment Exhibits III-A and III-B). These indicate generally good water quality both upstream and downstream from Dixon.

CSO MODIFICATION PROGRAM

Joint Petitioners' contention that the Dixon CSOs have minimal impact on the Rock River notwithstanding, Dixon has agreed to undertake a program to further reduce CSO impacts.

Dixon agrees to plug those CSO discharges which are no longer active. At present, these can be identified to include 002 (which is already plugged), 004, 005, 008 and the recently-discovered unpermitted outfall north of Palmyra Avenue.

Dixon is justifiably reluctant to plug the remaining five CSOs at the present time, even though two of them (009 and 011) are characterized as minor bypasses (R. at 14), due to threat of sewer backups into basements during very severe rainfall events (R. at 17). Dixon is agreeable, however, to raising the weirs which divert flows to each of these CSOs (Id.). This action is expected to significantly reduce both the number and extent of CSO events (R. at 31-32).

Dixon also agrees to provide a backup system at the WWTP. Absent this system, a power failure at the plant necessitates bypassing raw sewage (R. at 26-8). Although this system improvement is independently required pursuant to the Clean Water Act, its implementation will also provide CSO benefits (R. at 28).

Another provision of the Dixon system improvement program consists of providing backflow prevention and manhole seals for floods up to the 100-year flood (R. at 29). This provision is expected to have significant impact on the CSO situation because it will restrict storm water and river water from entering the sewer system, and hence preserve capacity for conveyance of combined sewer discharges to the WWTP (R. at 30-31).

A major facet of Dixon's CSO program is continued inspection of its interceptor sewers, and cleaning of them as necessary (R. at 33-35). This is an essential element of the program, given the significant evidence that the past high frequency CSO discharge events was related to clogged interceptors.

Dixon has for the past several years practiced a program of street sweeping on a regular basis, a program it characterizes as its "accelerated street cleaning program" (R. at 39-41). Dixon commits to continuing this program.

Finally, Dixon commits to a continued policy of separating combined sewers when street improvement projects are undertaken (R. at 35, 37-8).

CONCLUSION

The Board determines that Petitioners have shown pursuant to 35 Ill. Adm. Code 306.361(a) that exception to 35 Ill. Adm. Code 306.305(a), as it relates to first flush of storm flows, and to 35 Ill. Adm. Code 306.305(b) would produce minimal impact on the receiving stream. Accordingly, the Board will grant the

exception. The Board further will accept the conditions as proposed by Joint Petitioners in their Petition and as modified at hearing (R. at 19-20, 23; Ex. 10 at 8-9).

Some of the system improvements offered by Dixon had been completed at the time of hearing (R. at 24); others have been completed subsequently (Status Report; Final Submission). The Board further notes that Dixon has committed to completion of all improvements by July 1, 1988, a date now in the past. Although the record does not explicitly show that Dixon has met this deadline, the Board will accept Dixon's commitment to the deadline at face value, and condition the grant of exception accordingly.

ORDER

The City of Dixon is hereby granted an exception from 35 Ill. Adm. Code 306.305 (a) as it relates to first flush of storm flows and from 35 Ill. Adm. Code 306.305(b) for combined sewer overflows, to the Rock River, subject to the following conditions:

1. The City shall complete the following improvements by July 1, 1988:

   a. Installation of standby power system at the WWTP, providing backflow prevention systems at vulnerable CSOs, and installation of sealed manhole frames as specified in the City's approved Municipal Compliance Plan and NPDES permit.

   b. The City shall permanently inactivate the following combined sewer overflows:

      1. College Avenue (already blocked) (002)
      2. South Galena Avenue (004)
      3. South Ottawa Avenue (005)
      4. North Galena Avenue (008)
      5. Unreported non-active overflow on Swissville Interceptor, just north of Palmyra Avenue.

   c. The City shall raise overflow weirs or dams to the maximum extent practicable, without causing basement backups at the following locations:

      1. South Madison Avenue (003)
      2. North Hennepin Avenue (007)
      3. North Ottawa Avenue (009)
      4. North Dement Avenue (010)
      5. Assembly Place (011)

2. The City shall inspect interceptor sewers annually and clean these sewers as necessary.

3. The City shall continue the present accelerated street cleaning operations in the combined sewer areas.

4. The City shall continue its past practices of separating combined sewers during street improvement projects, as funding is available, until the City's goal of complete separation is achieved.

5. The City shall submit to the Agency by January 31st of each year a report summarizing all sewer system inspection and maintenance performed during the preceeding year. The report for the year 1988 shall summarize efforts to raise overflow weirs and plug outfalls.

6. 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 and other controls, if needed, for compliance, including compliance with water quality standards.

7. 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.

Section 41 of the Environmental Protection Act, Ill. Rev. Stat. 1985 ch. 111 1/2 par. 1041, provides for appeal of final Orders of the Board within 35 days. The Rules of the Supreme Court of Illinois establish filing requirements.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 8th day of September, 1988, by a vote of 7-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board