

ILLINOIS POLLUTION CONTROL BOARD
November 7, 2002

CITY OF CARLYLE,)
)
 Petitioner,)
)
 v.) PCB 03-11
) (Variance – Public Water Supply)
 ILLINOIS ENVIRONMENTAL)
 PROTECTION AGENCY,)
)
 Respondent.)

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

The City of Carlyle (Carlyle or city) asked the Board for a variance from three new turbidity provisions¹ of the Interim Enhanced Surface Water Treatment Rule (IESWTR) that it was not able to meet by the statutory compliance dates, December 31, 2001 and January 1, 2002. Carlyle filed the petition for variance (petition) from such turbidity requirements on July 22, 2002. The purpose in strengthening the turbidity requirements was to control microbial contamination, in particular, the protozoan *Cryptosporidium*.

Pursuant to the Illinois Environmental Protection Act (Act), the Board is charged with the responsibility of granting variances from Board regulations whenever immediate compliance with Board regulations would impose an arbitrary or unreasonable hardship on the petitioner. 415 ILCS 5/35(a). The Illinois Environmental Protection Agency (Agency) is required to appear at hearings on variance petitions. 415 ILCS 5/4(f). The Agency is also charged with the responsibility of investigating each variance petition and making a recommendation to the Board as to the disposition of the petition. 415 ILCS 5/37(a).

Carlyle seeks a variance for a period of fourteen months during which it intends to update its facility so it may come into compliance with the following three provisions of the IESWTR: filtered water turbidity limits, continuous turbidity monitoring, and the associated recordkeeping and reporting requirements. 35 Ill. Adm. Code 611.743, 611.744, and 611.745. Carlyle cannot comply with the new filtration and documenting requirements because the existing equipment is not reliable and needs to be replaced. Thus, the city cannot comply with the requirements of the IESWTR until the proposed improvements discussed below have been completed. Carlyle asks

¹ 35 Ill. Adm. Code 611.743, 611.745, and 611.745 were adopted by the Board in SDWA Update, USEPA Regulations (July 1, 1998 through December 31, 1998), R99-12 (July 22, 1999). These standards became effective on August 11, 1999, with compliance dates of December 31, 2001 for Section 611.743 (filtration) and January 1, 2002 for Sections 611.744 and 611.745 (monitoring, reporting, and recordkeeping).

the Board to allow it to continue to comply with the old turbidity standards while it makes the proposed improvements to the facility.

On Aug. 30, 2002, Carlyle filed an open waiver of decision deadline. On September 9, 2002, the Illinois Environmental Protection Agency (Agency) filed a recommendation in response to the petition. On October 18, 2002, Carlyle withdrew its request for a public hearing that it is entitled to pursuant to 35 Ill. Adm. Code 104.204(n). The Agency recommends that the variance be granted, subject to certain conditions, until April 1, 2003. Rec. at 2.

In a variance proceeding, the burden is on the petitioner to present proof that immediate compliance with Board regulations would cause an arbitrary or unreasonable hardship, which outweighs public interest in compliance with the regulations. Willowbrook Motel v. PCB, 135 Ill. App. 3d 343, 349, 350, 481 N.E.2d 1032, 1036, 1037 (1st Dist. 1977). Pursuant to Section 35(a) of the Act, the Board finds that Carlyle has presented adequate proof that immediate compliance with the Board regulations for which relief is being requested would impose such a hardship. 415 ILCS 5/35(a) (2000).

The Board grants Carlyle's requested variance, subject to certain conditions recommended by the Agency. The variance will be granted as of November 7, 2002, until April 1, 2003, for the reasons set forth below.

BACKGROUND

Carlyle received a letter from the Agency on December 18, 2001, notifying Carlyle that it was subject to Sections 611.743, 611.744, and 611.745. Pet. at 9; rec. at 11. These sections apply to public water supply systems that serve 10,000 or more people and require these systems to maintain a turbidity level of 0.3 nephelometric turbidity units² (NTU) 95% of the time, with compliance dates of December 31, 2001 and January 1, 2002. Prior to December 18, Carlyle believed it served fewer than 10,000 people, and therefore, was instead subject to Section 611.250(a)(1) of the Board's regulations. Pet. at 9. Section 611.250 requires systems to maintain a 0.5 NTU turbidity level 95% of the time.

After December 31, 2001, Carlyle could no longer remain in compliance with the newly applicable requirements and filed its variance request seven months later. Carlyle has not petitioned for, nor received, any prior variance or other relief concerning the water treatment plant at issue.

² A nephelometric turbidity unit is a measuring unit of turbidity in water determined by passing light through a sample of water and measuring the amount of light that is deflected. A device called a nephelometer is used to measure turbidity.

The Facility

Carlyle owns and operates a water treatment plant (plant) located on 151 Jefferson in Carlyle.³ Pet. at 4. The city provides drinking water to 12,209 residents within the city limits and surrounding communities.⁴ *Id.* The plant has been in existence since 1889 and currently employs five full-time operators. Pet. at 5.

The Carlyle plant is a conventional surface water filtration plant. The plant draws raw water from the Kaskaskia River, which is immediately east of the plant and immediately downstream of Carlyle Lake. Pet. at 6. Agricultural runoff from livestock farms and animal wildlife areas compose part of the water draining into the Kaskaskia River and Carlyle Lake. *Id.*

The plant uses a static rapid mixer, four upflow ballasted bed clarifiers, four dual media gravity filters utilizing anthracite over sand and support gravel, a clear well, and high service pumps. Chemical treatment includes: (1) the addition of potassium permanganate and powdered activated carbon for the control of organic compounds associated with objectionable taste and odor and total organic carbon; (2) Hyper⁺Ion 1090 and Cat Floc TL for coagulation; (3) hydrofluosilicic acid to provide fluoride ion to the drinking water as required by state statutes for dental hygiene; (4) chlorine gas for disinfection; and (5) ammonia to deliver a predominantly monochloramine residual to the distribution system. *Id.*

Carlyle has been issued various construction and operating permits in the past for making modifications to the plant. The facility also discharges process wastewater to the Carlyle Wastewater Treatment Plant. The wastewater treatment plant has a National Pollutant Discharge Elimination System (NPDES) permit. Granting the variance at issue today would not impact these permits. Pet. at 5.

Relevant Pollution Control Equipment in Use

The point at which the Carlyle plant reduces turbidity is at the four 140 square foot dual media gravity filters. The flow of water decreases in turbidity as it passes through the filter media consisting of anthracite, sand and support gravel. Such media is currently 30 inches deep at each filter. Pet. Exhibit A. Filtered water turbidity is monitored at each filter automatically and at a point representing the combined filter effluent while the plant is in operation. Turbidity is measured using Great Lakes Turbidimeters and the results are recorded on a spreadsheet. Pet. at 7.

³ Illinois Environmental Protection Agency Facility #0270300.

⁴ The Carlyle plant provides or sells water to the following areas: City of Carlyle, Clinton County East Public Water District, Village of Keyesport, FMC Water Company, Village of Breckemeyer, Hoffman Rural Water District, Carlyle Southwest Water Public District, and the Carlyle North Water Company, Inc.

Carlyle is currently unable to continually document the turbidity levels at each filter because the existing equipment (nephelometers) is unreliable and needs to be replaced. Additionally, the chart recorders in place cannot provide turbidity readings at 15-minute intervals as required by Section 611.744. *Id.*

Cryptosporidium

The Illinois Department of Public Health (IDPH) has no record of any outbreak of *Cryptosporidium* in any Illinois public water in the last 25 years since *Cryptosporidium* was discovered. Rec. Exhibit A. Furthermore, the IDPH has no knowledge of any outbreak of waterborne disease at the Carlyle water treatment plant. Pet. at 10.

APPLICABLE REGULATIONS

Carlyle seeks a variance from 35 Ill. Adm. Code 611.743, 611.744, and 611.745:

35 Ill. Adm. Code 611.743 states in pertinent part:

- (a) Conventional filtration treatment or direct filtration.
 - (1) For a supplier using conventional or direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 0.3 NTU in at least 95 percent of the measurements taken each month, measured as specified in Sections 611.531 and 611.533.

Section 611.744 states in full:

Section 611.744 Filtration Sampling Requirements

- (a) Monitoring requirements for systems using filtration treatment. In addition to monitoring required by Sections 611.531 and 611.533, a [public water supply] PWS subject to the requirements of this Subpart that provides conventional filtration treatment or direct filtration shall conduct continuous monitoring of turbidity for each individual filter using an approved method in section 611.531(a) and shall calibrate turbidimeters using the procedure specified by the manufacturer. Systems shall record the results of individual filter monitoring every 15 minutes.
- (b) If there is a failure in the continuous monitoring equipment, the system shall conduct grab sampling every four hours in lieu of continuous monitoring, until the turbidimeter is back online. A system shall repair the equipment within a maximum of five working days after failure.

Section 611.745 imposes reporting and recordkeeping requirements regarding the data obtained by the turbidimeters and states in pertinent part:

In addition to the reporting and recordkeeping requirements in Sections 611.261 and 611.262, a PWS supplier subject to the requirements of this Subpart that provides conventional filtration treatment or direct filtration must report monthly to the Agency the information [relating to turbidity measurements and individual filter monitoring specified in subsection (a), (b), and (c) of this section] . . . [.]

COMPLIANCE PLAN

Carlyle has outlined a detailed compliance plan. In order to achieve compliance, Carlyle must install accurate recording nephelometers on each individual filter, and on the combined effluent, with the Supervisory Controls and Data Acquisition (“SCADA”) system modified for continuous monitoring and 15 minute reporting of the filtered water turbidity. Pet. at 10. Additionally, Carlyle will improve filtering efficiency to meet IESWTR standards by replacing the two filter backwash water supply valves with slower closing valves. Id. Carlyle will also reprogram the filter control PLC to maximize filter performance and purge air trapped in the filters that has been causing short circuits and high turbidity. Finally, Carlyle will replace the dual sand and anthracite filter media in all four filters that was lost due to the rapidly opening valves. Id. Carlyle will replace the media in filters 2, 3 and 4 as it was. Carlyle also agreed that it will replace the media in filter 1 with 12 inches of filter sand and 15 inches of granular activated carbon (GAC) in accordance with Agency recommendations (see 35 Ill. Adm. Code 602.115), as opposed to 9 inches of filter sand and 18 inches of GAC as found in petitioner’s construction permit. Rec. at 7. It would take about 90 days for the Agency permit review and approximately 9 months for Carlyle to obtain and install the requisite equipment. Carlyle estimates the project cost at \$36,600. Pet. at 12; rec. at 8. The cost estimates Carlyle provides actually add up to a total of \$38,600.

THE REQUESTED VARIANCE AND AGENCY RECOMMENDATION

Carlyle’s petition seeks relief from Sections 611.743, 611.744, and 611.745 of the Board’s rules. 35 Ill. Admin. Code 611.743, 611.744, 611.745. Pet. at 15-16. Section 611.743 requires a turbidity level of less than or equal to 0.3 NTU 95% of the time, compared to 0.5 NTU 95% of the time before this rule was amended. Section 611.744 requires continuous monitoring of turbidity for each individual filter, and Section 611.745 requires that results collected with the previous two sections are reported monthly and that the records are kept for at least three years.

Carlyle seeks a variance consistent with the current Section 611.250(a)(1), to which it was subject prior to January 1, 2002. Carlyle states it will continue to comply with the 0.5 NTU turbidity level found therein. Pet. at 14.

Carlyle seeks the variance beginning January 1, 2002 and ending March 1, 2003. The Agency recommends the variance be granted until April 1, 2003, in order to give the Agency 90 days to review Carlyle’s construction permit application. Rec. at 2.

The Agency recommends that the Board grant the requested variance but also require Carlyle to comply with the following additional conditions while it is updating its facility: (1) Carlyle must take all reasonable measures with existing equipment to minimize the level of turbidity in its finished water until it reaches full compliance; (2) Carlyle must produce finished

water that meets the new 0.3 NTU turbidity level 45% of the time in accordance with the analytical and sampling requirements found at 35 Ill. Adm. Code 611.531 and 35 Ill. Adm. Code 611.533; (3) Carlyle must comply with the monitoring and recordkeeping requirements in 35 Ill. Adm. Code 611.745(c)(1), which require Carlyle to contact the Agency by the end of the next business day anytime the turbidity exceeds 1 NTU; (4) Carlyle must replace the filter media in filter 1 with 12 inches of filter sand and 15 inches of GAC, rather than 9 inches of filter sand and 18 inches of GAC; and (5) Carlyle must provide written progress reports to the Agency's Division of Public Water Supplies, Field Operations Section, the first of which is due 90 days after the grant of the variance. Rec. at 14-15.

HARDSHIP

Carlyle argues that the amount of hardship resulting from a denial of the requested variance outweighs any injury to the public or environment should the Board grant this variance. In its consideration of a variance, the Board is required, pursuant to Section 35(a) of the Act, to determine whether the petitioner has presented adequate proof that it would suffer an arbitrary or unreasonable hardship if required to comply with the Board's regulation at issue. 415 ILCS 5/35(a) (2000). In order to comply with the Board's 0.3 NTU turbidity requirement at 35 Ill. Adm. Code 611.743, Carlyle must improve filter efficiency by replacing the two backwash feed valves; replacing the filter media; and modifying the filter control cycle to include backwash bumping. Rec. at 6.

To meet the monitoring and recordkeeping requirements in Sections 611.744, and 611.745 of the Board's regulations, Carlyle must install new continuous turbidity monitors on each individual filter, with the SCADA system modified for continuous monitoring and 15-minute reporting. Rec. at 7. The costs of making the above improvements will cost Carlyle an estimated \$39000. Rec. at 8.

ENVIRONMENTAL IMPACT

When deciding to grant or deny a variance petition, the Board is required to balance the petitioner's hardship in complying with Board regulations against the impact that the requested variance will have on human health and the environment. Monsanto Co. v. PCB, 67 Ill. 2d 276, 292, 367 N.E.2d 684, 691 (1977).

In guarding against microbial contamination of drinking water, the fewer the number of particulates present in the water, the less statistical chance consumers have of contracting a waterborne disease. Pet. at 13. The current IESWTR requires a 99% (2 log) removal rate of *Cryptosporidium* and automatically gives the 2 log removal credit to conventional treatment plants with combined filter water turbidities of 0.30 NTU or less. If an individual ingests a single viable *Cryptosporidium* oocyst, the individual has about a 0.5% chance of contracting Cryptosporidiosis. Pet. at 13; 63 Fed. Reg. 69484.

There has been no recorded outbreak of *Cryptosporidium* in the past 25 years, and there is no reported outbreak of any waterborne disease originating from the Carlyle plant. Thus, the Agency believes continual compliance with the 0.5 NTU turbidity level required by 35 Ill. Adm.

Code 611.250(a)(1) during the life of the variance poses no significant injury to public health or the environment. Rec. at 9-10.

CONTAMINANT RESPONSE PLAN

Carlyle has created a response plan should *Cryptosporidium* be detected in the City of Carlyle's treated water. First, the city would issue a system-wide "boil order" to inform customers of the presence of contaminants. Pet. at 14. Carlyle would recommend that customers boil water before ingestion. The "boil order" would remain effective until tests show that microbial contaminants no longer exist in the treated water. Pet. at 14. Second, the City would analyze the water treatment process to determine the cause of the contamination, followed by remedial action to correct the process failure.

CONSISTENCY WITH FEDERAL LAW

Both Carlyle and the Agency state that granting the variance is consistent with federal law. Pet. at 14; rec. at 13. In accordance with Section 35 of the Act, the Board may grant a variance only where it is consistent with federal law. 415 ILCS 5/35 (2000). The Safe Drinking Water Act provides that states may allow up to two years to comply with a maximum contaminant level or treatment technique if additional time is necessary for capital improvements. 42 U.S.C. 300g-I(b)(10); pet. at 16; rec. at 12-13. The modifications Carlyle must make at the water treatment plant constitute a major improvement. Therefore, the Board agrees that allowing Carlyle a variance while it purchases and installs new equipment and software that will bring it into compliance with the IESWTR is consistent with federal law.

RETROACTIVE VARIANCES

Carlyle requests a variance beginning January 1, 2002, which would be a retroactive variance. The Agency supports Carlyle's retroactive variance request. The Board has previously considered requests for retroactive variances, and as a general rule, absent unusual or extraordinary circumstances, the Board renders a variance as effective on the date of the Board order in which it grants the variance. LCN Closers, Inc. v. IEPA, PCB 89-27 (July 27, 1989). A petitioner must file a petition for variance at least 120 days prior to that date it wishes the variance to begin. 415 ILCS 5/38(a); 35 Ill. Adm. Code 104.232.

As a matter of law, a variance is not retroactive and the Board does not grant retroactive variances unless such relief is specially justified. Deere & Co. v. IEPA, PCB 88-22 (Sept. 8, 1988). Also, the Board generally will not apply a variance retroactively if the petitioner's hardship is self-imposed as a result of the petitioner's inactivity or faulty decision-making. Marathon Oil Co. v. IEPA, PCB 95-150 (May 16, 1996).

Carlyle states it was not aware that the Carlyle Water Treatment Plant served more than 10,000 customers and, consequently, was unaware that the turbidity standards at issue were applicable to its facility. The Carlyle water treatment plant actually serves 12,209 residents. Pet. at 4. The Board finds that this oversight is a result of Carlyle's inactivity and lack of diligence in determining whether these new regulations were to affect Carlyle's facility. Furthermore, Carlyle did not request a provisional variance nor did Carlyle file the instant petition for variance

until seven months after it knew it must comply with the new regulations. The Board will not grant Carlyle a retroactive variance as it requests, but will instead grant the variance effective as of the date of this order.

DISCUSSION

The Board grants Carlyle a variance from Sections 611.743, 611.744, and 611.745 of the Board rules. This variance will allow Carlyle to continue to comply with the current, less stringent turbidity requirements while Carlyle updates its water treatment plant at a cost of roughly \$39,000 to achieve compliance with the lower turbidity requirements. Maintaining the current turbidity levels will not increase the risk of *Cryptosporidium*, and should an outbreak occur, Carlyle has a response plan in place that includes issuing a “boil order” to its customers, a system-wide process analysis, and taking immediate action to remediate the process failure. The Board, in agreement with the Agency, believes that granting the variance will pose no significant threat to public health or the environment.

There is only one discrepancy between the petition for variance and the Agency’s recommendation: the length of the variance. Carlyle requests that the variance be granted until March 1, 2003, however, the Agency recommends the variance be granted until April 1, 2003, so the Agency may have additional time to review Carlyle’s construction application. The Board finds this extra time is reasonable. The term of this variance will be from November 7, 2002 through April 1, 2003.

This order does not relieve Carlyle of its duty to contact the Agency should turbidity levels surpass 1 NTU or its responsibility to minimize the levels of turbidity in its finished drinking water until it reaches full compliance.

CONCLUSION

The Board finds that if this variance petition is not granted, Carlyle will incur an arbitrary or unreasonable hardship. Therefore, the Board grants Carlyle’s petition for variance, subject to the conditions recommended by the Agency.

This constitutes the Board's findings of fact and conclusions of law.

ORDER

The City of Carlyle is hereby granted a variance from 35 Ill. Adm. Code 611.743, 611.744, and 611.745, from November 7, 2002 to April 1, 2003, subject to the following conditions:

1. Carlyle must take all reasonable measures to minimize the level of turbidity in its finished drinking water until full compliance is reached.
2. Carlyle’s finished drinking water must meet the turbidity level of 0.3 NTU set forth in Section 611.743(a)(1) in at least 45 percent of the measurements taken

each month as specified in 35 Ill. Adm. Code 611.531 and 35 Ill. Adm. Code 611.533.

3. Carlyle must continue to comply with 35 Ill. Adm. Code 611.250(a)(1), which requires a 0.5 NTU turbidity level in at least 95 percent of the measurements taken each month.
4. Carlyle must comply with the monitoring and recordkeeping requirements in 35 Ill. Code 611.745(c)(1).
5. Carlyle must replace the filter media in all four filters, and specifically in filter 1 with 12 inches of filter sand and 15 inches of GAC, rather than with nine inches of filter and sand and 18 inches of GAC, as stated in Carlyle's construction permit application.
6. Every three months Carlyle must provide written progress reports to the Agency's Division of Public Water Supplies, Field Operations Section concerning steps taken to replace the backwash feed valves; replace the filter media; modify the filter control cycle; install continuous turbidity monitors and modify the SCADA system. The first of these reports will be due 90 days after the grant of the variance.

IT IS SO ORDERED.

If petitioner chooses to accept this variance, within 45 days after the date of this opinion and order, petitioner shall execute and forward to:

Vera Herst
Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Mail Code #21
Springfield, IL 62794-9276

a certificate of acceptance and agreement to be bound by all the terms and conditions of the granted variance. The 45-day period shall be held in abeyance during any period that this matter is appealed. Failure to execute and forward the certificate within 45 days renders this variance void. The form of the certificate is as follows:

CERTIFICATE OF ACCEPTANCE

The City of Carlyle, having read the opinion and order of the Illinois Pollution Control Board in PCB 03-11, dated November 7, 2002, accepts and agrees to be bound by all terms and conditions found therein.

Petitioner

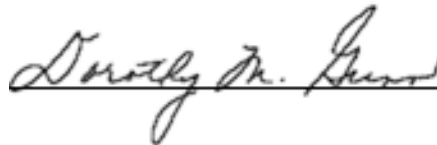
By: Authorized Agent

Title

Date

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2000); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, 102.702.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on November 7, 2002, by a vote of 6-0.

A handwritten signature in cursive script, reading "Dorothy M. Gunn", written over a horizontal line.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board