

ILLINOIS POLLUTION CONTROL BOARD
October 19, 1995

IN THE MATTER OF:)
)
PETITION OF THE CITY OF) AS 91-13
ROCK ISLAND FOR AN) (Adjusted Standard - Water)
ADJUSTED STANDARD FROM)
35 ILL. ADM. CODE 304)

MARK LATHAM, OF GARDNER, CARTON & DOUGLAS, APPEARED ON BEHALF OF
THE CITY OF ROCK ISLAND;

LISA MORENO APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY.

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

This matter comes before the Board upon a petition for adjusted standard filed by the City of Rock Island (Rock Island). Rock Island requests an adjusted standard from the Board effluent regulations at 35 Ill. Adm. Code 304 as applied to the wastewater discharges from Rock Island's water treatment plant. The petition is brought pursuant to the provisions concerning discharge of solids to the Mississippi or Ohio Rivers found at Section 28.3 of the Environmental Protection Act (Act) (415 ILCS 5/1 et seq. (1994)).

The Board's responsibility in this matter arises from the Act. The Board is charged therein to "determine, define and implement the environmental control standards applicable in the State of Illinois" (415 ILCS 5/5(b)), as well as to "grant *** an adjusted standard for persons who can justify such an adjustment" (415 ILCS 5/28.1(a)). More generally, the Board's responsibility in this matter is based on the system of checks and balances integral to Illinois environmental governance: the Board is charged with the rulemaking and principal adjudicatory functions, and the Illinois Environmental Protection Agency (Agency) is responsible for administering the Act and the Board's regulations.

In a Section 28.3 proceeding the Agency also has responsibility to review proposals and, where the Agency so deems, participate as a joint petitioner. (415 ILCS 28.3(b).) Although the Agency has not joined as a petitioner in the instant proceeding, it has otherwise been an active participant.

Based upon the record before it and upon review of the factors involved in the consideration of adjusted standards, the Board finds that Rock Island has demonstrated that grant of an

adjusted standard in the instant matter is warranted. The adjusted standard accordingly will be granted.

PROCEDURAL HISTORY

A petition in this matter was initially filed on December 31, 1991¹. Two amended petitions have subsequently been filed: a first amended petition filed on July 6, 1994, and a second amended petition (2nd Pet.) filed on January 17, 1995. The second amended petition frames this matter as it today stands.

On June 6, 1995 the Agency filed a Response to the Second Amended Petition for Adjusted Standard (Agency Resp.). The Agency recommends that the adjusted standard be granted subject to conditions. On July 7, 1995 Rock Island filed a response indicating its acceptance of the conditions recommended by the Agency.

Hearing, which is mandatory in a Section 28.3 proceeding (415 ILCS 5/28.3(e)), was held in Rock Island on August 23, 1995 before Hearing Officer Marvin I. Medintz. The participants have waived filing of post-hearing briefs. (Tr. at 50.)

Although almost four years have elapsed since this matter was first placed before the Board, the Board notes that this time has not passed without activity. In particular, the Board notes that early in this proceeding concern was raised by both federal and state agencies that the discharge site initially proposed by Rock Island might be unsuitable due to the presence of a sensitive benthos, particularly mussels. Thereafter both Rock Island and the agencies undertook several studies to evaluate this concern. A significant outcome of these studies has been that Rock Island has substantially altered its proposal, including changing the discharge mode and site. This evolution in Rock Island's petition has been summarized by both Rock Island (2nd Pet. at 4-8) and the Agency (Agency Resp. at 5-12). However, inasmuch as this history is not germane to the decision before the Board today, the Board will not here further explore it.

STATUTORY AND REGULATORY FRAMEWORK

Section 28.3 of the Act, which was signed into law on September 7, 1990, establishes provisions whereby certain petitioners may request of the Board an adjustment of the standards otherwise applicable to direct discharge of waste

¹ Pursuant to 415 ILCS 5/28.3(d)(4) the deadline for filing Section 28.3 petitions was January 1, 1992. The instant petition accordingly was timely filed.

solids to the Mississippi or Ohio Rivers. Particulars are that the primary petitioner must be a public water supply, that the raw water source be either the Mississippi or Ohio River, that the solids consist of clarifier sludge and filter backwash generated in the water purification process, and that the purification process not utilize lime softening. (415 ILCS 5/28.3(a).) The instant petition satisfies each of these provisions.

The particular standards from which Rock Island seek an adjustment are the Board's effluent standards for total suspended solids (TSS), iron, and manganese, found at 35 Ill. Adm. Code 304.120 and 304.124. (2nd Pet. at 10.) The proposed adjustment to these standards is that the standards not apply to the discharge in question provided that Rock Island comply with a series of conditions (see following) proposed by Rock Island and supported by the Agency.

Rock Island is not seeking an adjustment of any water quality standards. All water quality standards would remain applicable to the receiving water body, and Rock Island would, through the operation of 35 Ill. Code 304.105, continue to be prohibited from causing or allowing the violation of all water quality standards. Rock Island apparently believes all quality standards can be met even though the effluent standards would be modified as the result of the adjusted standard.

In determining whether an adjusted standard is to be granted under Section 28.3, the Board is to base its decision "upon water quality effects, actual and potential stream uses, and economic considerations, including those of the discharger and those affected by the discharge". (415 ILCS 5/28.3(a).) Moreover, the Board is to "take into account the factors contained in subsection (a) of Section 27 of the Act". (415 ILCS 5/28.3(f).) These factors include "the existing physical conditions, the character of surrounding land uses, zoning classifications, the nature of the . . . receiving body of water, . . . and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution". (415 ILCS 5/27(a).)

DISCUSSION

Current and Proposed Operations

Rock Island operates a water treatment plant located at 24th Street and 16th Avenue in Rock Island. The plant provides clarified, filtered, and disinfected water to approximately 43,000 residents and approximately 1,000 businesses in Rock Island. (Tr. at 17; 2nd Pet. at 16.) The plant has a capacity of 16 million gallons per day, but the average pumping rate is approximately 5.3 MGD. (Id. at 17.)

The raw water source for the treatment plant is the Mississippi River. The raw water is delivered to the water treatment plant via a pumping station located at 24th Street in Rock Island. (2nd Pet. at 17.)

The raw water is subject to various treatments. The first treatment consists of primary clarification through rapid mix flocculation and sedimentation aided by the addition of alum and lime. (2nd Pet. at 17.) The clarified water is then passed through gravity filters for filtration of remaining suspended solids. (*Id.*) The filtered water is finally disinfected and fluoridated before being routed into on-site storage or the distribution system. (*Id.*)

Rock Island's operation generates two waste streams: filter backwash water generated when the gravity filters are cleaned, and sediments from the sedimentation and flocculation basins. (2nd Pet. at 17.) The filter backwash water is currently sent to one of Rock Island's wastewater treatment plants; this practice is not proposed to be altered. (*Id.*)

The second waste stream is currently disposed of via a combination of landfilling and flushing. Nineteen percent of the sediment basin wastes are dewatered and landfilled. (2nd Pet. at 17.) The remaining 81% are flushed twice a year into Black Hawk Creek, a small tributary of the Rock River. (*Id.*) Rock Island estimates that the sedimentation basin solids accumulate at the rate of approximately 4800 pounds per day. (Tr. at 18.)

Under its instant petition, Rock Island proposes to continuously discharge the sedimentation basin solids to the Rock Island wastewater treatment plant located at 1300 Mill Street in Rock Island. There the waste stream would be continuously discharged directly to Mississippi River via the same outlet used to discharge treated effluent from the treatment plant. (2nd Pet. at 12, 17.)

Water Quality Effects

Rock Island contends that there would be no measurable adverse environmental impact caused by the proposed discharge. (2nd Pet. at 25.) The Agency indicates that it anticipates no adverse impact. (Agency Resp. at 20, 22.) Rock Island bases its conclusion in part on the contention that "half of the constituents discharged are derived from the Mississippi River water and will be simply returned to it through continuous discharge, which will rapidly return the mixture to background levels". (2nd Pet. at 25.)

However, Rock Island has attempted to quantify the average discharge concentrations and effluent quality to be expected if the requested relief is granted. The estimation was made by assuming that effluent of the quality current for the Mill Street

wastewater treatment plant would be combined with discharges from the water treatment plant at the current levels of sediment production. (Tr. at 42-43, 46; 2nd Pet. at 13-14.) For each parameter of interest the data suggests that concentrations in the combined effluent would be less than the respective General Use Water Quality standard:

<u>Parameter</u>	<u>Current Effluent (mg/L)</u>	<u>Combined Effluent (mg/L)</u>	<u>Water Quality Standard (mg/L)</u>
Barium	0.04	0.42	5.0
Copper	0.005	0.0056	0.28
Iron	0.077	0.97	1.0*
Lead	0.02	0.019	0.148
Manganese	0.018	0.045	---
Nickel	0.01	0.011	1.0
TSS	15.0	86	---
Zinc	<0.005	0.031	1.0

As dissolved iron; effluent concentrations are for total iron

Rock Island thus contends that the combined water treatment plant/wastewater treatment plant discharge would meet water quality standards at the end of pipe; the Agency indicates that Rock Island's data supports this conclusion (Agency Resp. at 16).

Nevertheless, both Rock Island and the Agency observe that utilization of a Zone of Initial Dilution (ZID) may be necessary to insure consistent compliance with the water quality standards. (2nd Pet. at 10; Agency Resp. at 16.) Rock Island has a ZID defined in its current NPDES permit, and the Agency notes that "certainly the Agency will reexamine the issue of mixing and ZIDS in connection with the issuance of a modification of [the current permit] to reflect the addition of the water treatment discharge" (Agency Resp. at 16). The Agency also observes, however, that of the parameters of interest, only copper and lead would qualify for a ZID because these are the two parameters for which an acute toxicity standard has been established. (Id.)

Reduction in Flocculent and Sediment Loading

Under current operations approximately half of the solids generated in the sedimentation/flocculation basins consist of aluminum and calcium hydrates resulting from the alum-lime additions. (2nd Pet. at 18.) In order to decrease the amount of sediment generated, Rock Island originally proposed to investigate the use of polymers as an alternative flocculent, noting that the results cannot be determined until the new facilities necessary to allow for continuous discharge are constructed and operational. (Id.)

It is the Agency's belief that the new facilities will indeed allow Rock Island to decrease the quantity of flocculents presently used, and thereby as well to decrease the volume of discharged sediments. (Tr. at 10-11; Agency Resp. at 14.) The Agency has accordingly recommended (*Id.* at 19), and Rock Island has agreed to the recommendation (Tr. at 24, 34), that grant of adjusted standard be conditioned upon Rock Island implementing a flocculent reduction program².

Rock Island also proposes as a condition to grant of adjusted standard (2nd Pet. at 24) that it attempt to offset any possible increases in sediment discharges to the Mississippi by removing some erodible land from cultivation.

Rock Island also proposes to offset any contribution of solids by lease or purchase of agricultural land and will maintain it as fallow. Thus, in combination with the increased use of polymers . . . will ensure that if the relief Rock Island seeks is granted, there will be no net increase of solids discharged to the Mississippi River and very likely a net decrease. (Tr. at 23.)

Character of the Mississippi River/Discharge Area

The Mississippi River, in the vicinity of Rock Island, is a major navigational waterway. It also has general use for sport fishing and boating, and serves both as a source of public water supply and as a discharge point for wastewater treatment facilities and for storm water runoff from both rural and urban areas.

Water is withdrawn for public water supply upstream from the proposed discharge point not only by Rock Island, but also by Moline and East Moline. (2nd Pet. at 12.) The nearest public water supply downstream from the proposed discharge point is located near Muscatine, Iowa, a distance of approximately 20 miles. (*Id.*)

Character of Surrounding Land Uses

Rock Island describes the surrounding land use as follows:

Side stream property is predominately industrial. The edge of the river in the proposed discharge area consists of a flood protection levee with a crushed rock walk path on top of it. In the vicinity of the proposed discharge area, the property is privately owned by a local industry that has granted an easement

² See condition #15 to today's grant of adjusted standard.

to Rock Island for the river levee and wastewater treatment plant outfall. (2nd Pet. at 12-13.)

Bottom Conditions

Rock Island observes that it has evaluated the area below the proposed discharge site and that it did not find any significant accumulation of solids there. (Tr. at 26; 2nd Pet. at 15.) Rock Island also notes that at its direction a survey of mussels was undertaken in the vicinity of the proposed discharge site³. The survey found only five mussels representing four species, none of which were endangered species. (*Id.* at 8.) Further, the habitat in the area of the wastewater outfall did not appear conducive to mussels due to the character of the bottom deposits. (*Id.*)

Proposed Modifications and New Discharge System

Rock Island describes the proposed new discharge system as follows:

Rock Island now proposes to discharge the solids from its water treatment plant through the main outfall that is currently used to discharge wastewater from its Mill Street wastewater treatment plant, storm water and combined sewer overflows. This will require Rock Island to construct three new circular clarifiers at the water treatment plant adjacent to the existing sedimentation basins. The new circular clarifiers will cost \$4.3 million to design and construct, and once two of the three new clarifiers are constructed, Rock Island will cease using the existing sedimentation basins, sludge thickeners and basket centrifuges, begin using the new clarifiers and construct the third circular clarifier.

This alternative will also require Rock Island to construct a force main and continuously pump the solids that are removed from the new circular clarifiers to an existing storm sewer. Once in the storm sewer, the solids will flow by gravity and be discharged through the existing wastewater treatment plant outfall structure. A diagram of the proposed discharge system is set forth in Attachment M. It is anticipated that the design and construction of the force main and associated pump will be \$300,000.

(2nd Pet. at 8-9.)

³ The report of the survey is Attachment L to the 2nd Amended Petition.

Technological and Economic Considerations

Rock Island began the current program to find alternatives to disposal of its water treatment plant solids as early as 1983. (2nd Pet. at 2-3.) Studies undertaken at that time and later updated indicated several technologically feasible alternatives. Among these were a variety of alternatives involving the addition of on-site facilities or discharging into sewers. However, of the alternatives, the most cost effective, typically by an order of magnitude, was direct discharge into the Mississippi⁴. (Id. at 3-4.)

The alternative proposed herein is estimated by Rock Island to have a construction cost of \$4,300,000 for facilities at the water treatment plant and \$300,000 for the forced main and pump necessary to convey the sediment discharges to the wastewater treatment plant. (Tr. at 13; 2nd Pet. at 9, 21, and attachment M.) Rock Island anticipates that the alternative will require a 25% rate increase and the issuance of \$5,000,000 in bonds. (2nd Pet. at 21.)

CONCLUSION

Based upon its consideration of the record presented in this action, the Board finds that Rock Island has provided justification necessary for an adjusted standard to be granted with conditions.

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

ORDER

The City of Rock Island (Rock Island) is hereby granted an adjusted standard applicable to the discharge of wastewater from a water treatment plant located at 24th Street and 16th Avenue in Rock Island, Illinois, which as of the date of this order discharges wastewater from its sedimentation basins to Black Hawk Creek on an intermittent basis. Pursuant to this adjusted standard, the effluent standards for total suspended solids, iron, and manganese set forth at 35 Ill. Adm. Code 304.120 and 304.124 do not apply to this discharge, provided that:

- 1) Within sixty (60) days of this order, Rock Island shall solicit proposals for engineering design of the

⁴ Of the direct discharge options, discharge to Sylvan Slough, as proposed in the first two petitions, was the least costly alternative. (2nd Pet. at 21-22.) However, this alternative has been withdrawn.

- improvements necessary to discharge water treatment plant solids through its wastewater treatment plant outfall;
- 2) Within one hundred twenty (120) days of this order Rock Island shall award the contract for engineering design of those improvements;
 - 3) Within three hundred (300) days after awarding the engineering design contract, Rock Island shall complete the design plans;
 - 4) Within thirty (30) days after the design plans are complete, Rock Island shall complete its review of the design plans;
 - 5) Within ninety (90) days after the completion of the design plans, Rock Island shall apply for all construction and operating permits, including NPDES permit modifications, necessary to comply with the conditions of this adjusted standard;
 - 6) Within sixty (60) days after construction permit issuance, Rock Island will advertise, accept bids and award the contract for construction of the improvements necessary to discharge water treatment plant solids through its wastewater treatment plant outfall;
 - 7) Within twelve (12) months after awarding the contract for construction of the improvements necessary to discharge water treatment plant solids through the wastewater treatment plant outfall, Rock Island shall complete construction of two of the three new circular clarifiers;
 - 8) Within sixty (60) days after completing construction and debugging of those two circular clarifiers, Rock Island will begin their operation, discontinue operation of the existing water treatment plant sedimentation basins and conduct a final flush of the existing water treatment plant sedimentation basins;
 - 9) Within sixty (60) days after beginning operation of the initial two circular clarifiers, Rock Island shall complete construction of the third circular clarifier and begin its operation;
 - 10) Following the final flush of the existing water treatment plant sedimentation basins, Rock Island shall cease discharging to Black Hawk Creek and discharge all water treatment plant solids collected in the circular clarifiers directly to the Mississippi River;

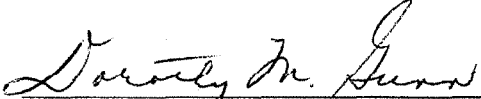
- 11) The continuous discharge to the Mississippi River shall be through a force main to the existing storm sewer and through the main outfall used for the discharge of effluent from the wastewater treatment plant, storm water and combined sewer overflows. The level of suspended solids shall be confirmed by way of field measurements after discharge begins. Data on suspended solids concentration will be provided to the Agency, Illinois Department of Natural Resources and United States Fish and Wildlife Service;
- 12) Within nine (9) months from the start of operations of all three circular clarifiers, Rock Island shall then obtain, through lease or purchase, agricultural land which at the time of acquisition is not fallow land and which amount is calculated through use of the Universal Soil Loss Equation to contribute an equal amount of total net suspended solids loading to the Mississippi River as the total suspended solids caused by the water treatment plant's discharge;
- 13) Rock Island shall remove the land acquired pursuant to Paragraph 12, above, from agricultural service and shall maintain such land as fallow land, unless such land is replaced with other land similarly removed from agricultural service and maintained as fallow land or the water plant implements some other plan approved by the Agency for offsetting the water plant's contribution of suspended solids to the Mississippi River;
- 14) The granting of this adjusted standard is not to be construed as affecting the enforceability of any provisions of this adjusted standard, other Board regulations, the Act, the Clean Water Act or any federal regulation. Nothing in this order shall preclude the Agency from exercising its authority to require as a permit condition a monitoring program sufficient to assess compliance with this adjusted standard and any other Board regulation, the Act, the Clean Water Act or any federal regulation and other controls, if needed for compliance, including compliance with water quality standards.
- 15) Within six (6) months of the start of operation of all three clarifiers, Rock Island shall implement a program to optimize the use of polymer coagulants. The study must be completed within one (1) year of its start. The results of this program, including the reduction in TSS loading expected and achieved on an annual basis, must be submitted to the Agency within ninety (90) days of completion of the program.

- 16) Within thirty (30) days after completing construction and debugging of the first two circular clarifiers, Rock Island shall submit to the Agency a maintenance plan, that includes regular inspection, and cleaning when necessary, of the sewers conveying the water treatment plant sludge.

IT IS SO ORDERED.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1994)) provides for the appeal of final Board orders within 35 days of the date of service of this order. The Rules of the Supreme Court of Illinois establish filing requirements. (See also 35 Ill. Adm. Code 101.246 "Motions for Reconsideration".)

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 19th day of October, 1995, by a vote of 7-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board