

raw water. The raw water containing activated carbon is then pumped through two pipes to two separate rapid-mix units. Lime is added to one rapid-mix unit and alum is added to the other rapid-mix unit. The flow from each rapid-mix unit subsequently flows through separate but identical paddle-wheel flocculation basins followed by rectangular settling basins. Chlorine is added at approximately the mid-point of the clarification units. The treated water from the settling units is combined and flows to the rapid sand filtration units. After filtration, the water is stored in a "clearwell" before being pumped to the distribution system. Post-chlorination does occur after filtration to maintain a chlorine residual in the distribution system. Finally, backwash water from the filters, sludge from the settling tanks and drain lines from the various process units are discharged from the Plant into an adjacent drainage ditch which gravity flows to the Mississippi River.

As a result of the chlorine disinfection process used to treat raw water, THMs are formed. The generalized reaction for the formation of THMs is free chlorine, which combines with organic precursors such as humic and fulvic substances to produce THMs. The organic precursors which naturally occur in the raw water pumped to the Plant are naturally occurring in the water drawn from the Mississippi River. In addition to the generalized reaction which produces THMs, the City asserts that the following factors serve to influence the formation of THMs and THM levels in East Moline's public water supply.

1. Temperature - the rate of formation of THMs increases with temperature and thus generally are higher during the Summer.
2. pH - higher pH values increase the rate of THM formation.
3. Organic precursors - type and concentration in source water influences the rate of THM formation.
4. Free chlorine concentration - free chlorine is necessary for the formation, however, free chloride residuals beyond the chlorine demand has little impact on the rate of formation. Initial mixing and reactor design influences the rate of formation and thus the concentration after treatment.

The water currently supplied to the public by the City periodically exceeds the THM limit of 0.10 mg/l. However, at other times, the THM limit in East Moline's public water supply is below this limit. Since June of 1982, East Moline has conducted quarterly analysis of THM concentrations in the public

water supply. The average quarterly THM concentrations for samples taken between June 7, 1982, and December 30, 1986, are reflected below.

Date Sample Collected	Average THM Concentration (mg/l)*
06/07/82	0.205
02/20/84	0.138
06/04/84	0.206
08/27/84	0.172
10/05/84	0.175
10/23/84	0.153
11/06/84	0.074
12/18/84	0.125
02/11/85	0.084
03/25/85	0.022
06/20/85	0.223
10/11/85	0.244
03/03/86	0.095
12/30/86	0.153

*Milligrams per liter, based on average of four distribution samples per quarter on date indicated. 0.148 equal average concentration, mg/l

By letter dated September 25, 1984, the City was advised by the Agency that East Moline was being placed on restricted status. The City reports that since being placed on restricted status, East Moline has taken steps to control the concentration of THMs in its public water supply. These efforts included increasing the amount of carbon, relocating the point of chlorination, removing sludge from the sedimentation basins on a more frequent basis and by better controlling the chlorine feed rate.

In its October 9, 1987 Recommendation, the Agency notes that the most recent quarterly analysis (presumably taken after those listed above) indicate that THM levels in the City's water are below the 0.10 mg/l MAC. However, the Agency further notes that restricted status cannot be lifted absent grant of variance, since compliance with the standard is calculated on the basis of the average of four consecutive quarterly samples.

The City has submitted the following schedule of compliance activities to meet the THM standard by the end of the proposed two-year variance period:

October, 1987: East Moline will install a new rapid mixer in its public water supply treatment system to provide for the addition of lime and alum for controlling trihalomethanes. The estimated cost of purchase and installation for the rapid mixer is \$7,700.

January, 1988: East Moline is currently conducting pilot studies to determine the necessary steps for achieving compliance with the trihalomethane regulations. East Moline will complete pilot studies in January, 1988. These studies will focus on the use of different chemicals and chemical mixtures to reduce trihalomethane levels in East Moline's public water supply. The cost of these studies has been estimated at \$15,000.

February, 1988: East Moline's consultants will submit a final report summarizing the pilot studies conducted for the control of trihalomethanes. The estimated cost for this report has been estimated at \$15,000.

March, 1988: East Moline will review the pilot studies previously submitted and forward the studies to the Illinois Environmental Protection Agency for its review.

June, 1988: East Moline will apply for construction permits from the Illinois Environmental Protection Agency for undertaking those steps recommended in the pilot study report for the control of trihalomethanes.

September, 1988: Begin steps for achieving compliance with the trihalomethane regulations.

No time period specified: Complete construction steps; achieve compliance with trihalomethane regulations.

The City asserts that to keep:

East Moline on restricted status while it is investigating methods for the control of THMs in its public water supply imposes an arbitrary and unreasonable hardship upon East Moline. Restricted status prevents East Moline from expanding, extending or modifying its water distribution system. Recently, East Moline has lost much of its industrial base and has suffered a resulting loss in water users. This has served to increase water rates while it discourages both industry and residents from using the public water supply system. As a result, East Moline does not have the funding required to implement many necessary improvements to the water treatment plant and distribution system.

East Moline is in the position where it needs to attract new industry to improve the depressed economic conditions in that City, in part caused by a loss of industry. However, by being placed on restricted status, East Moline is effectively prohibited from establishing new industry as it cannot modify its water distribution system to accommodate that industry. This situation is only serving to worsen the economic climate in East Moline, and imposes an arbitrary and unreasonable hardship upon East Moline.

The City further asserts its belief that grant of variance will not pose a threat to the health of its water users, submitting in support thereof USEPA's rationale for setting the 0.10 THM interim standard in 1979 as published in 44 Fed. Reg. 68690-68707.

In its Recommendation in support of grant of variance, the Agency stated that it had no disagreement with the City's factual allegations. The Agency stated its belief that "an incremental increase in the allowable concentration for the contaminant in question should cause no significant health risk for the limited population served by new water main extensions for the time period of this recommended variance." Additionally, the Agency observed that:

grant of variance from restricted status should affect only those users who consume water drawn from any newly extended water lines. This variance should not affect the status of the rest of Petitioner's population drawing water from existing water lines, except insofar as the variance by its conditions may hasten compliance. In so saying, the Agency emphasizes that it continues to place a high priority on compliance with the standard.

The Agency believes that the hardship resulting from denial of the recommended variance from the effect of being on Restricted Status would outweigh the injury of the public from grant of that variance. In light of the cost to the Petitioner of treatment of its current water supply and, the likelihood of no significant injury to the public from continuation of the present level of the contaminant in question in the Petitioner's water for the limited time period of the variance, the Agency concludes that denial of a variance from the effects of Restricted Status would impose an arbitrary or unreasonable hardship upon Petitioner.

The Board notes that this petition provides no detail as to the number of new connections expected if variance is granted, and contains little data supporting the City's economic hardship claims. On the other hand, the City has already implemented various measures to solve its THM problem, measures which appear to have resulted in reduction of THMs in the water delivered to its customers. Given the fact that the City is well on the way to achieving compliance, has firmly committed to continue its compliance efforts, the limited environmental impact during the limited term of this variance, the Board finds that denial of variance would impose an arbitrary or unreasonable hardship.

The Board notes that while the City has committed to applying for permits in June, 1988, that the conditions suggested by the Agency would not have required such application until March, 1989. The Order imposes the earlier deadline. The Board also notes that neither the City's nor the Agency's schedule provided time for the four quarterly samples necessary to demonstrate compliance. Therefore, the Board will extend the variance for an extra year, until January 21, 1991, solely to allow the City to demonstrate compliance; paragraph (g) of the order still requires all construction activities to be completed by January 21, 1990. A three year variance is accordingly granted subject to conditions similar to those outlined by the Agency.

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

ORDER

1. Petitioner, the City of East Moline, is hereby granted variance from 35 Ill. Adm. Code Sections 602.105(a) "Standards of Issuance" and 602.106(b) "Restricted Status" solely as they relate to excursions of the 0.10 mg/l trihalomethane (THM) standard of Section 604.202, subject to the following conditions:
 - (a) This variance terminates on January 21, 1991, or when analysis pursuant to 35 Ill. Adm. Code 605.105(a) shows compliance with the trihalomethane standard, whichever comes first;
 - (b) In consultation with the Agency, Petitioner shall continue its sampling program to determine as accurately as possible the level of THM in its finished water;
 - (c) Compliance shall be achieved no later than January 21, 1991;
 - (d) On or before April 1, 1988, Petitioner shall submit the final report of its consultants concerning the pilot

studies described in the foregoing Opinion to the Agency's Division of Public Water Supplies, FOS, at 2200 Churchill Road, Springfield, Illinois 62794-9276;

- (e) On or before July 1, 1988, Petitioner shall apply to IEPA for all necessary construction permits. The deadline for applying for said permits for construction of treatment facilities may be extended by the Agency in writing for good cause shown. Notwithstanding this provision Petitioner must comply in full with paragraph (g), below;
- (f) Within two months after each construction permit is issued by IEPA, DPWS, the Petitioner shall, if necessary, advertise for bids, to be submitted within 60 days, from contractors to do the necessary work described in the construction permit. The Petitioner shall accept appropriate bids within a reasonable time. Petitioner shall notify IEPA, DPWS, within 30 days of each action, of: 1) advertisements for bids, 2) names of successful bidders, and 3) whether Petitioner accepted the bids;
- (g) Construction pursuant to said construction permits shall begin within a reasonable time of bids being accepted, but in any case, construction of all installations, changes or additions necessary to achieve compliance with the maximum allowable concentration of THMs shall begin no later than July 1, 1989; and shall be completed no later than January 21, 1990;
- (h) Pursuant to 35 Ill. Adm. Code 606.201, in its first set of water bills or within three months after the date of this Variance Order, whichever occurs first, and every three months thereafter, Petitioner will send to each user of its public water supply a written notice to the effect that Petitioner has been granted by the Pollution Control Board a variance from 35 Ill. Adm. Code 602.105(a) Standards of Issuance and 35 Ill. Adm. Code 602.106(b) Restricted Status, as they relate to the 0.10 mg/l THM standard;
- (i) Pursuant to 35 Ill. Adm. Code 606.201, in its first set of water bills or within three months after the date of this Order, whichever occurs first, and every three months thereafter, Petitioner will send to each user of its public water supply as written notice to the effect that Petitioner is not in compliance with the THM standard. The notice shall state the THM content in samples taken since the last notice period during which samples were taken;

- (j) That Petitioner shall take all reasonable measures with its existing equipment to minimize the level of THM in its finished water; and
- (k) The Petitioner shall provide written progress reports to IEPA, DPWS, FOS every six months concerning steps taken to comply with this Order. Progress reports shall quote each of said paragraphs and immediately below each paragraph state what steps have been taken to comply with each paragraph.

2. Within 45 days of the date of this Order, Petitioner shall execute and forward to Thomas Davis, Enforcement Programs, Illinois Environmental Protection Agency, 2200 Churchill Road, Springfield, Illinois 62794-9276, a Certification of Acceptance and Agreement to be bound to all terms and conditions of this variance. The 45-day period shall be held in abeyance during any period that this matter is being appealed. Failure to execute and forward the Certificate within 45 days renders this variance void and of no force and effect as a shield against enforcement of rules from which variance was granted. 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 87-128, January 21, 1988.

Petitioner

Authorized Agent

Title

Date

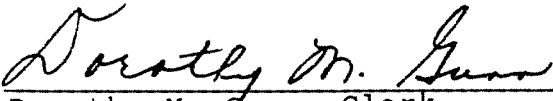
Section 41 of the Environmental Protection Act, Ill. Rev. Stat. 1985 ch. 111 1/2 par. 1041, provides for appeal of final

Orders of the Board within 35 days. The Rules of the Supreme Court of Illinois establish filing requirements.

IT IS SO ORDERED.

J. D. Dumelle and B. Forcade dissented.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 21st day of January, 1988, by a vote of 5-2.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board