ILLINOIS POLLUTION CONTROL BOARD
June 5, 2018

IN THE MATTER OF:)
)
PROPOSED SITE-SPECIFIC RULE FOR   )   R14-24
SANITARY DISTRICT OF DECATUR   )   (Site-Specific Rule - Water)
FROM 35 ILL. ADM. CODE 302.208(e)   )

HEARING OFFICER ORDER

On November 30, 2017, the Sanitary District of Decatur (District) filed an amended petition for a site-specific rule. The District proposes an alternative chronic water quality standard for nickel for a segment of the Sangamon River receiving discharges from its Main Sewage Treatment Plant. The Board held a hearing on the District's proposal on May 16, 2018, and received the transcript (Tr.) on May 23, 2018.

During the hearing, the District agreed to provide four specific items of additional information to the Board by June 15, 2018. Tr. at 86-87. The Board anticipated that the additional information might generate follow-up questions, and the District agreed to a seven-day deadline for the Board to submit those question. *Id.* at 88. The District responded on May 31, 2018 (Resp.), stating that it responded early to elicit any Board questions by June 7, 2018. Resp. at 1.

The Board has reviewed the District's May 31, 2018 response. The attachment to this hearing officer order includes a request for clarification. The Board requests that the District file its response within 14 days, on or before June 19, 2018.

IT IS SO ORDERED.

Timothy Fox, Hearing Officer
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The Decatur Sanitary District's May 31, 2018 response to Question 23 by Mr. Robert Santore included equations for the Illinois Chronic Nickel Water Quality Standard and derivations used to arrive at the proposed site-specific water quality standard.

The Board questions whether word processing limitations for equations may have prevented some of the equations from appearing precisely as intended. Also, the equation for the Illinois Chronic Nickel Water Quality Standard did not include the conversion factor multiplier for dissolved metals of 0.997. Resp. at 2. As a result, the calculation of the expected NPDES permit limit appears to be slightly lower at 0.03806 mg/L instead of the previously calculated 0.03820 mg/L. For clarification below, the Board repeats the District's equations with minor adjustments. In addition, the Board adds the units of measurement (μg/L), a significant digit, and the term "Water Effect Ratio" to the proposed language.

The Board requests that the District file a response on or before June 19, 2018, indicating whether the equations and proposed language below appear accurately and reflect the District's intent. If they do not, the Board requests that the District respond by proposing revisions.

35 Ill. Adm. Code 302.208(e): Numeric Water Quality Standards for the Protection of Aquatic Organisms

Nickel (Dissolved), Chronic Water Quality Standard (μg/L) $= e^{[A + B\, ln(H)]} \times 0.997*$

where
A $= -2.286$
B $= 0.8460$
e^x $=$ base of natural logarithms raised to the x-power
ln(H) $=$ natural logarithm of Hardness
* $=$ conversion factor multiplier for dissolved metals

Nickel (Dissolved), Chronic Water Quality Standard (μg/L) $= e^{[-2.286 + 0.8460\, ln\,(H)]} \times 0.997$

Resp. at 2.

20% Effect Concentration for Nickel (Ni EC$_{20}$)

$Ni\ EC_{20} = 10^{[0.3260 \times log_{10}(DOC) + 0.9215]}$

where
EC_{20} $=$ 20% Effect Concentration
DOC $=$ Dissolved Organic Carbon (mg/L)

Resp. at 2-3; Exh. 28 at 5.

Water Effect Ratio for Nickel (Ni WER)

Ni WER $= \dfrac{\text{Ni effect in site water}}{\text{Ni effect in reference water}}$

$$\text{Ni WER} \quad = \frac{10^{[0.3260 \times \log_{10}(8.33) + 0.9215]}}{10^{[0.3260 \times \log_{10}(0.5) + 0.9215]}} \quad = 2.50$$

Resp. at 3.

Site-Specific Nickel Chronic Water Quality Standard (dissolved)
= Illinois Nickel Chronic Water Quality Standard (dissolved) × Ni WER

$$(\mu g/L) = \left[e^{[-2.286 + 0.8460\, ln\,(H)]} \times 0.997 \right] \times \left[\frac{10^{[0.3260 \times \log_{10}(8.33) + 0.9215]}}{10^{[0.3260 \times \log_{10}(0.5) + 0.9215]}} \right]$$

$$(\mu g/L) = \left[e^{[-2.286 + 0.8460\, ln\,(H)]} \times 0.997 \right] \times \quad 2.50$$

Resp. at 3.

Equation for Anticipated Total Nickel NPDES Permit Limit (µg/L)

$$(\mu g/L) = \left[e^{[-2.286 + 0.8460\, ln\,(359)]} \times 0.997 \right] \times \left[\frac{10^{[0.3260 \times \log_{10}(8.33) + 0.9215]}}{10^{[0.3260 \times \log_{10}(0.5) + 0.9215]}} \right] \; / \; 0.966 = 38.06 \; \mu g/L$$

Resp. at 3.

Proposed Site Specific Rule Language

Section 303.410 Chronic Nickel Water Quality Standard for Segment of the Sangamon River

The general use chronic water quality standard for dissolved nickel contained in Section 302.208(e) shall not apply to the segment of the Sangamon River, which receives discharges from the Sanitary District of Decatur's Main Sewage Treatment Plant, from that facility's Outfall 001 located at 39° 49' 56" North Latitude, 89° 0' 7" West Longitude, to the point of the confluence of the Sangamon River with the South Fork of the Sangamon River near Riverton. Instead, waters in this segment of the Sangamon River must meet a chronic water quality standard for dissolved nickel as follows:

Chronic Dissolved Nickel Standard (µg/L) = exp[A+Bln(H)] x 0.997* x WER, where A = -2.286, B = 0.8460, ln(H) = natural logarithm of Hardness, * = conversion factor multiplier for dissolved metals, and WER (Water Effect Ratio) = 2.50