UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JAN 21 2011

REPLY TO THE ATTENTION OF:
WN-16J

Marcia Willhite, Chief
Bureau of Water
Illinois Environmental Protection Agency
Post Office Box 19276
Springfield, Illinois 62794-9276

Dear Ms. Willhite:

As you are aware, point source discharges of phosphorus and nitrogen (nutrients) to surface water can cause aquatic plants and algae to become a nuisance, produce toxic cyanobacteria, and increase water treatment costs. In addition, plant and algal respiration and decomposition can reduce oxygen below levels that are safe for fish and aquatic life. The U.S. Environmental Protection Agency has become increasingly concerned about the impact of nutrients on water quality, including impacts downstream from outfall locations.

EPA recently reviewed our files for more than 20 Illinois point sources (list enclosed). The files generally contain permit applications, fact sheets, and National Pollutant Discharge Elimination System (NPDES) permits for the sources. In all cases, the review indicated that the Illinois Environmental Protection Agency (Illinois EPA) did not evaluate permit application data to determine whether the discharge of nutrients may cause or contribute to an excursion beyond the water quality criteria at 35 Ill. Adm. Code 302.203 (providing that waters of the State shall be free from, among other conditions, plant or algal growth of other than natural origin), 35 Ill. Adm. Code 302.205 (pertaining to phosphorus in certain reservoirs and lakes), or 35 Ill. Adm. Code 302.206 (pertaining to dissolved oxygen)[1].

Sections 301 and 402 of the Clean Water Act (CWA) require NPDES permits to include effluent limitations as needed for discharges to meet water quality standards. The regulation at 40 CFR § 122.44(d), made applicable to states by 40 CFR § 123.25(a), implements these sections by requiring a permit-issuing agency to: (1) determine whether point source discharges will cause, have a reasonable potential to cause, or contribute to an excursion beyond applicable water quality criteria; and (2) set water quality-based effluent limitations in permits when the agency makes an affirmative determination. The regulation applies whether the relevant criteria are expressed numerically or in a narrative fashion. For narrative criteria including, but not limited to, the criterion at 35 Ill. Adm. Code 302.203, the regulation provides three methods for setting numeric effluent limitations in permits:

[1] The criterion at 35 Ill. Adm. Code 302.210, providing that waters shall be free from substances in concentrations that alone or in combination with others that are toxic or harmful to human health, or to animal, plant, or aquatic life, may also apply when evaluating nutrients.

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1. Calculate a criterion based on a proposed State criterion or an explicit State policy or regulation interpreting its narrative criterion;
2. Set the limit based on EPA's CWA section 304(a) recommended criteria supplemented, where necessary, by other relevant information; or
3. Set the limit on an indicator parameter.

EPA expects that Illinois EPA will follow 40 CFR § 122.44(d) when it develops permits for nutrient discharges. Specifically, Illinois EPA must: (1) determine whether nutrient discharges will cause, have a reasonable potential to cause, or contribute to an excursion beyond the criteria in 35 Ill. Adm. Code 302.203 or 302.205 in proximate and downstream waters; and (2) set nutrient effluent limitations which are derived from and comply with 35 Ill. Adm. Code 302.203 and 302.205, as applicable, when it makes an affirmative determination. In addition, Illinois EPA must: (1) determine whether nutrients, either alone or in combination with carbonaceous biochemical oxygen demand (CBOD) and ammonia, will cause, have a reasonable potential to cause, or contribute to an excursion beyond the criteria in 35 Ill. Adm. Code 302.206 in proximate and downstream waters; and (2) set nutrient effluent limitations which, either alone or in combination with limits on CBOD, ammonia, and/or dissolved oxygen, are derived from and comply with 35 Ill. Adm. Code 302.206 when it makes an affirmative determination.

Currently, we are working with you on permits for certain of the treatment plants operated by the Metropolitan Water Reclamation District for Greater Chicago. Beginning not later than July 1, 2011, EPA will review additional NPDES permits under section 402(d) of the CWA and 40 CFR § 123.44 to confirm that Illinois EPA is fulfilling the requirements described above. Under these provisions, EPA can provide comments or recommendations on, or object to, NPDES permits. A State cannot issue a permit in the face of an EPA objection. On December 20, 2010, EPA's NPDES Programs Branch and Illinois EPA's Permits Section agreed to the major permits that EPA would review in federal fiscal year 2011. In addition to these permits, we ask Illinois EPA to provide to EPA for review any permits it develops after June 30, 2011, for new or expanding major dischargers of nutrients.

When making determinations, 40 CFR § 122.44(d) requires permit-issuing agencies to use procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and, where appropriate, the dilution of the effluent with the receiving waters. EPA asks Illinois EPA to establish procedures that it will use when making determinations relative to nutrient discharges and 35 Ill. Adm. Code 302.203, 302.205, and 302.206, and to provide a draft of the procedures to EPA for review by April 15, 2011. In addition to addressing the topics identified in the first sentence of this paragraph, we ask that the procedures identify the method that Illinois EPA will use to set effluent limits based on a numeric expression of the 35 Ill. Adm. Code 302.203 criterion. Through a review and subsequent dialogue, we hope to reach agreement with Illinois EPA on the final procedures and method, thereby reducing the possibility that EPA may object to Illinois EPA permits. Within 30 days, please confirm that Illinois EPA will provide draft procedures and a method by the date requested.

In 2003, Illinois EPA said it would recommend that the Illinois Pollution Control Board adopt, by 2008, numeric nutrient criteria for waters other than reservoirs and lakes. Illinois EPA

subsequently revised that commitment to December 2010. To date, Illinois EPA has not submitted numeric nutrient criteria recommendations to the Board. It appears that Illinois will not be in a position to propose or adopt numeric nutrient criteria in the near future.

EPA is committeed to working with Illinois EPA to protect Illinois waters from nutrient pollution. The enclosed materials may be helpful in this regard. If you have any questions, please contact me or Kevin Pierard, Chief, NPDES Programs Branch, at (312) 886-4448.

Sincerely,

Tinka G. Hyde
Director, Water Division

Enclosures

Some References for Setting Nutrient Effluent Limitations

Permits, practices or rules

U.S. EPA Region 1 NPDES Program
Draft NPDES permits and fact sheets:
http://www.epa.gov/region1/npdes/draft_permits_listing_ma.html
Final NPDES permits and fact sheets:
http://www.epa.gov/region1/npdes/permits_listing_ma.html

Michigan DNRE

Phosphorus Limits and Implementation in Michigan. Power point presentation at Region 5-State NPDES meeting, May 4, 2010.

Sorrano, et al., 2008. *A framework for developing ecosystem-specific nutrient criteria: Integrating biological thresholds with predictive modeling.* Limnol. Oceanogr., 43(2): 773-787.

Wisconsin DNR
Chapter NR 217 Wisconsin Administrative Code, Effluent Standards and Limitations For Phosphorus. http://legis.wisconsin.gov/rsb/code/nr/nr217.pdf

Ohio EPA
Association Between Nutrients, Habitat, and the Aquatic Biota in Ohio Rivers and Streams. Ohio EPA Technical Bulletin MAS/1999-1-1, available at: http://www.epa.state.oh.us/portals/35/documents/assoc_load.pdf

Models

Dynamic models
SPARROW:
http://water.usgs.gov/nawqa/sparrow/

AQUATOX:
http://www.epa.gov/waterscience/models/aquatox/

Klamath River TMDL Models:
http://www.swrcb.ca.gov/northcoast/water_issues/programs/tmdls/klamath_river/100927/staff_report/04_Ch3_Analytic_Approach.pdf

CE-QUAL-W2:
http://www.ecy.wa.gov/biblio/0403006.html

Physical models

MERL:

http://www.gso.uri.edu/merl/merl.html

Steady-State models

Great Bay:

http://des.nh.gov/organization/divisions/water/wmb/coastal/documents/gb_nitro_load_analysis.pdf

BATHTUB:

http://www.wes.army.mil/el/elmodels/emiinfo.html

http://cwam.ucdavis.edu/pdfs/BATHTUB.pdf

QUAL 2K:

http://www.epa.gov/athens/wwqtsc/html/qual2k.html

http://www.epa.gov/athens/wwqtsc/QUAL2K.pdf

Vollenweider:

http://www.lwa.org/des_report/htm/vollenweiderphosphorusloadingandsurfaceoverflowraterelationship.htm

Water quality criteria:

EPA Gold Book Quality Criteria For Water 1986:

http://www.epa.gov/waterscience/criteria/goldbook.pdf

EPA recommended CWA Section 304(a) numeric nutrient criteria:

http://water.epa.gov/scitech/swguidance/waterquality/standards/criteria/aqlife/pollutants/nutrient/