ILLINOIS POLLUTION CONTROL BOARD
June 29, 1984

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| IN THE MATTER OF: | ) | |
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| JOINT PETITION OF THE BLOOMINGTON AND NORMAL SANITARY DISTRICT AND THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY FOR EXCEPTION TO THE COMBINED SEWER OVERFLOW REGULATIONS. | ) | PCB 84-40 |

MICHAEL J. WILSON (CHESLEY AND WILSON) APPEARED ON BEHALF OF THE BLOOMINGTON AND NORMAL SANITARY DISTRICT, and

DAVID L. RIESER APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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

This matter comes before the Board on the March 29, 1984 joint petition of the Bloomington and Normal Sanitary District (District) and the IEPA (Agency) for an exception, with conditions, to 35 Ill. Adm. Code 306.305(a) and (b) of the Board's combined sewer overflow (CSO) regulations which require that:

> "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 the average dry weather flow for the design year, shall receive a minimum of primary treatment and disinfection with adequate retention time."

The joint petition alleges that a) the District's existing CSO's have minimal water quality and stream use impact, and b) that construction and operation of proposed alternate facilities will save $34.7 to $39.3 million versus the costs to fully comply with the Board's CSO regulations.

Hearing was held on May 11, 1984, at which some members of the press and public were present but did not testify. Testimony and exhibits (Exh. 1-10) were presented by the petitioners at hearing. At the request of the hearing officer at hearing, the Agency submitted, on May 17, 1984, a letter containing alternate language for conditions 6 and 7(h) contained in the Agency's

January 20, 1984 letter (Gr. Exh. 10, Attach. E). This May 17, 1984 letter is accepted as Exhibit 11.* No other written submittals or comments have been received.

## THE DISTRICT AND ITS CSO DISCHARGES

The District presented seven witnesses at hearing:

1. Mr. James M. Pappas, District Executive Director and Chief Engineer;

2. Mr. Douglas C. Melton, Engineer with Farnsworth & Wylie Consulting Engineers;

3. Mr. John M. Callahan, District Field Superintendent;

4. Dr. Harry Huizinga, Aquatic Biologist on the Illinois State University faculty;

5. Mr. George Swier, Director of Engineering & Water, City of Bloomington;

6. Mr. Sam Wylie, City Engineer, Town of Normal; and

7. Mr. James Pemberton, Trustee and Clerk of the District.

Additionally the Agency presented testimony of Mr. Toby Frevert, an engineer and technical standards advisor with the Division of Water Pollution Control, whose duties include analyzing and coordinating the CSO exception applications. As much of the testimony and accompanying exhibits (Exh. 1-9) referenced the petition and attachments (Gr. Exh. 10, Attach. A through H), hearing testimony will not be directly set forth, but will instead be referenced as appropriate.

The Bloomington and Normal Sanitary District, in McLean County, encompasses the City of Bloomington (Bloomington) and the Town of Normal (Normal), which have combined 1980 populations of 79,927. Major local industries/institutions include State Farm and Country Companies Insurance, Illinois State and Illinois Wesleyen Universities, General Electric, Eureka Williams, Ralston Purina and Firestone Companies.

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*The Board wishes to note, in this second of these CSO exception procedures cases, that the well-organized presentations and responses to questions by the resource persons at hearing greatly assist the Board. As the Board earlier suggested in PCB 83-231 (Pontiac/Agency CSO petition), future petitioners are advised to also examine the record in this PCB 84-40 petition.

The District, whose area encompasses about 25 square miles, owns and operates the 16 MGD treatment plant and interceptor sewers which receive flows from partially local combined sewer systems owned by Bloomington and Normal. The major portion of the District lies in the 34.5 square mile drainage area of Sugar Creek and its tributaries. Sugar Creek is tributary to Salt Creek and the Sangamon River. Only the southeast portion of Bloomington lies in the Kickapoo drainage basin (Exh. 1).

The treatment plant's design average flow capacity needs are estimated to be 20.3 MGD by the year 2005. The total capacity for peak flow after the proposed dry weather treatment expansion is completed will be 82 MGD, of which 42 MGD is excess flow receiving primary treatment and disinfection. An additional 158 MGD would have to be captured and similarly treated if the District were required to comply with the Board's CSO regulations (Exh. 2). Depending on land availability for siting, the compliance costs would range from $34.7 to $39.3 million (R. 17, Exh. 3, 4). Additionally, operation and maintenance costs for the additional interceptors and treatment facilities are estimated to range, annually, from $319,000 to $363,000.

There are eighteen existing CSO discharge points, eleven discharging directly into Sugar Creek and the remaining seven discharging into its tributaries. Ten outlets are on the District's interceptors, three on Normal's sewers, and five on Bloomington's. (R. 20, Pet. Exh. D, Exh. 1.)

In July, 1980, the District began a 5 days/week overflow monitoring program at ten CSO locations on Sugar Creek, accompanied by a maintenance program to remove debris, repair weir leakage, etc. to minimize non-rainfall caused overflow occurrences. By the end of 1982, there were 6,500 overflow inspection reports. (R. 24, Exh. B, ch. 6.)

Additionally, in 1980 the District spent $173,000 to clean 7,000 feet of 51", 36", and 27" interceptors, with 6,500 feet televised. Another $15,000 was spent to clean junction boxes.

Two months after the completion of sewer cleaning, the 51" interceptor began to quickly accumulate grit at a point immediately downstream of the junction box, thus reducing sewer capacity and aggravating the CSO problem. Starting February, 1981, a monthly grit monitoring program, covering over 10,000 feet at 31 sites on the main 51", 36", and 27" interceptor was commenced. Starting in January, 1982, approximately 60 flow measurements (as of April 30, 1984) at each of 23 locations on five interceptors were undertaken (R. 25, 31, also see Pet. ch. 7, Exh. B).

The District has a water quality monitoring program utilizing 13 stations located as follows: Seven upstream in the vicinity of the CSO's, two immediately upstream and 600 yards

downstream of the treatment plant, and four farther downstream at 1, 2, 3, and 4 mile intervals from the plant. Over 11,000 analytical tests/year are performed. (See Pet. ch. 12, Exh. B and ch. 15, Exh. C.)

Finally, a biological survey was conducted in July and August, 1983 to evaluate the CSO impacts on macroinvertebrate and fish, and stream conditions at 19 stations as follows: seven on the main branch of Sugar Creek above the treatment plant, two of which were above any overflows; two on intermittent steams receiving overflows from the West Slough and Graham Street sewers; two on the West Branch, one above and one below overflows; two on Skunk Creek with no overflows; one on Goose Creek, and five at stations on the Main Branch below the treatment plant at distances of 600 yards and 1, 3, 4 and 7 miles.

## RESULTS OF THE BIOLOGICAL SURVEY
(See Gr. Exh. 10, Exh. C., Tables 1-9)

Initial Agency concerns regarding "some statistical detail aspects of one of the data analysis techniques" used in the study have been satisfied. No question has existed concerning the quality or validity of the raw data (see Gr. Exh. 10, Exh. E., p. 2 and R. 89-91).

The macroinvertebrate studies indicated that the majority of the 19 sites were classified as semi-polluted or unbalanced, using the Agency stream quality classification, with no substantial differences attributable to CSO impact. Although the sampling was done during the hot weather and drought conditions of July and August 1984, the stream appeared to be unbalanced, but not polluted, and the DO remained around 6.0 mg/l. throughout the stress period (Exh. C, p. 16-33, Table 10).

The fish collections indicate that Sugar Creek can support a diverse number of fish species. Although the residual chlorine from the tertiary treatment effluent was associated with a considerable reduction of diversity of macroinvertebrates and fish populations just below the discharge, recovery occurred one mile below the plant.

Although Sugar Creek suffers the impacts of pollution and disruption as an agricultural and urban drainage stream, there were "no directly observable effects of combined sewer overflows on the biological conditions of Sugar Creek" (R. 38).

## LOCAL SEWER PROBLEMS

Bloomington has experienced sewer backups and basement and surface flooding. During the past four years it has spent over $1 million on flood reduction projects, has separated over 5,000 feet of combined sewers, and has corrected backyard flooding in

several neighborhoods. In 1983, Bloomington constructed two detention basins to intercept storm water and reduce combined sewer surcharging. To reduce basement flooding in the separate sewer areas, illegal downspout and drain tile connections are being disconnected. Bloomington also plans to spend $800,000 in additional flood control measures.

Normal also has attempted to address surcharging and basement flooding resulting from a development boom starting in the 1950's. Presently about 85% of the known private cross-connections, a major source of the backup problem, have been corrected. Some recent major surcharging incidents were caused by manholes left open during construction of a major trunk line as well as drainage into sewers left open during home construction were excavated basements filled (R. 51-54).

Both communities have sewer cleaning programs designed primarily to prevent sewer backups (R. 72, 74).

## STREAM AND LAND USE CHARACTERISTICS

Sugar Creek is classified as a general use stream. It is not used for water supply and the only known secondary contact is for trapping. Because of lack of dry weather stream flow there are no recreational opportunities in the overflow areas.

Most of the channels in the urban area have been straightened, deepened, and often paved to increase capacity for storm water drainage, considered its primary use. Land use is mainly residential, commercial or underveloped. The Creek flows range from zero to as high as 4,000 to 6,000 cfs. A rain of one to two inches results in a flow of at least 1,000 cfs. (See Pet., ch. 9, Exh. B.)

There were no sludge deposits found in the Main Branch or major tributary creeks. Sludge deposits were noted in two open ditches between the Graham Street and West Slough Sewer outlets and the Main Branch. The only flow in these ditches is from the overflow from the sewer outlets. (R. 55-58.) The Proposed Alternate CSO Program includes construction of paved channels to eliminate low spots in the ditches.

## CONCLUSIONS FROM MONITORING PROGRAMS

The monitoring program showed that four of the ten overflows accounted for 65% of the total observed.

Regarding DO, of the total 901 samples, there were 63 with DO less than 6 mg/l; in only 12 of these did an overflow occur less than five days prior to sampling. Since there was no evidence of sludge deposits, it is concluded that the DO readings are not correlated to CSO events. It does not appear that BOD is

significantly affected by CSO either. (R. 61, 62.) The District and the Agency asserted that no first flush study was done to determine overall quality and quantity of the CSO's because a) it would be time consuming and very expensive and b) the minimal impact on water quality from the existing overflows was evident.

JUSTIFICATION FOR EXCEPTION

The Agency, the District and the consulting engineers feel that exception to Rule 306.305(a) and (b) is warranted because a) there is minimal CSO impact on the stream, and CSO's do not restrict water use, b) the added cost of full compliance is prohibitively expensive and should not significantly improve water quality, c) the proposed alternate control program will provide benefits at a reasonable cost. (R. 63-64.)

THE RECOMMENDED ALTERNATE CONTROL PROGRAM

The District feels the various components of the recommended CSO control program correct or alleviate specific problems found in the studies. The controls are: (See Exh. 5.)

1. Construction of a grit chamber for the interceptor from the West Slough Sewer to discharge to the 51" Caroline Street interceptor. By alleviating the problem of grit deposition in the 51" interceptor, its capacity would increase by about 50%, resulting in an additional 10 mgd flow to the treatment plant and a proportionate decrease in CSO from the outlets along the interceptor. The estimated cost is $289,000.

2. Construction of paved bottoms in the two ditches, as described supra, p. 5. The estimated cost is $187,600.

3. Revisions to piping of the Sanitary Relief Sewer area to better utilize available capacities of two sewers (48" and Normal Valley) below this point. This would increase intercepted flow by 16 MDG (from 20 to 36 MGD) and reduce CSO frequency. The estimated cost is $96,700.

4. Various revisions to piping and adjustment of weirs to reduce CSO. Estimated cost is $23,900.

5. Construction of additional interceptor from the Normal Valley sewer area to the treatment plant to receive the additional flows from the piping revisions in 3) and 4) above. Available capacity will increase from 16 to 30 MGD. The estimated cost is $1,298,000.

The overall increase in District transport capacity by restoring the 51" capacity and construction the new interceptor is about 24 MGD, reducing overflows by as much as 1,200 MGD per year. Additionally, about 329,000 pounds of pollutant BOD materials will be removed.

The total cost of the alternate CSO program is estimated at $1,896,000. Compliance with the Board's regulations for CSO controls would, as stated earlier, cost $34,.7 to $39.3 million.

The total costs of all construction projects are: (R. 64-67)

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| Ammonia Control, Expansion and Upgrading | $14,677,000 |
| Sludge Processing and Disposal | 5,028,000 |
| | $19,705,000 |
| CSO Control Program | 1,896,000 |
| Total | $21,601,000 |

The taxpayer impact would vary considerably between financing the costs for a CSO program with and without an exception. The District has a general obligation bonding power (financed through property taxes) of $28 million. The total tax rate for all government bodies presently averages $5.25/$100 assessed valuation.

If the full $39.3 million for CSO controls is required, and a 55% federal grant (75% funding is unavailable) is obtained, financing the local share of $17.7 million would increase property taxes by $0.45/$100 assessed valuation over a 15 year period. If the alternate $1.9 million program is allowed, property taxes would increase $.044/$100 assessed valuation over a 6 year period. The full CSO program would increase total taxes by 8.6%; while the alternate CSO program would increase taxes less than 1%.

In addition, the local share of the costs of the sludge processing and disposal and ammonia controls will require an average tax levy over 15 years of $0.27/$100 assessed valuation.

Regarding annual operating costs, the full required CSO program is estimated to cost $363,000 versus the proposed alternate at $101,000. The increase in sewer rates would be $0.13 and $0.04/1000 gallons respectively. (R. 78-81.)

The District hopes to have its project design completed and approved as quickly as possible in order to be able to get federal funding in October, 1985. All funds for this and the upcoming federal fiscal year are already obligated (R. 83-84).

## THE RESOLUTION

Based on the results of the comprehensive stream inspection and water quality data, and the biological survey, the Board concludes that the District's CSO's have a minimal impact on water quality and stream use. In addition to the District's proposed construction program, its post-construction program

of monitoring for three years the overflows, grit deposition, water quality, biological effects, and sewer flows can continue to assure that CSO impact will be controlled.

Given these circumstances, and the economic considerations - a savings of some $35 million - the District has persuasively shown that its alternate program approach is preferable to full compliance with the Board's CSO regulations.

The Board accordingly finds that the Petitioners have provided the justification for 1) the granting of an exception to 35 Ill. Adm. Code 306.305(a) and (b), and 2) the District's proceeding with the alternate program as proposed, outlined as conditions in the attached Order. While the Board is aware that these conditions have been agreed to, the Board will require execution of a certificate of acceptance, as the amendatory letter of May 17 lacks the District's signature.

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

ORDER

1. The Bloomington and Normal Sanitary District (District) is hereby granted an exception from 35 Ill. Adm. Code 306.305(a) and (b), subject to the following conditions:

   a) The District shall execute outlet channel improvements below West Slough and Graham Street combined sewer overflows as proposed on pages 17-1 and 17-2 of the BNSD Combined Sewer Overflow Study Phase III & IV report dated September, 1983 (Gr. Exh. 10, Exh. C).

   b) The District shall install operate and maintain the grit removal facility at the juncture of West Slough Sewer and the 51 inch interceptor as proposed in pages 17-2 through 17-5 of BNSD Combined Sewer Overflow Study Phase III & IV report dated September, 1983.

   c) The District shall complete the piping modification to sewer system in the vicinity of Overflow 013 as proposed in pages 17-4, and 17-6 through 17-8 of BNSD Combined Sewer Overflow Study Phase III & IV report dated September, 1983.

   d) The District shall complete the piping modifications to the sewer system in the vicinity of overflows 011, 010, and 009 and construction of a new interceptor from this area to the District's treatment plant grounds as proposed in pages 17-8 throught 17-11 of BNSD Combined Sewer Overflow Study Phase III & IV report dated September, 1983.

e) Subsequent to the completion of the grit removal facility and its being placed into operation, the District shall monitor the downstream interceptor once per month at representative manholes for a 12 month period to demonstrate effectiveness of grit removal facility in maintaining full transport capacity of the downstream interceptor. Upon completion of the monitoring period a report describing the results of the monitoring shall be submitted to the Agency.

f) The District shall maintain its current monitoring activities including a) inspection of overflows on a 5 day per week frequency, b) water chemistry monitoring at all Sugar Creek sampling stations except for 8 and 9 on a once per week frequency from April through October and a once every two week frequency from November through March with Stations 8 and 9 monitored daily throughout the year, and c) a biological survey of Sugar Creek on an annual basis. Biological surveys shall be performed during the late spring-early summer season. These monitoring activities shall be maintained for a period of 3 years following completion of conditions a) through d) above.

2. Within forty-five days of the date of this Order, the District 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 84-40, June 29, 1984.

_____
Petitioner

_____
Authorized Agent

_____
Title

_____
Date

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 22nd day of June, 1984 by a vote of 5-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board