

ILLINOIS POLLUTION CONTROL BOARD
August 18, 1982

ALTON WATER CO.,)
)
) Petitioner,)
)
) v.) PCB 82-13
)
 ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,)
)
) Respondent.)

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

This matter comes before the Board on the petition for variance filed February 10, 1982 as amended July 16, 1982 by the Alton Water Company (the Company). The Company seeks variance from the 15 mg/l total suspended solids (TSS) and 2 mg/l total iron effluent standards of Section 304.124(a) of Ill. Adm. Code. Title 35, Subtitle C, Chapter 1 [formerly Rule 408(a) of Chapter 3: Water Pollution]*, as they relate to the wastewater discharged by the Company's potable water treatment facility. The Company also has initiated a site-specific rulemaking requesting identical relief which has been docketed as R82-3 (which proceeding had been delayed pending the Company's filing of an amended regulatory petition, received July 21, 1982). On July 16, 1982, the Illinois Environmental Protection Agency (Agency) filed its Recommendation in support of grant of variance subject to conditions for either three years or until a decision is reached in R82-3, whichever comes first. Hearing was waived and none has been held.

The Alton Water Company, Madison County, is a public utility which provides drinking water to approximately 16,900 residential, commercial, industrial, and municipal customers in the City of Alton and the surrounding area. The Company owns and operates a water purification plant which withdraws raw water from the Mississippi River and purifies and distributes finished water to its customers. Wastewater resulting from the purification process is discharged into the Mississippi downstream from the intake. An average of 12.5 millions of gallons per day (mgd) of raw water is treated prior to distribution by means of coagulation, settling, filtration, chlorination and fluoridation.

* The Agency in its Recommendation implies, without specifically addressing the matter, that the 30 mg/l TSS limit of Section 304.120(a) is the applicable limit.

As of 1980, the rated filter capacity of the Company's plant was 10.4 mgd. On account of lack of reserve treatment capacity, the plant was placed on the Agency's Division of Public Water Supplies' Critical Review list on July 1, 1981. As a result of various modifications to the Company's system, the rated filter capacity was subsequently increased to 13.3 mgd, and the plant was removed from the Critical Review list.

The Company has begun construction of a new additional treatment system to increase the plant capacity by 5 mgd. The Company alleges that the addition is necessary to enable the Company to meet existing system peaks and normal summer season demands on the system. Construction of this addition, scheduled to be completed in August, 1982, has proceeded pursuant to a "construct-only" permit issued by the Agency: absent grant of a variance or site-specific rule change, the Agency will not issue an operating permit.

Operation of this plant addition would not change the treatment process or discharge configuration of the existing plant, although the quantity of discharge would increase as production of finished water increases. The treatment process here involved begins with the pumping of raw river water at an intake structure, where alum and polymer are added to the water. It is then conveyed to two circular mixers and then to a clarifier where addition of a small quantity of lime for pH adjustment, pre-chlorination, and occasionally a coagulant aid, occurs. Water then flows through two sedimentation basins, and finally through sand and gravel filters, a filter aid having been added when required. Post-chlorination and fluoride additions are made after filtration. Finished drinking water flows to a clear well before distribution.

The high TSS concentration in the Company's wastewater was the subject of an earlier Board proceeding, East St. Louis and Interurban Water Co. v. IEPA and Alton Water Co. v. IEPA (consolidated), PCB 76-297 and 298, 24 PCB 801, February 17, 1977. In that case, average TSS concentration of Alton's discharge was reported as being 11,060 mg/l, 24 PCB at 803. The Company unsuccessfully argued that since the high TSS concentration was largely attributable to high TSS levels in its raw water source (e.g. 68 mg/l), that it qualified for a Rule 401(a) exemption to the Rule 408 effluent limitations. The Board affirmed the Agency's denial of an operating permit. Following this Board decision, the Company began investigating methods of treating its discharge, as well as the possibility of obtaining site specific regulatory relief. In pursuing the latter option, the Company contacted the State Water Survey (Survey) concerning the possibility of the Survey doing a study of the environmental impact of the discharge on the Mississippi. Due to the Survey's workload, its commitment to undertake the study was not made until May, 1979. The recently completed study, "Waste from the Water Treatment Plant at Alton and its Impact on the Mississippi River", Ralph Evans et al. (July, 1981) (Evans Report) (Ex. 1), is the source of most of the information relied on by the Company.

The Evans Report estimates the volume of wastewater produced at the plant to be 603,000 gpd, or roughly 48,000 gallons of wastewater per million gallons of raw water treated. Wastes are produced in the mixers, clarifier, sedimentation basins and filters. The significant contributors to the waste loads in the discharge were viewed to be the TSS content of the raw water and the alum added for coagulant purposes. Average daily production of dry solids in the treatment system was estimated to be 12,500 pounds, of which only 150 pounds was attributed to alum usage.

Additional monitoring of plant discharges was conducted in response to Agency questions concerning the variance petition. During normal daily plant operations, in addition to TSS, the discharge exceeds only one other effluent standard: the 2.0 mg/l iron limitation, the average concentration in the discharge being 14.6 mg/l. Again, however, the raw water contains iron in excess of the limit. During the twice yearly cleaning of sedimentation basins, the 2.0 mg/l barium standard and the 1.0 mg/l manganese standard are also violated, as the average concentrations in the discharge at those times are estimated to be, respectively, 6.0 mg/l and 3.92 mg/l (Ex. 5). (The Company believes that such excursions could be eliminated by more frequent basin cleaning.)

In assessing the environmental impact of these discharges, the Survey believed it unnecessary to perform a study of in-stream water quality, based upon its earlier studies of water treatment plant discharges. Calculations were made concerning the impact of the TSS discharge under worst case conditions. Using the daily load of suspended solids in the discharge (12,500 lbs.) and the 7-day, 10-year low flow for the River (21,700 cfs) with a 10% mixing and a river TSS concentration of 10 mg/l, Evans concluded that the in-stream TSS concentration would be 34 mg/l. Except during such conditions, the Company's discharge was estimated to represent only 0.018% of the average daily solids load conveyed by the stream (Ex. 1).

Calculations were also made as to the effect of the barium, manganese and iron discharges during the twice-yearly (April, November) basin cleaning episodes during the worse November (average stream flow) conditions. Again assuming a 10% mixing, the concentration in the Mississippi without the waste, and then with it, were estimated to be: for barium 0.10 mg/l vs. 0.11 mg/l, for manganese 0.25 mg/l vs. 0.27 mg/l, and for iron 8.60 mg/l vs. 9.40 mg/l.

The Survey did do sampling of river bottom sediments, to determine their content as well as the types of densities of macroinvertebrates located in these sediments. The Survey determined that while the Company's waste flows were detectable in the River's bottom segments, that the areal extent of their influence was limited to 200 feet offshore and within 2,000 feet downstream of the waste outfall. No unnatural sludge deposits were observed, and there was no evidence that the iron and

aluminum concentrations in the sediment was toxic to aquatic organisms. The study therefore concluded that the changes in the chemical and physical composition in these sediments should not be considered "a mark of environmental degradation" (Ex. 1 at 31).

The study of macroinvertebrates lead the Survey to conclude that the impact of the Company's discharges was not an adverse one.

Based on the Evans Report, the Company alleges its belief that its discharges have no adverse environmental impact. In further support, the Company has presented a statement of the Army Corps of Engineers stating its opinion that the discharges have no effect on the Corps' channel maintenance duties (Ex. 6).

The Company has, since 1973, considered various options for disposal of the sediments contained in its wastewater. The City of Alton determined in 1978 that it could not accept and treat the Company's discharge at the municipal sewage treatment plant (Ex. 8). Given the small size of the Company's plant site, all feasible compliance options involve off-site disposal of sediments. Four options have been rejected. Two of these would involve transportation of sludge by barge to a disposal site in either a) Illinois or b) Missouri. Capital costs involved in the Illinois choice would be \$4,140,000 and \$3,270,000 in the Missouri choice, with annual hauling operation and maintenance expenditures estimated respectively at \$25,850 and \$23,150. The other two rejected options are for mechanical dewatering of sludge which would be shipped by truck to a disposal site. Dewatering by filter press and centrifuge systems were considered at respective capital costs of \$3,300,000 and \$3,120,000 and respective annual hauling, operation and maintenance costs of \$116,950 and \$127,200 (Ex. 7).

The chosen compliance option, if ultimately required, would involve pumping of wastewater to an off-site lagoon disposal system. A site 3½ miles upstream of the plant has been purchased at a cost of \$243,000. Capital costs of construction of a collection system at the plant, installation of piping and lift stations, and construction of two drying lagoons, are estimated to be \$3,000,000 with annual operation and maintenance costs of \$16,850. Such a system would take approximately 20 months to construct.

Given the asserted lack of environmental impact and the pendency of the R82-3 rulemaking, and its need to commence operation of its additional purification facilities, the Company asserts that immediate compliance would impose an arbitrary or unreasonable hardship. To support lagoon construction capital investments, the Company expects it would require an annual increase in revenues of \$710,000, which would result in an average 12% rise in water use rates to its customers. The Company has already petitioned the ICC for a rate increase for reasons related to this petition. The Company notes that, assuming its December 4, 1981 petition for rate increase is approved, compliance costs would add \$23.00 per year to a typical residential user's projected \$188.00 annual bill.

Given all of the above circumstances, the Agency supports grant of variance subject to conditions for a period not to exceed three years. In so doing, the Agency expressly stated that its Recommendation "should not be taken as acquiescence in the rule change petition... The Agency's decision in the rule change petition will be based on the evidence and testimony" in that proceeding.

The Board finds that the Company has proven that immediate compliance would impose an arbitrary or unreasonable hardship. Based on the uncontroverted evidence presented concerning community water needs, the asserted financial hardship, and the Survey's environmental impact assessment, the Board finds that delay in compliance with Section 304.124 is justifiable. Variance is accordingly granted for the term and subject to the conditions outlined in the attached Order. In so doing, the Board expresses no pre-judgement of the outcome of R82-3, in which the initial hearing is yet to be held.

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

ORDER

1. Petitioner, the Alton Water Co., is granted variance from the 15 mg/l total suspended solids (TSS) and 2 mg/l total iron effluent standards of Section 304.124(a) of the Ill. Adm. Code, Title 35, Subtitle C, Chapter 1, subject to the following conditions:

a. This variance shall terminate September 1, 1985 or upon any earlier final decision in R82-3.

b. Petitioner shall operate its facility so as to minimize the TSS and iron content of its discharge.

c. Within 90 days of the date of this Order, petitioner shall develop and submit to the Agency a plan for the cleaning of its clarifier basins with sufficient frequency to avoid violations of the barium and manganese standards. This plan shall be followed during the life of this variance.

2. Within forty-five days of the date of this Order, Petitioner shall execute and forward to the Illinois Environmental Protection Agency, Division of Water Pollution Control, Compliance Assurance Section, 2200 Churchill Road, Springfield, Illinois 62706, a Certificate of Acceptance and Agreement to be bound to all terms and conditions of this variance. This forty-five day period shall be held in abeyance for any period this matter is being appealed. The form of the certificate shall be as follows:

CERTIFICATION

I, (We), _____, having read the Order of the Illinois Pollution Control Board in PCB 82-13, dated _____, understand and accept the said Order, realizing that such acceptance renders all terms and conditions thereto binding and enforceable.

Petitioner

By: Authorized Agent

Title

Date

IT IS SO ORDERED.

Board Member J. Dumelle concurred.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 18th day of August, 1982 by a vote of 5-0.

Christan L. Moffett
Christan L. Moffett, Clerk
Illinois Pollution Control Board