

ILLINOIS POLLUTION CONTROL BOARD  
May 19, 1994

IN THE MATTER OF: )  
 )  
PETITION OF THE CITY OF EAST ) AS 91-9  
MOLINE AND THE ILLINOIS ENVIRON- ) (Adjusted Standard)  
MENTAL PROTECTION AGENCY FOR )  
ADJUSTED STANDARD FROM 35 ILLINOIS )  
ADMINISTRATIVE CODE 304 )

LEE R. CUNNINGHAM, of GARDNER, CARTON & DOUGLAS, APPEARED ON BEHALF OF THE CITY OF EAST MOLINE;

BRUCE L. CARLSON 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 jointly by the City of East Moline (East Moline) and the Illinois Environmental Protection Agency (Agency). The joint petitioners request an adjusted standard from the Board effluent regulations at 35 Ill. Adm. Code 304 as applied to the wastewater discharges from East Moline's water treatment plant. The petition is brought pursuant to the special provisions regarding 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.).

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)) and 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 Agency is responsible for carrying out the principal administrative duties.

Based upon the record before it and upon review of the factors involved in the consideration of adjusted standards, the Board finds that East Moline has demonstrated that grant of an adjusted standard in the instant matter is warranted. The adjusted standard accordingly will be granted.

PROCEDURAL HISTORY

The instant petition was filed on December 27, 1991. Pursuant to 415 ILCS 5/28.3(d)(4) the cutoff date for filing Section 28.3 petitions was January 1, 1992. The instant petition accordingly was timely filed.

Hearing, which is mandatory in a Section 28.3 proceeding (415 ILCS 5/28.3(e), was originally scheduled for March 10, 1992. However, by letter dated February 27, 1992<sup>1</sup> the Fish and Wildlife Service of the U.S. Department of the Interior (FWS) raised concerns regarding the affects that sediment from the proposed discharge might have on the benthos of the receiving Mississippi River waters.

Subsequent to meetings with the FWS, Illinois Department of Conservation, Illinois Natural History Survey, and the Office of the Attorney General of Illinois (Amended Petition at p. 1), East Moline embarked on a series of surveys and studies intended to address the concerns regarding benthic organisms, with particular focus on mussels.

On December 29, 1993 joint petitioners filed an amended joint petition. The amended petition updates and supplements the original petition, principally as regards the mussel studies. The amended petition also revises the requested relief in light of the mussel studies.

Hearing was held in East Moline on March 25, 1994 before Hearing Officer Allen E. Shoenberger. No members of the general public attended the hearing. (Tr. at p. 17.)

No briefs have been filed.

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 solids to the Mississippi or Ohio Rivers. Among particulars of these provisions are that the primary petitioner must be a public water supply<sup>2</sup>, 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

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<sup>1</sup> The letter was not received and docketed by the Board until March 19, 1992.

<sup>2</sup> Section 28.3(b) provides that the water supply may be joined by the Agency as joint petitioner, as is the case here.

process, and that the purification process not utilize lime softening.

The particular standards from which the petitioners seek an adjustment are the Board's effluent standards relating to five-day biochemical oxygen demand (BOD<sub>5</sub>) found at 35 Ill. Adm. Code 304.120 and to copper, iron, manganese, and total dissolved solids (TSS) found at 35 Ill. Adm. Code 304.124. The proposed adjustment to these standards is that the standards not apply to the discharge in question provided that East Moline comply with a series of fourteen conditions (see following) proposed by the joint petitioners.

East Moline is not seeking an adjustment of any water quality standards. All water quality standards would remain applicable to the receiving water body, and East Moline 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. The joint petitioners apparently believe all quality standards can be met<sup>3</sup> 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).)

The roles assigned to the Agency in the Section 28.3 process include that of proposal reviewer and, where the Agency so deems, joint petitioner. The Agency has compiled a guidance document specifying its conditions of review (See Petition Attachment A).

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<sup>3</sup> Joint petitioners allow that attainment of compliance might entail invoking allowed mixing, pursuant to 35 Ill. Adm. Code 302.102, and perhaps the necessity of defining a mixing zone as part of East Moline's NPDES permit. (Petition, p. 4.) Joint petitioners indicate that they do not anticipate problem with East Moline obtaining a mixing zone or a zone of initial dilution. (Id.)

## DISCUSSION

### Current Operations/Existing Physical Conditions

East Moline operates a water treatment plant located at 901 12th Avenue in East Moline. (Petition at p. 14.) The plant provides clarified, filtered, disinfected water to approximately 6,500 residences (22,000 people) and approximately 100 businesses in East Moline. (Id. at p. 15.) The plant has a capacity of 10 million gallons per day, but the average pumping rate is 4.0 MGD

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 7th Street and 1st Avenue in East Moline. (Petition at p. 15.)

The raw water is subject to various treatments, including the addition of powdered activated carbon for removal of taste and odors, copper sulfate to reduce algal growth, lime and alum for flocculation and pH adjustment, chlorine and ammonia for disinfection, and fluoride. (Petition at p. 15, 16.)

Sediment is removed from the raw water at two principal points, within sedimentation basins and in sand filtration units. (Petition at p. 16.) The discharges at issue are generated from these two sources, as a result of dragging of the sedimentation basins and during backwashing of the filters.

The sediment wastestreams are currently discharged through two outfalls. Discharge from the sediment basins is through outfall 001; discharge from the filter backwash operations is through outfall 002. Both outfalls are on an unnamed tributary of the Mississippi River. Flow thereafter follows the unnamed tributary for approximately 1000 feet before entering a storm sewer and thence discharging into the Mississippi River.

Currently the sediment discharges are on an intermittent basis. Cleaning of both sediment basins and filters are performed as needed, with filter backwashing typically occurring for 20 minute periods four times daily and dragging of the sedimentation basins typically occurring for 1½ to two hour periods once every 36 hours. (Petition at p. 8-9.)

### Character of the Mississippi River/Discharge Area

The Mississippi River in the vicinity of East Moline is a multi-use waterway. It is a major navigational waterway. It is used for sport fishing and boating. In addition to East Moline, it is also utilized as a source of drinking water by Rock Island. It is also a discharge point for wastewater treatment facilities and for stormwater runoff from both rural and urban areas.

Water quality of the Mississippi River in the vicinity of the discharge is generally good. (Petition at p. 9.) A biological survey conducted in 1987 also indicated that the biological integrity of the river, as measured by biological index, number of organisms, and total number of taxa found, was similar upstream and downstream of the existing East Moline outfall. (*Id.* at p. 10.) Joint petitioners contend that the discharge system as proposed herein would actually cause a net decrease in the sediment loadings to the Mississippi River, and accordingly should tend to improve water quality. (Petition at p. 40.)

#### Character of Surrounding Land Uses

Joint petitioners described the surrounding land use as follows:

Side stream property is predominately industrial, except for a small residential area around the proposed discharge point. This property is separated from the Mississippi River by a road and flood levee. Between the bicycle path and the river is steeply graded riprap which drops off approximately 18 feet to the shore, thereby greatly limiting access to the river from the adjacent property. (Petition at p. 8.)

#### Proposed Modifications and New Discharge System

Joint petitioners propose as a condition of the adjusted standard that the present discharge configuration be replaced by a direct discharge to the Mississippi River. The new direct discharge would take place through a 3-inch pipe extending from the water plant to approximately 70 feet (22 m) beyond the shore of the Mississippi River.

Moreover, as additional conditions of the adjusted standard, East Moline proposes to replace the intermittent discharges with continuous discharges. The filter backwash and sedimentation basin discharges would be directed to a mixing tank that has a continuous discharge of approximately 100 gallons per minute. Joint petitioners declare that "this will avoid any impact from intermittent loadings and reduce the area of the mixing zone, thereby minimizing any adverse impact on the River" (Petition at p. 9).

Among the principal concerns raised during the course of this matter has been whether the proposed sediment discharges would have a negative impact on benthic organisms in the receiving water, and particularly whether the discharge would adversely impact either mussel beds or endangered or threaten mussel species. This concern has occasioned a delay of more than two years in the conduct of the hearing in this proceeding (see

above) and has been the impetus for most of the issues raised in the amended petition.

Both the design and location of the proposed discharge point have been modified as the result of the mussel studies. The design has been reconfigured to add a diffuser that would project the discharge upward at a 30-degree angle. Model studies indicate that this diffuser would produce a maximum increase in the suspended solids concentration of 22 mg/l (71:1 dilution ratio) on the river bed, a level that joint petitioners consider to have no adverse impact on mussels. (Amended Petition at p. 5 and attachment FF.)

Initially the new discharge point was proposed to be located approximately 1400 feet upstream of the present storm sewer outfall. (Petition at p. 5-6.) However, based on the mussel studies, joint petitioners now recommend that the discharge occur immediately offshore of the present storm sewer discharge. This site, known as "Dive Area #2" in the various mussel studies (see Amended Petition attachments), was selected based on the absence of mussels in a transect from the shore to the proposed discharge point (Amended Petition attachment LL at p. 3.) and a sparse mussel population (absence of mussel beds) in the projected plume of the discharge (Id. at p. 4). At the point of proposed discharge the bottom of the Mississippi River is sediment. (Id. at p. 10.)

As regards the matter of endangered or threaten mussel species, the Illinois Department of Conservation on February 25, 1994 issued a biological opinion pursuant to 17 Ill. Adm. Code 1075.40(e). The opinion concludes

... that the discharge of water treatment solids to the Mississippi River by the City of East Moline is not likely to have significant adverse effects on endangered or threatened species of freshwater mussels that may be present in the vicinity of the discharge. This conclusion has been reached with understanding that the discharge will be installed [in accordance with the conditions specified in the amended petition]. (Co-Petitioner's Hearing Exhibit #1 at p. 1.)

#### Net Sediment Reduction

A singular facet of the conditions proposed by the joint petitioners is the provision that East Moline obtain land that is presently being farmed and to hold the land as fallow land. The purpose is to "more than offset the net amount of solids added to the Mississippi River from the discharge of its mixing tank as compared to the amount of solids which result from the raw water used" (Petition at p. 29-30). The joint petitioners further note that:

To do so East Moline will first calculate its annual solids loading to the Mississippi River. It will then calculate the annual solids loading in the raw water and subtract that value from its annual loading to determine its net annual loading to the Mississippi. East Moline, with the assistance of the local Soil and Water Conservation District, will next identify available land parcels, and for each parcel it will calculate, using the Universal Soil Loss Equation, the annual solids loading which will be expected from land which is actively farmed. It will then subtract from that value the annual loading calculated from the same land as fallow land, thereby determining the net annual reduction in loading. Finally, it will obtain sufficient land to result in a total net annual reduction in solids loading to the Mississippi River of double its net annual loading due to discharges from its water plant. (Petition at p. 30.)

#### Technological and Economic Considerations

East Moline has undertaken various efforts to maximize operational procedures and to minimize chemical use, so as to improve the quality of the discharged water and reduce the impact of the discharge on the river. (Petition at p. 16-23.) Several of the procedures are now in place, and others, such as designing the discharge system to maximize diffusion and to direct the discharge plume away from the bed of the river, are proposed as part of the agreed-upon conditions to the grant of the instant adjusted standard. The Agency would exercise oversight of the conditions, among other matters, through the construction, operating, and NPDES permits that are required for the implementing the adjusted standard.

East Moline has also investigated compliance options that would not require an adjusted standard. (Petition at p. 26.) Among these, the most economical option would be to pass the sediment wastestreams through standard treatment operations. Consultants for East Moline estimate that capital cost and annual costs of this operation would be \$581,000 and \$396,000, respectively. As compared to East Moline's proposal, which has a capital cost of \$460,400 and annual costs of \$93,000<sup>4</sup>, the most economical compliance option accordingly would cost an additional \$120,000 in capital and \$197,000 per year in operating expenses. (Petition at p. 37.) Over a twenty-year period the proposed

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<sup>4</sup> The Board notes that these figures are for the discharge configuration proposed in the original petition. Since the joint petitioners have not updated these figures, the Board assumes that the costs for the discharge configuration proposed in the amended petition do not significantly differ from those of the original petition.

adjusted standard would thus save East Moline approximately \$20 million. (Id.)

Joint petitioners summarize the economic considerations by observing:

The economic impact upon those affected by the discharge is ... positive since there will be no impairment of actual or potential uses and many of those affected are customers of the water plant. Since East Moline's proposal is a lower cost alternative, water bills will not increase as much as they would if East Moline were required to comply with generally applicable standards. (Petition at p. 37.)

#### CONCLUSION

Based upon its consideration of the record presented in this action, the Board finds that the joint petitioners have 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 East Moline (East Moline) is hereby granted an adjusted standard applicable to the discharge of wastewater from a water treatment plant located at 901 12th Avenue in East Moline, Illinois, which as of the date of this order discharges wastewater from its sedimentation basin through outfall 001 to an unnamed tributary of the Mississippi River at 41° 31' 08" north latitude and 90° 26' 32" west longitude and wastewater from its filter backwash which discharges to the same tributary through outfall 002 at 41° 31' 09" north latitude and 90° 26' 30" west longitude. Pursuant to this adjusted standard, the effluent standards for BOD<sub>5</sub>, total suspended solids, iron, manganese, and copper set forth at 35 Ill. Adm. Code 304.120 and 304.124 do not apply to these discharges. This grant of adjusted standard is contingent upon East Moline complying with each of the following:

1. Within ninety (90) days of this order East Moline shall apply for all construction and operation permits, including NPDES permit revisions, necessary to comply with the conditions of this adjusted standard. East Moline shall promptly provide any supplemental information needed for those applications, if any such information is identified by the Agency.



2. Within two years of the date of obtaining the necessary construction permits the water plant shall cease discharging to the unnamed tributary of the Mississippi River and shall commence discharging directly to the Mississippi River.
3. The discharge to the Mississippi River shall be through a pipe which extends approximately 22 meters into the Mississippi River from the shore from a point near the present stormwater outfall to the Mississippi River approximately 1600 feet west of 7th street.
4. Until at least January 1, 1996, East Moline shall maintain as fallow land approximately 33.7 acres which are part of Farm #2116, Tax Parcel 350 and 351 in Coe Township and after that date shall either continue to maintain that land as fallow land or shall obtain, through lease or purchase, other agricultural land which at the time of acquisition is not fallow land and which is calculated through the use of the Universal Soil Loss Equation to contribute a net suspended solids loading to the Mississippi River (as compared to the calculated loading for fallow land) of least an average of 500 tons per year of the term of the lease or ownership or the water plant shall implement some other plan approved by the Agency for offsetting the water plant's net contribution of suspended solids to the Mississippi River.
5. Within two years of the date of obtaining the necessary construction permits East Moline shall construct a surge tank with a capacity of at least 100,000 gallons to hold its filter backwash wastewater prior to discharge.
6. As much of the wastewaters from the surge tank described in Paragraph 5, above, as can reasonably be returned to the headworks of the water plant for retreatment, consistent with reliable and lawful operation of the water plant, shall be so returned.
7. Within two years of the date of obtaining the necessary construction permits East Moline shall construct and place into operation a mixing tank of not less than 50,000 gallons capacity to hold the wastewater from the water plant's sedimentation basins prior to discharge to the Mississippi River.
8. The wastewaters from the surge tank described in Paragraph 5, above, which are not returned to the headworks of the water plant pursuant to Paragraph 6, above, shall be mixed with wastewaters from the

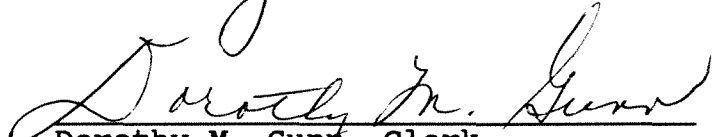
sedimentation basins, if any, prior to discharge to the Mississippi River.

9. Any overflows from the surge tank described in Paragraph 5, above, which are not handled pursuant to paragraphs 6 or 8, above, shall be directed to East Moline's wastewater treatment plant for treatment.
10. All mussels found at the time of construction which would be anticipated to be directly impacted by the construction activities shall be relocated to a suitable area outside of the area of direct impact.
11. Each year for a period of five (5) years after the commencement of the discharge East Moline shall perform a mussel survey to evaluate the impact of the discharge upon the mussels, and shall sample sediment copper concentrations, weather conditions reasonably permitting.
12. Within one year after the commencement of the discharge, East Moline shall perform a study to verify the accuracy of the modeling conducted by Mr. James Huff as described in Attachment FF of the Amended Joint Petition, including sampling of water quality downstream of the discharge point for total suspended solids, hardness (as  $\text{CaCO}_3$ ), total copper and soluble copper to verify the effectiveness of the high velocity port discharge.
13. The activities required by Conditions 10 through 12, above, shall be carried out in accordance with the Scope-of-Work set forth at Attachment JJ of the Joint Amended Petition in this matter regarding the performance of various mussel surveys before and after the commencement of the water plant's discharge to the Mississippi River, the verification of field conditions after operation begins, and sampling for copper and hardness.
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.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1992)) 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".)

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 19<sup>th</sup> day of May, 1994, by a vote of 6-0.

  
Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board