



REGION 2

NEW YORK, N.Y. 10007

January 29, 2024

Mr. Victor Poretti, Director
Division of Water Monitoring, Standards and Pesticide Control
New Jersey Department of Environmental Protection
401 East State Street
P.O. Box 420
Trenton, New Jersey 08625-0420

Dear Mr. Poretti:

The New Jersey Department of Environmental Protection (NJDEP) conducted a triennial review of the New Jersey Surface Water Quality Standards (NJSWQS) and, as a result, on August 7, 2023, adopted new and revised water quality standards (WQS), at N.J.A.C. 7:9B-1.1, 1.4, 1.5, 1.14; and 1.16. On August 21, 2023, pursuant to Section 303(c) of the Clean Water Act (CWA), 33 U.S.C. § 1313(c), and EPA's implementing regulations, at 40 CFR Part 131, New Jersey submitted these new and revised WQS to EPA for review. The submission was accompanied by a letter, dated August 15, 2023, from the New Jersey Deputy Attorney General Cloe Gogo, certifying that the new and revised WQS were adopted in accordance with New Jersey law.

Following NJDEP's original August 21, 2023, submission to EPA, on November 14, 2023, NJDEP filed a notice of administrative correction to its SWQS, at N.J.A.C. 7:9B-1.14(d)1, with the New Jersey Office of Administrative Law. This administrative correction corrected NJDEP's inadvertent drafting errors, which were found during EPA's review of NJDEP's amendments to its SWQS. In a letter, dated November 15, 2023, NJDEP notified EPA of this administrative correction and indicated that the correction became effective upon filing of the notice with the New Jersey Office of Administrative Law.

EPA completed its review of these new and revised WQS and considered the following documents in its review:

1. A letter, dated August 15, 2023, from the New Jersey Deputy Attorney General Cloe Gogo, certifying that the standards were duly adopted pursuant to New Jersey law;
2. The notice of proposed rulemaking, published on July 5, 2022, in the New Jersey Register. This notice included a notification of the public hearing;

3. The notice of adoption of final rulemaking, published on August 7, 2023, in the New Jersey Register. This notice included New Jersey's responses to public comments received on the proposed rulemaking; and,
4. The notice of Administrative Correction, filed with the New Jersey Office of Administrative Law on November 14, 2023.

These new and revised WQS enhance and improve the NJSWQS program, and include:

1. Revised bacteria water quality criteria for primary contact recreation, at N.J.A.C. 7:9B-1.14(d)1, based on EPA's 2012 CWA Section 304(a)¹ recommendations;
2. Revised freshwater ammonia water quality criteria for aquatic life, at N.J.A.C. 7:9B-1.14(e), based on EPA's 2013 CWA 304(a)² recommendations;
3. A new subchapter, at N.J.A.C. 7:9B-1.16 (Enclosure 1), to establish provisions for the development, adoption, and implementation of water quality standards (WQS) variances, based on EPA regulations, at 40 C.F.R. 131.14;
4. Revisions to the total phosphorus water quality criteria, at N.J.A.C. 7:9B-1.14(d)4, consistent with New Jersey's nutrient policies, at N.J.A.C. 7:9B-1.5(g)2;
5. New definitions, at N.J.A.C. 7:9B-1.4, for a "Water Quality Standards Variance" and "Statistical Threshold Value;"
6. Revisions to "Scope of subchapter," at N.J.A.C. 7:B-1.1, to include procedures for establishing water quality standards variances, within the scope of the NJSWQS; and,
7. Revisions to "Statements of Policy," at N.J.A.C. 7:B-1.5c(8) and (10), to include water quality standards policies related to the revised water quality criteria for bacteria and freshwater total ammonia.

Along with the above, New Jersey revised its New Jersey Pollutant Discharge Elimination System (NJPDES) Rules, at N.J.A.C. 7:14A-11.7(e), to include a reference to the new subchapter on WQS variances, at N.J.A.C. 7:9B-1.16, (#3 above). Because this revision is not a new or revised WQS, EPA is not acting on the revision under CWA section 303(c).

In its notice of proposed rulemaking, published in the New Jersey Register on July 5, 2022, NJDEP provided notification of a public hearing to receive public input and comment on the proposed rulemaking. The public hearing was held on August 3, 2022.

¹ <http://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf>

² <https://www.epa.gov/sites/default/files/2015-08/documents/aquatic-life-ambient-water-quality-criteria-for-ammonia-freshwater-2013.pdf>

Based on EPA's review of NJDEP's new and revised WQS and NJDEP's procedures to adopt the new and revised WQS, the following new and revised WQS are consistent with the CWA and EPA's implementing regulations, and are approved by EPA, pursuant to Section 303(c) of the CWA and 40 CFR Part 131.

1. *Revised bacteria water quality criteria for primary contact recreation (counts/100 ml and calculated based on 32 illnesses per 1000 individuals), at N.J.A.C. 7:9B-1.14(d)1ii (added language below in **bold**);*

Enterococci levels in SE1 and SC waters "shall not exceed a geometric mean of **30/100 ml** over a **90-day period**, and a **Statistical Threshold Value of 110/100 ml, which shall not be greater than 10 percent excursion frequency over a 90-day period.**"

E. Coli levels in all FW2 waters "shall not exceed a geometric mean of **100/100 ml over a 90-day period** and a **Statistical Threshold Value of 320/100 ml, which shall not be greater than 10 percent excursion frequency over a 90-day period.**"

In summary, NJDEP adopted revised primary contact recreation water quality criteria for pathogen indicators enterococcus and *E. coli*, including an updated geometric mean and new statistical threshold value (STV). These criteria are consistent with EPA's 2012 CWA Section 304(a) recommended recreational water quality criteria and the requirements of 40 C.F.R. 131.11(a)(1).

As noted above, after adoption, an error was found in the regulatory text: an "or" was included instead of an "and" for both the enterococci and *E.Coli* criteria. Specifically, the adopted language stated:

"Enterococci levels shall not exceed a geometric mean of 30/100 ml over a 90-day period, or a Statistical Threshold Value of 100/100 ml..."; and,

"*E. coli* levels shall not exceed a geometric mean of 100/100 ml over a 90-day period or a Statistical Threshold Value of 320/100 ml..."

Consistent with proposed and final N.J.A.C. 7:9B-1.5(c)8, as well as the preambles to the proposed and final rules, NJDEP's intent was and is clear - both the geometric mean and STV are applicable components of these criteria. Accordingly, NJDEP filed a notice of administrative correction with the New Jersey Office of Administrative Law which included the correction to the regulatory text. The corrected regulatory text states:

"Enterococci levels shall not exceed a geometric mean of 30/100 ml over a 90-day period, and a Statistical Threshold Value of 100/100 ml..."; and

"*E. coli* levels shall not exceed a geometric mean of 100/100 ml over a 90-day period and a Statistical Threshold Value of 320/100 ml..."

2. Revised freshwater ammonia water quality criteria for aquatic life, at N.J.A.C. 7:9B-1.14(e)

NJDEP's revised freshwater ammonia criteria are expressed as formulas and in milligrams/liter. Because ammonia toxicity is dependent on temperature (T) and pH, the formulas incorporate these variables. These criteria are consistent with EPA's 2013 CWA Section 304(a) recommended freshwater ammonia criteria and the requirements of 40 C.F.R. 131.11(a)(1).

EPA's 2013 CWA Section 304(a) recommended ammonia criteria are recommended for pH values between 6.5 and 9.5. New Jersey's Pineland (PL) waters' established pH criteria range is between 3.5 and 5.5. As a result, EPA's 2013 CWA Section 304(a) recommended ammonia criteria are not appropriate for nor applicable to those PL waters that are fresh water. NJDEP's revised freshwater ammonia criteria are as follows:

"(2) Ammonia, Total (mg TAN/L) - Acute criteria are expressed as one-hour average using MA1CD10 flow, chronic criteria are expressed as 30-day rolling average using MA30CD10 flow and the highest four-day average within the 30-day averaging period should not be more than 2.5 times of chronic criteria. No exceedance of criteria shall be permitted at or above the design flows specified."

Ammonia, total (mg TAN/L)	7664-41-7	Criteria applicable in FW2 waters	Classifications
		i. $\text{MIN} \left(\left(\frac{0.275}{1+10^{7.204-\text{pH}}} + \frac{39.0}{1+10^{\text{pH}-7.204}} \right), \left(0.7249 \times \left(\frac{0.0114}{1+10^{7.204-\text{pH}}} + \frac{1.6181}{1+10^{\text{pH}-7.204}} \right) \times (23.12 \times 10^{0.036 \times (20-T)}) \right) \right) \text{ (acute)}$	FW2-TP, FW2-TM
		ii. $0.7249 \times \left(\frac{0.0114}{1+10^{7.204-\text{pH}}} + \frac{1.6181}{1+10^{\text{pH}-7.204}} \right) \times \text{MIN}(51.93, 23.12 \times 10^{0.036 \times (20-T)}) \text{ (acute)}$	FW2-NT
		iii. $0.8876 \times \left(\frac{0.0278}{1+10^{7.688-\text{pH}}} + \frac{1.1994}{1+10^{\text{pH}-7.688}} \right) \times (2.126 \times 10^{0.028 \times (20-\text{MAX}(T,7))}) \text{ (chronic)}$	All FW2

3. A new subchapter, at N.J.A.C. 7:9B-1.16, to establish authorizing provisions for New Jersey to develop, adopt, and implement WQS variances

This subchapter includes provisions that are consistent with the provisions in 40 C.F.R. 131.14. This subchapter also includes the following additional New Jersey-specific requirements:

N.J.A.C. 7:9B-16(b)(5): "A WQS variance requested by a new or expanded permittee for an aquatic life criterion specified at N.J.A.C. 7:9B-1.14 that would likely jeopardize the continued existence of any endangered or threatened species, as listed at section 7 of the Federal Endangered Species Act of 1973 (16 U.S.C. §§ 1531 et seq.) or result in the destruction or adverse modification of such species' critical habitat shall not be granted."

N.J.A.C. 7:9B-16(c): "A permittee requesting a WQS variance to satisfy one of the conditions listed at (b)4 above must submit the following:"

"1. Ambient, influent, and effluent data collected, in accordance with a Department-approved quality assurance project plan;"

- “2. For a substance or substances that the permittee alleges is naturally occurring, a justification that includes an investigation of the anthropogenic sources of the substance or substances to the receiving stream upstream of the discharge point;”
- “3. A review of possible sources of the substance or substances in the effluent, including, but not limited to, processes on-site, legacy contamination, and influent sources, such as industrial users discharging to a sanitary treatment plant;”
- “4. A review of existing technology installed on-site to treat the influent for the substance or substances of concern and the date that the existing technology was first implemented;”
- “5. A review of any additional technologies that would lower the effluent concentrations of the substance or substances of concern and the associated cost to implement such technology;”
- “6. Information required to determine the affordability of such technology using the EPA Interim Economic Guidance for Water Quality Standards (EPA-823-B-95002)”
- “7. For a WQS variance to a waterbody or waterbody segment, identification of any cost-effective and reasonable best management practices for nonpoint source controls related to the substance or substances and waterbody or waterbody segment specified in the WQS variance that could be implemented to make progress towards attaining the underlying designated use and criterion.”
- “10. A Pollutant Minimization Program, including:
 - i. Pollutant control activities that the permittee proposes to take during the term of the WQS variance, including identification and quantification of source(s) of substance(s) within the permittee’s collection system and evaluation of on-site strategies to minimize the discharge of a substance or substances and in the collection system to the maximum extent practicable; and,
 - ii. A schedule for implementing the PMP.”

N.J.A.C. 7:9B-16(e):

- “1. A permittee shall submit the following for a reevaluation:
 - i. A report with the submittal requirements listed at (c) above with the NJPDES permit renewal application pursuant to N.J.A.C 7:9B-1.14;
 - ii. Documentation of whether, and to what extent, the PMP was implemented and the water quality progress achieved; and,
 - iii. An updated PMP for the subsequent five-year permit cycle.”

"2. The Department shall take the following actions in response to reevaluation submittals:

- i. Approve and authorize the WQS variance for an additional five years, if the reevaluation submittal is satisfactory;
- ii. Propose a permit action to revise the WQS variance if the submittal fails to meet the requirements, or the submittal indicates a revised HAC is appropriate; or,
- iii. Suspend the WQS variance if the permittee does not submit the information required for the reevaluation of the WQS variance at the frequency specified at N.J.A.C. 7:9B. The variance may be reinstated when this information is submitted and approved by the Department."

4. Revisions to the total phosphorus water quality criteria, at N.J.A.C. 7:9B-1.14(d)4 (added language below in **bold**), consistent with New Jersey's nutrient policies, at N.J.A.C. 7:9B-1.5(q)2

"(1) Non Tidal Streams: Concentrations of total P shall not exceed 0.1 mg/l in any stream, **unless site-specific criteria** or watershed-specific translators are established pursuant to N.J.A.C. 7:9B-1.5(g)2 or if the Department determines that concentrations do not render the waters unsuitable, in accordance with (d)4i."

"(2) Lakes: Concentrations of total P shall not exceed 0.05 mg/l in any lake, pond, or reservoir, or in a tributary at the point where it enters such bodies of water, **unless site-specific criteria** or watershed-specific translators are developed pursuant to N.J.A.C. 7:9B-1.5(g)2 or if the Department determines that concentrations do not render the waters unsuitable, in accordance with (d)4i."

5. New definitions, at N.J.A.C 7:B-1.4, for a "Water quality Standards variance" and "Statistical Threshold Value"

"Water Quality Standards variance or WQS variance means a time-limited designated use and criterion for a specific pollutant or pollutants that reflect the highest attainable condition during the term of the WQS variance. For the purposes of any such WQS variance, pollutant shall refer to any substance," as specified at N.J.A.C. 7:9B-1.14.

"Statistical Threshold Value or STV means the value that approximates the 90th percentile of the water quality distribution and is not exceeded by more than 10 percent of the samples used to calculate the geometric mean for the purposes of bacterial quality criteria pursuant to N.J.A.C. 7:9B-1.14(d)1ii."

6. Revisions to "Scope of subchapter," at N.J.A.C 7:B-1.1, to include "procedures for establishing water quality standards variances," within the scope of the NJSWQS

7. Revisions to "Statements of Policy," at N.J.A.C 7:B-1.5(c)8 & 10, to include water quality standards policies related to the revised water quality criteria for bacteria and freshwater total ammonia

“8. The Department shall implement the geometric mean and statistical threshold values (STV) where applicable, for bacterial quality criteria established at N.J.A.C. 7:9B-1.14(d)1ii and iii, over a 30-day period in the NJPDES permits, in accordance with N.J.S.A. 58:10A-3 and N.J.A.C. 7:14A-13.15(a)2;” and,

“10. The Department may adopt an alternative freshwater total ammonia criterion pursuant to the Aquatic Life Ambient Water Quality Criteria For Ammonia—Freshwater 2013, EPA 822-R-13-001, April 2013, <https://www.epa.gov/sites/production/files/2015-08/documents/aquatic-life-ambient-water-quality-criteria-for-ammonia-freshwater-2013.pdf>, if a permittee demonstrates to the satisfaction of the Department, that an alternative criterion is applicable in place of the freshwater total ammonia criteria at N.J.A.C. 7:9B-1.14(e)2.”

Section 7(a)(2) of the Endangered Species Act, 16 U.S.C. § 1536(a)(2), requires that federal agencies, in consultation with the U.S. Fish and Wildlife Service (FWS) and/or the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS), ensure that their actions are not likely to jeopardize the existence of federally-listed species or result in the adverse modification of designated critical habitat of such species. In a letter, dated March 13, 2023, the FWS provided written concurrence that the above revisions to the NJSWQS are not likely to adversely affect threatened/endangered species (Enclosure 2). In a letter, dated January 18, 2024, the NMFS provided written concurrence that the above revisions to the NJSWQS are not likely to adversely affect threatened/ endangered species (Enclosure 3).

Finally, EPA would like to highlight that all WQS variances, including subsequent WQS variances, must meet 40 C.F.R. 131.14, be submitted to EPA and be approved by EPA, before they can be incorporated into final permits. In addition, EPA would like to take this opportunity to re-affirm the requirements under CWA Section 303(c), for State submittal of all new and revised WQS to EPA for review. Specifically, when NJDEP adopts site-specific water quality criteria, including through the CWA Section 303(d) process of establishing Total Maximum Daily Loads (TMDLs), and also when NJDEP withdraws otherwise applicable statewide water quality criteria, NJDEP must comply with CWA Section 303(c) and 40 C.F.R. Part 131, including all public participation requirements, submission of a certification from the Attorney General that the WQS were adopted in accordance with New Jersey law and submission to EPA for review.

EPA Region 2 looks forward to continuing to work with NJDEP to further improve the NJSWQS. If you have any questions, please call me at (212) 637-4125 or have your staff contact Virginia Wong, Supervisor, Clean Water Regulatory Branch at (212) 637-4241.

Sincerely,

[Signed]

Javier Laureano, M.P.A., Ph.D.
Director
Water Division

Enclosure

1. Copy of NJDEP Water Quality Standards variance policies (N.J.A.C. 7:9b-1.16)
2. March 13, 2023, FWS Concurrence Letter
3. January 18, 2024, NMFS Concurrence Letter

7:9B-1.16 Water quality standards variances

- (a) A water quality standards (WQS) variance is subject to 40 CFR 131.14 and 40 CFR 131.20(b). The USEPA must review and approve the variance prior to implementation of any WQS variance. A WQS variance may be initiated either by the Department or at the request of a permittee.
- (b) The WQS variance policies are, as follows:
 - 1. A WQS variance serves as the interim applicable water quality standard for the term of the WQS variance when implementing:
 - i. NJPDES permitting requirements pursuant to N.J.A.C. 7:14A; or
 - ii. Certifications under Section 401 of the Federal Act;
 - 2. A WQS variance may be adopted for a permittee, waterbody, or waterbody segment, and only applies to the permittee, waterbody, or waterbody segment specified in the WQS variance;
 - 3. Where a WQS variance is established, the underlying criterion and designated use pursuant to N.J.A.C. 7:9B-1.14 and 1.15 shall be retained by the Department. All other standards not specifically addressed by the WQS variance also remain in effect;
 - 4. A permittee requesting a WQS variance must demonstrate, to the satisfaction of the Department, that the water quality standards cannot be met due to one or more of the following conditions:
 - i. Naturally occurring pollutant concentrations prevent the attainment of the use;
 - ii. Natural-, ephemeral-, intermittent-, or low-flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met;
 - iii. Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;
 - iv. Dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use;
 - v. Natural features of the waterbody, such as cover, flow, depth, pools, riffles, or lack of a proper substrate, that create physical conditions unrelated to water quality, and preclude attainment of aquatic life protection uses; or
 - vi. Controls more stringent than those required by sections 301(b) and 306 of the Federal Act would result in substantial and widespread economic and social impact, as determined in accordance with the USEPA Interim Economic Guidance for Water Quality Standards (EPA-823-B-95-002), Clean Water Act Financial Capability Assessment Guidance (EPA-800-B-21-001), and as supplemented and amended;
 - 5. A WQS variance requested by a new or expanded permittee for an aquatic life criterion specified at N.J.A.C. 7:9B-1.14 that would likely jeopardize the continued existence of any endangered or threatened species, as listed at section 7 of the Federal Endangered Species Act of 1973 (16 U.S.C. §§ 1531 et seq.), or result in the destruction or adverse modification of such species' critical habitat shall not be granted;

6. A WQS variance may not be adopted if the designated use and criterion addressed by the WQS variance can be achieved by implementing technology-based effluent limits required pursuant to sections 301(b) and 306 of the Federal Act; and
 7. A WQS variance for thermal discharge shall be consistent with section 316(a) of the Federal Act and N.J.A.C. 7:9B-1.5(c)9 and (h)2i(3) in lieu of this section.
- (c) A permittee requesting a WQS variance to satisfy one of the conditions listed at (b)4 above must submit the following:
1. Ambient, influent, and effluent data collected, in accordance with a Department-approved quality assurance project plan;
 2. For a substance or substances that the permittee alleges is naturally occurring, a justification that includes an investigation of the anthropogenic sources of the substance or substances to the receiving stream upstream of the discharge point;
 3. A review of possible sources of the substance or substances in the effluent, including, but not limited to, processes on-site, legacy contamination, and influent sources, such as industrial users discharging to a sanitary treatment plant;
 4. A review of existing technology installed on-site to treat the influent for the substance or substances of concern and the date that the existing technology was first implemented;
 5. A review of any additional technologies that would lower the effluent concentrations of the substance or substances of concern and the associated cost to implement such technology;
 6. Information required to determine the affordability of such technology using the USEPA Interim Economic Guidance for Water Quality Standards (EPA-823-B-95-002), Clean Water Act Financial Capability Assessment Guidance (EPA-800-B-21-001), as supplemented and amended;
 7. For a WQS variance to a waterbody or waterbody segment, identification of any cost-effective and reasonable best management practices for nonpoint source controls related to the substance or substances and waterbody or waterbody segment specified in the WQS variance that could be implemented to make progress towards attaining the underlying designated use and criterion;
 8. Documentation demonstrating the highest attainable condition (HAC) for the substance(s). A HAC must be based on the following:
 - i. For a permittee-specific WQS variance:
 - (1) The highest attainable interim criterion;
 - (2) The interim effluent condition that reflects the greatest pollutant reduction achievable; or
 - (3) The interim criterion or interim effluent condition that reflects the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the Department adopts the WQS variance, and the adoption and implementation of a Pollutant Minimization Program (PMP), if no additional feasible pollutant control technology can be identified; and
 - ii. For a WQS variance applicable to a waterbody or waterbody segment:
 - (1) The highest attainable interim use and interim criterion; or
 - (2) The interim use and interim criterion that reflects the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the Department adopts the WQS variance, and the adoption and

- implementation of a PMP, if no additional feasible pollutant control technology can be identified;
- 9. A proposed term, including documentation justifying that the proposed term is only as long as necessary to achieve the HAC;
- 10. A Pollutant Minimization Program, including:
 - i. Pollutant control activities that the permittee proposes to take during the term of the WQS variance, including identification and quantification of source(s) of substance(s) within the permittee's collection system and evaluation of on-site strategies to minimize the discharge of a substance or substances and in the collection system to the maximum extent practicable; and
 - ii. A schedule for implementing the PMP; and
- 11. Where applicable, documentation supporting the WQS variance must be submitted justifying the use and value of the waterbody pursuant to section 131.10(a) of the Federal Act for uses that are not specified at section 101(a)(2) of the Federal Act.
- (d) A permittee requesting a WQS variance to a use specified at section 101(a)(2) of the Federal Act or a sub-category of such a use shall demonstrate that attaining the designated use and criterion is not feasible throughout the term of the WQS variance because:
 - 1. One of the factors listed at (b)4 above is met; or
 - 2. Actions necessary to facilitate lake, wetland, or stream restoration through dam removal or other significant reconfiguration activities preclude attainment of the designated use and criterion while the actions are being implemented.
- (e) For a WQS variance term longer than five years, the Department shall reevaluate the WQS variance at least once every five years.
 - 1. A permittee shall submit the following for a reevaluation:
 - i. A report with the submittal requirements listed at (c) above with the NJPDES permit renewal application pursuant to N.J.A.C 7:9B-1.14;
 - ii. Documentation of whether, and to what extent, the PMP was implemented and the water quality progress achieved; and
 - iii. An updated PMP for the subsequent five-year permit cycle.
 - 2. The Department shall take the following actions in response to reevaluation submittals:
 - i. Approve and authorize the WQS variance for an additional five years, if the reevaluation submittal is satisfactory;
 - ii. Propose a permit action to revise the WQS variance if the submittal fails to meet the requirements or the submittal indicates a revised HAC is appropriate; or
 - iii. Suspend the WQS variance if the permittee does not submit the information required for the reevaluation of the WQS variance at the frequency specified at N.J.A.C. 7:9B. The variance may be reinstated when this information is submitted and approved by the Department.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New Jersey Field Office
4 East Jimmie Leeds Road, Suite 4
Galloway, New Jersey 08205
(609) 646-9310

In Reply Refer To:
2023-0054914

March 13, 2023

Mark Austin
Environmental Protection Agency – Region 2
290 Broadway
New York, New York 10007
Email: Austin.mark@epa.gov

Reference: 2011 and 2022 Revisions to the New Jersey Surface Water Quality Standards, All Counties and Townships, New Jersey

The U.S. Fish and Wildlife Service (Service) has reviewed the above-referenced proposed project pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA) to ensure the protection of federally listed endangered and threatened species. The following comments do not address all Service concerns for fish and wildlife resources and do not preclude separate review and comment by the Service as afforded by other applicable environmental legislation.

A known occurrence or potential habitat for the following federally listed or proposed listed species is located on or near the project's action area. However, the Service concurs that the proposed project is not likely to adversely affect federally listed or proposed listed species for the reasons listed below.

Species	Basis for Determination
Indiana Bat (<i>Myotis sodalis</i>), endangered Northern long-eared bat (<i>Myotis septentrionalis</i>), threatened Bog turtle (<i>Glyptemys muhlenbergii</i>), threatened Red knot (<i>Calidris canutus rufa</i>), threatened Eastern black rail (<i>Laterallus jamaicensis ssp. jamaicensis</i>), threatened	The 2011 and 2022 Revisions to the New Jersey Surface Water Quality Standards (NJSWQS) includes adopting the Environmental Protection Agency's recommended freshwater ammonia criteria and variance language provisions. These measures are more environmentally protective than the previous NJSWQS and are not likely to adversely affect federally listed species or their associated habitats. Based on the lack of impacts, no adverse effects are anticipated for Indiana bat, northern long-eared bat, bog turtle, red knot, eastern black rail, piping plover, roseate tern, dwarf wedgemussel, northeastern beach tiger beetle, swamp pink, Knieskern's beaked-rush, American chaffseed, sensitive joint-vetch, small whorled pogonia, or seabeach amaranth.

Piping Plover (<i>Charadrius melodus</i>), threatened Roseate Tern (<i>Sterna dougallii dougallii</i>), endangered Dwarf Wedgemussel (<i>Alasmidonta heterodon</i>), endangered Northeastern Beach Tiger Beetle (<i>Cicindela dorsalis dorsalis</i>), threatened Swamp pink (<i>Helonias bullata</i>), threatened Knieskern's beaked-rush (<i>Rhynchospora knieskernii</i>), threatened American chaffseed (<i>Schwalbea americana</i>), endangered Sensitive joint-vetch (<i>Aeschynomene virginica</i>), threatened Small Whorled Pogonia (<i>Isotria medeoloides</i>), threatened Seabeach Amaranth (<i>Amaranthus pumilus</i>), threatened	
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Except for the above-mentioned species, no other federally listed or proposed threatened or endangered flora or fauna under Service jurisdiction are known to occur within the proposed project's impact area. Therefore, no further consultation pursuant to the ESA is required. If additional information on federally listed species becomes available, or if project plans change, this determination may be reconsidered.

Please refer to this office's web site at <https://www.fws.gov/office/new-jersey-ecological-services/> for further information including federally listed and candidate species lists, procedures for requesting ESA review, the National Bald Eagle Management Guidelines, and contacts for obtaining information from the New Jersey Natural Heritage and Endangered and Nongame Species Programs regarding State-listed and other species of concern.

Reviewing Biologist: [Signed]
Rebecca Klee

Authorizing Supervisor: [Signed]
Eric Schradling



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

Refer to NMFS No: OPR-2022-03635

Mark Austin
Environmental Review Team Lead
Environmental Protection Agency, Region 2
290 Broadway
New York, NY 10007

RE: Concurrence letter for the Environmental Protection Agency's (EPA) approval of state-adopted freshwater ammonia criteria and changes to the total phosphorus (TP) criterion implementation by the New Jersey Department of Environmental Protection (NJDEP)

Dear Mr. Austin:

On November 21, 2023, the National Marine Fisheries Service (NMFS) received your request for written concurrence that Environmental Protection Agency's (EPA) approval of New Jersey Department of Environmental Protection (NJDEP) revisions to its water quality standards may affect, but are not likely to adversely affect, species listed as threatened or endangered or critical habitats designated under the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. §§ 1531 et seq.). Your letter was accompanied by a Biological Evaluation (BE) evaluating the potential effects of NJDEP's proposed adoption of EPA's Recommended Freshwater Ammonia Guidelines for the Protection of Aquatic Life (Ammonia Guidelines, USEPA 2013) and removing the total phosphorus (TP) criterion of 0.1 milligrams per liter (mg/L) from tidal freshwaters. While EPA approved these revisions on March 13, 2020, EPA's decision letter stated that the approval was subject to the results of consultation under section 7(a)(2) of the ESA. NMFS's response to your request was prepared pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR Part 402, and agency guidance for preparation of letters of concurrence.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with agency guidelines issued under section 515 of the Treasury and General Government Appropriations Act of 2001 (Data Quality Act; 44 U.S.C. 3504(d)(1) and 3516). A complete record of this informal consultation is on file electronically with NMFS Office of Protected Resources (NMFS OPR) in Silver Spring, Maryland.

Background

In a June 8, 2020, conference call, EPA Region 2 and NMFS Greater Atlantic Region made the decision to wait on initiating consultation on EPA-approved revisions to the New Jersey Water Quality Standards (NJWQS) in order to incorporate them into a consultation on the 2021 NJWQS triennial review/revision process. The 2021 revisions were expected to include further nutrient policy/criteria revisions, as well as other applicable revisions to the NJWQS addressing aquatic life protection. In a subsequent email, NMFS Greater Atlantic Region indicated consultation could not be initiated until they received a complete BE evaluating the action and its implications for ESA-listed species under NMFS jurisdiction.

On August 17, 2022, EPA Region 2 notified NMFS Greater Atlantic Region that NJDEP published a public notice for their proposed amendments to the NJWQS at N.J.A.C. 7:9B and EPA wanted to proceed with discussions regarding consultation on the 2020 nutrient revisions. In a subsequent email, NMFS Greater Atlantic Region informed EPA that NMFS OPR would lead the consultation.

In a September 12, 2022, conference call, EPA Region 2 and NMFS OPR discussed initiating consultation along with updates and EPA's summary of what it referred to as NJDEP's efforts in revising its nutrients standards. EPA subsequently transmitted the following supporting documents:

- A letter dated February 18, 2011, from NJDEP to EPA Region 2 requesting review and approval of nutrient policies and criteria proposed on December 21, 2009. This revision included a general narrative criterion applicable to all nutrients, including phosphorus, which is applicable to all waters in the State and the restriction of the numeric TP criterion of 0.1 mg/L to non-tidal waters.
- A letter dated June 21, 2011, from EPA Region 2 to NMFS Greater Atlantic Region requesting initiation of informal consultation and concurrence with a not likely to adversely affect determination for its approval of NJDEP's December 21, 2009 proposed standards changes. The request was not accompanied by a BE. A response from NMFS Greater Atlantic Region is not available.
- A letter dated June 30, 2011, from EPA Region 2 to NJDEP indicating that EPA will not approve removal of the TP criterion from tidal streams until NJDEP provides official supporting documentation.
- A letter dated December 12, 2019, from NJDEP to EPA Region 2 requesting review and approval of revised nutrient criteria that included a narrative standard specific to nutrients and restriction of the numeric TP criterion to non-tidal streams. The letter included an appendix justifying "*Relying on narrative criterion in absence of TP criteria in tidal freshwaters,*" and an appendix identifying "*Additional measures to be taken to serve as a 'backstop' for scenarios when demonstrated that waters are not being rendered unsuitable for designated uses*" [sic].

- A letter dated March 13, 2020, from EPA Region 2 to NJDEP approving the revised nutrient criteria described in NJDEP's December 12, 2019 letter, but noting it will be subject to the results of consultation under 7(a)(2) of the ESA.

Consultation History

On April 12, 2023, EPA Region 2 sent NMFS OPR a letter requesting concurrence on its not likely to adversely affect determination for NJDEP's proposed changes to its nutrient criteria. The request was not accompanied by a BE.

On April 14, 2023, NMFS responded to EPA's April 12, 2023 letter with an email asking for clarification regarding EPA's interest in consulting on criteria it had already approved and why NJDEP's adoption of ammonia criteria was not included in the request. The email explained that a not likely to adversely affect determination needs to be based on a demonstration that adverse effects are not likely to occur under the action, and reminded EPA that, as explained in the June 8, 2020 email from NMFS Greater Atlantic Region, EPA must submit a BE substantiating its determinations before we can initiate consultation.

In a May 3, 2023 conference call, EPA Region 2 and NMFS OPR discussed updates to the NJDEP nutrient policy. In a follow up email, EPA sent 2 documents: "*New Jersey Nutrient Criteria Enhancement Plan 2017*" and a "*2021 Annual Update: New Jersey Nutrient Criteria Enhancement Plan*."

In a May 10, 2023, conference call, EPA Region 2 and NMFS OPR discussed initiating consultation. EPA explained that it had been funding NJDEP's efforts to derive a numeric TP criterion for tidal waters for 15 years and was hoping consultation with NMFS would result in a binding reasonable and prudent measure (RPM) that would require EPA to encourage NJDEP to finalize a TP criterion for tidal freshwaters.

On November 21, 2023, EPA sent NMFS OPR an updated letter requesting concurrence on its not likely to adversely affect determination for NJDEP's proposed changes to its nutrient criteria. The request was accompanied by a BE containing analysis supporting why the approval is not likely to adversely affect ESA-listed species or designated critical habitat under the jurisdiction of NMFS.

In a December 22, 2023, email to EPA Region 2, NMFS explained that a letter of concurrence does not include RPMs and that analysis of water quality impairments in catchments adjacent to waters used by sturgeon does not suggest that the application of the TP criterion to tidal freshwaters has meaningful protective value. Elimination of the numeric criterion from these waters is expected to have insignificant effects on sturgeon. NMFS also requested data from any analyses performed by NJDEP demonstrating why the TP criterion should not be applied to tidal freshwaters.

In a January 3, 2024, email to NMFS, EPA Region 2 shared draft use attainability reports from the Delaware River Basin Commission (DRBC) for the Delaware River and explained that the

modeling used by DRBC demonstrated that nitrogenous oxygen demand, not TP, was the causal agent for oxygen depletion impairments in the basin.

Action Agency's Effect Determinations

EPA determined that approval of NJDEP's adoption of the 2013 Ammonia Guidelines as water quality criteria and removal of the TP criterion of 0.1 mg/L from tidal freshwaters may affect, but is not likely to adversely affect, shortnose sturgeon (*Acipenser brevirostrum*), the New York Bight distinct population segments (DPSs) of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), and the Gulf of Maine, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon migrating through and foraging within the action area. EPA also determined that these approvals would not adversely affect critical habitat designated for the New York Bight DPS of the Atlantic sturgeon in the Delaware River and Hudson River, which are within the action area.

Prior Consultations Incorporated by Reference

The body of this letter incorporates specific sections of prior consultations by reference. While there can be considerable overlap among consultations on EPA state or territorial water quality criteria approvals, the basis of our determinations is not identical because each state or territory may implement its standards differently and, even when the ESA-listed taxonomic species are the same, the action areas include different populations, aquatic resources, and pollutant sources. Our determinations thus take into consideration the ESA-listed species and designated critical habitat likely to be exposed, the level of protection from the criteria for those species, the physical and biological features (PBFs) of designated critical habitat, the land uses and pollutant sources associated with the action area, and the state's planned or expected implementation of the standards.

NMFS has previously concurred with EPA's may affect, not likely to adversely affect determinations for its approvals of Massachusetts' (EPA Region 1, [OPR-2022-00203](#)) and Delaware/Maryland's (EPA Region 3, [OPR-2022-030402](#)) adoption of the 2013 Ammonia Guidelines into their water quality standards. Both consultations addressed the effects of exposures to ammonia within the criteria limits on shortnose sturgeon and Atlantic sturgeon. This letter incorporates by reference and updates the most recent ammonia effects analysis found in Section 8.1.3, page 66-71 of the opinion documenting consultation on Maryland and Delaware's adoption of the Ammonia Guidelines (EPA Region 3, [OPR-2022-030402](#)). Prior to the consultation documented by this letter, NMFS has not consulted with EPA on approvals of water quality standards for the state of New Jersey and to our knowledge, has not consulted with EPA on the exclusion of the TP criterion from tidal freshwaters.

Prior biological opinions also describe in detail the approaches used in this consultation. For instance, Section 8.2.2, page 97-100 of the NMFS opinion on Florida's numeric nutrient criteria for estuarine waters describes our contingency analysis strategy for assessing numeric nutrient criteria (EPA Region 4, [PCTS FPR-2017-9187](#). Section 2.1, page 9-24 of our consultation on

Massachusetts and New Hampshire Standards ([OPR-2022-00203](#)) provides an overview of how toxicity data are reported and describes our strategy for the selection and interpretation of that data.

Action and Action Area

As required by Clean Water Act section 303(c) and 40 CFR Part 131, EPA reviews state and territorial water quality standards, which cannot be implemented until approved by EPA. Section 303(c) of the Clean Water Act requires that, at least once every 3 years, states, tribes, and territories review and, when necessary, modify their water quality standards or adopt new water quality standards to protect waters under their jurisdiction. Water quality standards are regulations established under the Clean Water Act intended to protect public health and welfare; enhance the quality of water; restore and maintain the chemical, physical, and biological integrity of state waters; and provide water quality protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water. A state's water quality standards include designated uses and narrative or numeric criteria¹ to protect those uses. Narrative water quality criteria describe the desired conditions of a water body as being "free from" certain negative conditions. The uses designated for state waters inform the narrative and numeric water quality criteria that will apply for each use.

Numeric water quality criteria are maximum allowable concentrations of toxic pollutants or acceptable aquatic chemistry conditions (e.g., pH or temperature range, nutrients). Numeric criteria for a given pollutant usually include a limit for acute exposures and chronic exposures. The criterion maximum concentration, also called the CMC or acute criterion, is the highest acceptable aquatic exposure concentration of a chemical in water that is not expected to cause severe effects in aquatic organisms during short-term (i.e., acute) exposure. The criterion continuous concentration, also called the CCC or chronic criterion, is the highest acceptable aquatic exposure concentration of a chemical in water that is not expected to cause adverse effects on survival, growth/development, and reproduction over indefinite (i.e., chronic) exposures.

Implementation of water quality criteria is part of EPA's approval process because, absent EPA approval of a state's adoption of criteria for a pollutant, the criteria cannot be used to identify impaired waters for biennial integrated reports, set permit limits for individual discharges, or calculate total maximum daily loads to restore waters impaired by that pollutant.

The BE defined the action area as New Jersey's contributing tributaries to the coastal waters, bays, estuaries, and "surrounding areas." In this case, EPA is approving the adoption and implementation of water quality criteria for ammonia in all freshwaters of New Jersey and removal of TP criterion for tidal freshwaters. The analyses in this letter address freshwaters

¹ NMFS uses the term "criteria" or "criterion" when discussing the numeric water quality limits to distinguish these from the broader term "water quality standards" that describe the desired condition of water bodies and the means by which this condition will be protected or achieved.

within catchments associated with waters used by Atlantic and shortnose sturgeon (Sturgeon Waters). Tidal freshwaters are considered to be those freshwaters² downstream of the head of tide³ (Figure 1). The New Jersey portion of the Hudson River is not classified as freshwater and is not affected by the action. Adult and subadult sturgeon migrate and forage in all tidal and non-tidal freshwaters of the action area. The Delaware River and its major tributaries are the only waters within the action area where early life stage sturgeon may be found. The Delaware River is the longest undammed river east of the Mississippi. It is 330 miles long with 130 tidal miles and 200 non-tidal miles. The river has more than 2,000 tributaries, including 216 major ones.

NJDEP is removing the numeric TP nutrient criterion of 0.1 mg/L from tidal freshwaters. In the absence of a numeric TP criterion for tidal freshwaters, these waters will continue to be protected by narrative criterion that nutrient conditions must not render the water unsuitable for the designated uses, as well as the anti-degradation provisions at N.J.A.C. 7:9B-1.5(d) and anti-backsliding provisions at N.J.A.C. 7:14A-13.19. NJDEP's stated rationale behind removing the TP criterion from tidal freshwaters is that the criterion was derived for non-tidal freshwaters. The BE and NJDEP's documentation describe how these waters would be protected until a numeric criterion is developed. The documentation did not include an explanation of how and why a TP criterion would and should be different in tidal freshwaters.

EPA collaborates with and provides guidance to state agencies during water quality standard development, but these activities precede the Clean Water Act 303(c) standard approvals that are subject to consultation under section 7 of the ESA. At this time, NJDEP is providing status reports to EPA on its progress on the Nutrient Criteria Enhancement Plan it initiated in 2009. The 2018 New Jersey Nutrient Criteria Enhancement Plan is the latest report describing NJDEP decade-long efforts in developing numeric nutrient criteria (NJDEP 2018). The plan outlines NJDEP's intent to develop nutrient criteria for coastal waters through a combination of cause-response relationships (e.g., benthic invertebrate condition versus total nitrogen) as well as eutrophication models. The 2018 Nutrient Plan does not include any specific projects for the tidal freshwaters. NJDEP states that it will include information about the projects being planned for the tidal freshwaters in the upcoming 2023 revision to the Nutrient Plan. At this time NJDEP is focusing on collecting and analyzing data for Barnegat Bay.

NJDEP is adopting and implementing ammonia criteria as recommended by the Ammonia Guidelines. The Ammonia Guidelines include a set of calculations applicable to waters where species of the genus *Oncorhynchus* occur and waters where they are absent, with optional recalculation for waters where unionid mussels are absent. The Ammonia Guidelines recommend the acute criterion duration limit as a one-hour average and the chronic criterion limit as a 30-day rolling average with the additional restriction that the highest four-day average within the 30 days be

² Surface Water Quality Classification of New Jersey at:

<https://mapsdep.nj.gov/arcgis/rest/services/Features/Hydrography/MapServer/7>

³ Head of Tide (HOT) for New Jersey Watercourses at:

<https://mapsdep.nj.gov/arcgis/rest/services/Features/Hydrography/MapServer/2>

no greater than 2.5 times the acute criterion. Both acute and chronic criteria are not to be exceeded more than once in 3 years.

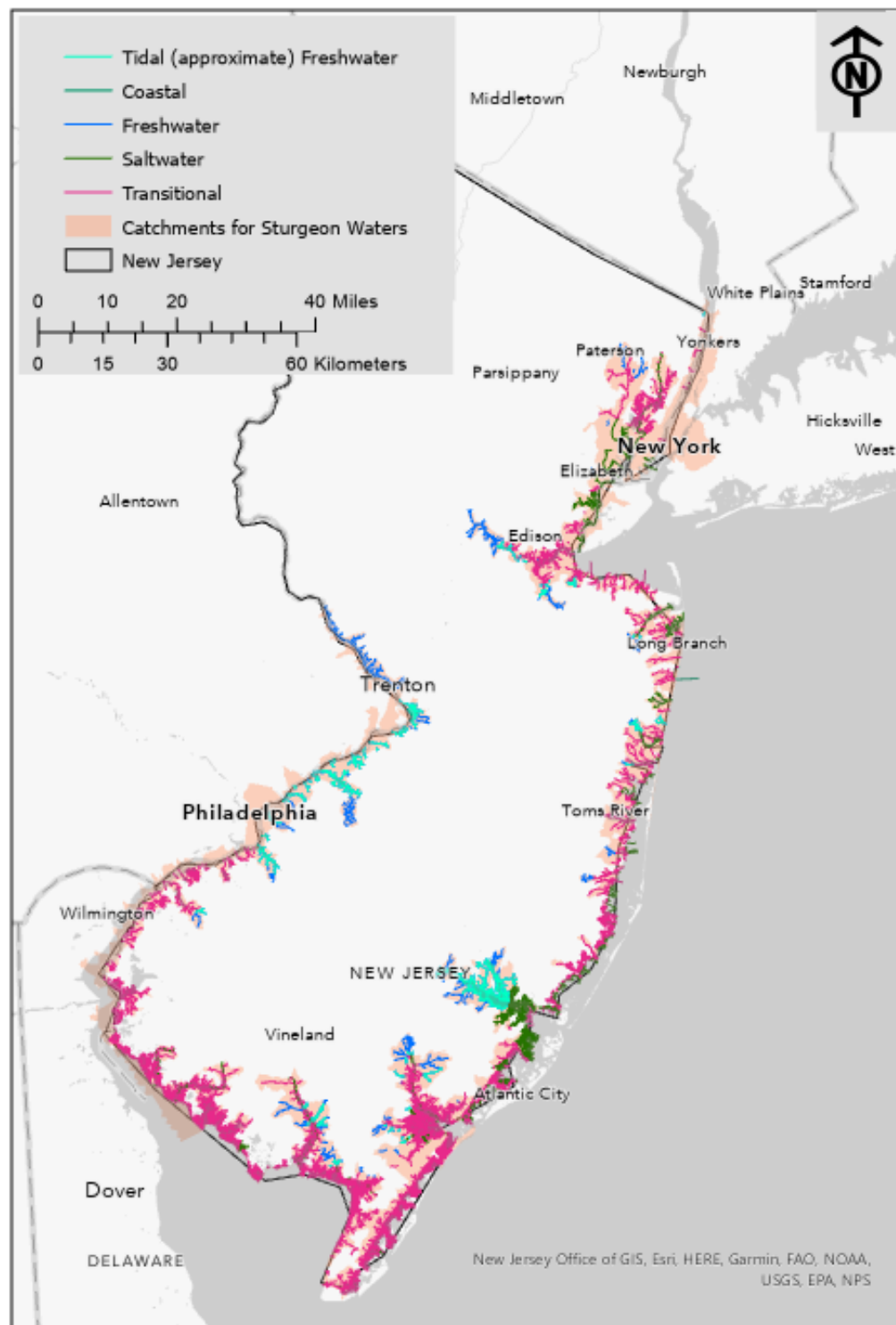


Figure 1. Water classifications within catchments associated with Sturgeon Waters

The effects of NJDEP's decision to remove the TP criteria from tidal freshwaters are influenced by the water quality objectives and regulatory participation of the DRBC. The DRBC oversees a unified approach to managing a river system and its drainage area without regard to political boundaries (Figure 2, DRBC 2023). The DRBC supplants state programs for water quality protection, water supply allocation, water conservation initiatives, watershed planning, regulatory review (permitting), flow and drought management, flood loss reduction, and recreation. When the DRBC has not established a water quality standard, state water quality standards are in effect.

NJDEP defers to the DRBC water quality standards for the tidal portions of the Delaware River (Nyer 2023). The DRBC has in-stream criteria for dissolved oxygen, an indicator of eutrophic conditions, but it has not established in-stream water quality criteria for ammonia or TP. The DRBC has effluent limits for TP and ammonia for new treatment facilities and substantial alterations of existing facilities.

The DRBC has designated some waters within the basin as Outstanding Basin Waters with exceptionally high scenic, recreational, and ecological values or Significant Resource Waters with exceptionally high scenic, recreational, ecological, and/or water supply uses. Taken together these are termed Special Protection Waters that are subject to more stringent protective requirements. NJDEP-issued national pollutant discharge elimination system (NJPDES) permits that exceed 10,000 gallons per day to special protection waters or 50,000 gallons per day in other waters are subject to DRBC review “...to ensure that discharges made under NJPDES permits do not substantially impair or conflict with the Commission's Comprehensive Plan and regulations relating to wastewater and stream quality objectives” (DRBC and NJDEP 2015).

Affected ESA-listed Species and Designated Critical Habitat

Table 1 lists the endangered and threatened species under NMFS' jurisdiction that occur within the action area.

Table 1. ESA-listed species under the jurisdiction of NMFS exposed to water quality conditions resulting from EPA's approval of NJDEP's revised water quality water standards

Species	Federal Register Listing	Critical habitat	In the action area
Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	77 FR 5879 77 FR 5913	82 FR 39160	
New York Bight DPS, (endangered)			Critical habitat in Delaware and Hudson River; spawn in the Delaware River; however, there are no freshwater tributaries to Hudson river originate in New Jersey
Chesapeake, Carolina, South Atlantic DPSs (endangered), and Gulf of Maine DPS (threatened)			Migrate and forage
Shortnose Sturgeon (endangered, <i>Acipenser brevirostrum</i>)	32 FR 4001	--	Migrate and forage, spawn in the Delaware River, juveniles overwinter in the Hudson River, but no freshwater tributaries to the Hudson River originate in New Jersey r

Shortnose sturgeon spawn in the northern part of the Delaware River in New Jersey near Scudder Falls and Trenton Rapids. Eggs and yolk-sac larvae are expected to be present mid-March to late June, post yolk-sac larvae mid-March to late July, and young of year, juveniles, and adults year-round. A small population of New York Bight DPS Atlantic sturgeon also spawn in the Delaware River. Eggs and yolk-sac larvae are expected to be present from April to late August, post yolk-sac larvae would be present from April to late September, and young of year, juveniles, and adults year-round. Critical habitat for the Atlantic sturgeon New York Bight DPSs was designated in 2017 (82 FR 39160). The Delaware River falls under New York Bight Unit 4. The PBF identified as essential components of the critical habitat to conserve the Atlantic sturgeon that may be influenced by the action include dissolved oxygen (DO) conditions that are potentially disrupted by eutrophication resulting from nutrient enrichment. Specifically:

“Water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support: ... larval, juvenile, and subadult growth, development, and recruitment.

Appropriate temperature and oxygen values will vary interdependently, and depending on salinity in a particular habitat. For example, 6.0 mg/L DO or greater likely supports juvenile rearing habitat, whereas DO less than 5.0 mg/L for longer than 30 days is less likely to support rearing when water temperature is greater than 25 °C. In temperatures greater than 26 °C, DO greater than 4.3 mg/L is needed to protect survival and growth. Temperatures of 13-26 °C likely to support spawning habitat”

Approach to the Assessment

The removal of the numeric TP criterion from tidal freshwaters and adoption of numeric ammonia criteria for all freshwaters require different types of analyses. We evaluate nutrient-related criteria using a contingency analysis because nutrients are not proximate stressors, that is, exposure does not cause a direct response and adverse effects are the result of complex environmental factors. Because toxicants like ammonia are proximate stressors, their criteria are evaluated by direct comparison with toxicity data.

Removal of TP Criterion from Tidal Freshwaters

When evaluating numeric nutrient criteria, the general question is whether eutrophication or harmful algal blooms will be caused by or sustained within criteria limits. Our evaluation of NJDEP’s removal of the TP criterion from tidal freshwaters asks whether eutrophication, using aquatic impairment by oxygen depletion as an indicator, is influenced by compliance with the TP criterion, given that the biogeochemistry of nutrients in tidal freshwaters differ from the non-tidal waters for which the criteria were derived. Our analysis is similar to the first phase contingency analysis we used when assessing Florida’s estuary specific numeric nutrient criteria ([FPR-2017-9187](#)). Section 8.2.2, pages 97-100, of that opinion describes the approach in detail. For this analysis, we evaluate whether impairment by dissolved oxygen depletion, is consistently associated with impairment by TP criterion exceedance in tidal freshwaters.

Numeric Freshwater Ammonia Criteria

Given the overlap of the prior consultations with this consultation, we are incorporating by reference the response analyses in the opinion documenting our consultation with EPA for Maryland and Delaware’s adoption of the Ammonia Guidelines (Section 8.1.1, pages 80-85 of [OPR-2022-030402](#)). Most criteria for directly toxic substances like ammonia are developed using endpoints identified through toxicity tests exposing laboratory-reared organisms to toxicants over a range of concentrations. It is necessary to review the endpoints here to facilitate understanding of the figure used in the assessment. They include:

- lethality concentration (LC) at which some fraction of the exposed organisms die (lethal concentration for 50% of organisms, LC50);
- lowest exposure at which a given effect did not differ from controls (no observed effects concentration, NOEC);
- lowest exposure at which the effect differed significantly from controls (lowest observed effects concentration, LOEC); and

- effect concentration (EC) at which a certain proportion of an effect was observed (EC##, such as EC10, or concentration affecting 10% of exposed organisms).

NMFS's assessment of toxicity data for ammonia followed the same assessment framework described in the Section 2.1, pages 9 through 24 of the biological opinion for EPA's approval of criteria adopted by New Hampshire and Massachusetts ([OPR-2022-00203](#)). This includes the data collection, screening, and evaluation strategy. Our purpose is to determine whether NMFS concurs with EPA's determination that its action is not likely to adversely affect the ESA-listed species and critical habitat subject to this consultation (50 CFR 402.13(c)). Accordingly, NMFS evaluated evidence for any effects resulting from exposures within criteria limits for ESA-listed species or the quantity and quality of forage species consumed by ESA-listed species.

Test-specific risk quotients, the calculated criterion concentration given the temperature and pH conditions during exposure divided by the response threshold concentration, are plotted in the context of reference lines representing a risk quotient of 1 (purple) for exposures at the criterion concentration and a risk quotient of 0.5 (orange) representing exposures at one-half the criterion concentration. Risk quotients are plotted on a log scale to enhance resolution. Risk quotients plotted close to or to the right of the purple reference line indicate responses occurring at an exposure concentration below the applicable criterion (i.e., higher risk). The orange one-half criterion concentration serves as a general reference for endpoint risk quotients representing a 50% response (e.g., LC50, EC50). EPA considers one-half the LC50 or other 50% response rate (EC50, IC50) to be a safe value. See the NMFS opinion [OPR-2022-00203](#) at Section 2.1.2.1, pages 20-23, for an explanation of why this rule of thumb is better applied as a general reference than a "bright line" decision point in assessments such as this one.

Effects of the Action

Under the ESA, "effects of the action" are "all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action" (see 50 CFR §402.02). On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order 2 days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the

letter of concurrence would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

The applicable standard to find that an action is not likely to adversely affect ESA-listed species or designated critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. *Beneficial* effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. *Insignificant* effects relate to the size or severity of the impact and include those effects that are undetectable, not measurable, or so minor that they cannot be meaningfully evaluated. Insignificant is the appropriate effect conclusion when plausible effects are going to happen, but will not rise to the level of constituting an adverse effect. That means the ESA-listed species may be expected to be affected, but the intensity of the impacts would not reach a scale where take would occur (e.g. harm, harassment). *Discountable* effects are those that are extremely unlikely to occur.

Removal of the Numeric TP criterion from Tidal Freshwaters

Under natural conditions, the nutrients phosphorous and nitrogen support the proper structure and function of healthy ecosystems. However, in excessive quantities, nutrients can lead to algal overgrowth and decay and cascading consequences: dissolved oxygen and pH regime disruption and decreased light penetration (i.e., eutrophication, Bricker et al. 2008). The introduction of high riverine nutrient loads through bi-directional tidal forces (i.e., rising and falling tides) results in high rates of nutrient assimilation, regeneration, and retention, relative to non-tidal freshwaters (Bukaveckas and Isenberg 2013; Marshall et al. 2009; Odum and Team 1984; Tee et al. 2021). Nutrient cycling in unimpaired tidal freshwaters mitigate nutrient enrichment and eutrophication in marine waters (Bukaveckas and Isenberg 2013; Caraco et al. 1990). This mitigation can fluctuate seasonally in temperate regions due to shifts in loading by stormwater and snowmelt and in assimilation capacity due to shifts in algal growth under changing light and temperature conditions. This further complicates nutrient management (reviewed in Bukaveckas and Isenberg 2013).

Relationship between TP Criterion and the Eutrophic Stressor Oxygen Depletion

The NJDEP [2018/2020 integrated report](#) was issued prior to EPA's approval of removing the TP criterion from tidal freshwaters, so it includes tidal freshwaters identified as impaired due to exceedances of the TP criterion and/or oxygen depletion. Eutrophic conditions evolve over time as nutrient enrichment enhances algal growth until the cascading consequences manifest. Impairment classification requires multiple consistent observations of adverse conditions or trend. NJDEP's target sample size for conventional parameters like TP and dissolved oxygen is 20 samples collected over at least a 2-year period within the specified five-year reporting period. Assessment decisions may also be made based on a minimum of 8 samples at stations in the primary water region, over a 2-year period, if additional data and lines of evidence support an assessment decision. NJDEP impairment assessments are for watershed-oriented collections of stream reaches called assessment units. The assessment unit approach predates the development

and broad use of nationally consistent hydrography data and Geographic Information System mapping. Assessment units are not identical to hydrological catchments and may differ among assessment cycles. Some of assessment units containing tidal freshwaters also contain non-tidal freshwaters and it is unclear whether indicators of eutrophy are associated with tidal or non-tidal reaches within the assessment unit. The relevance of the TP criterion to eutrophy in tidal freshwaters can be examined through contingency analysis of the co-occurrence of eutrophy indicators, in this case oxygen depletion impairments, with TP impairments (Figure 3, Table 2).

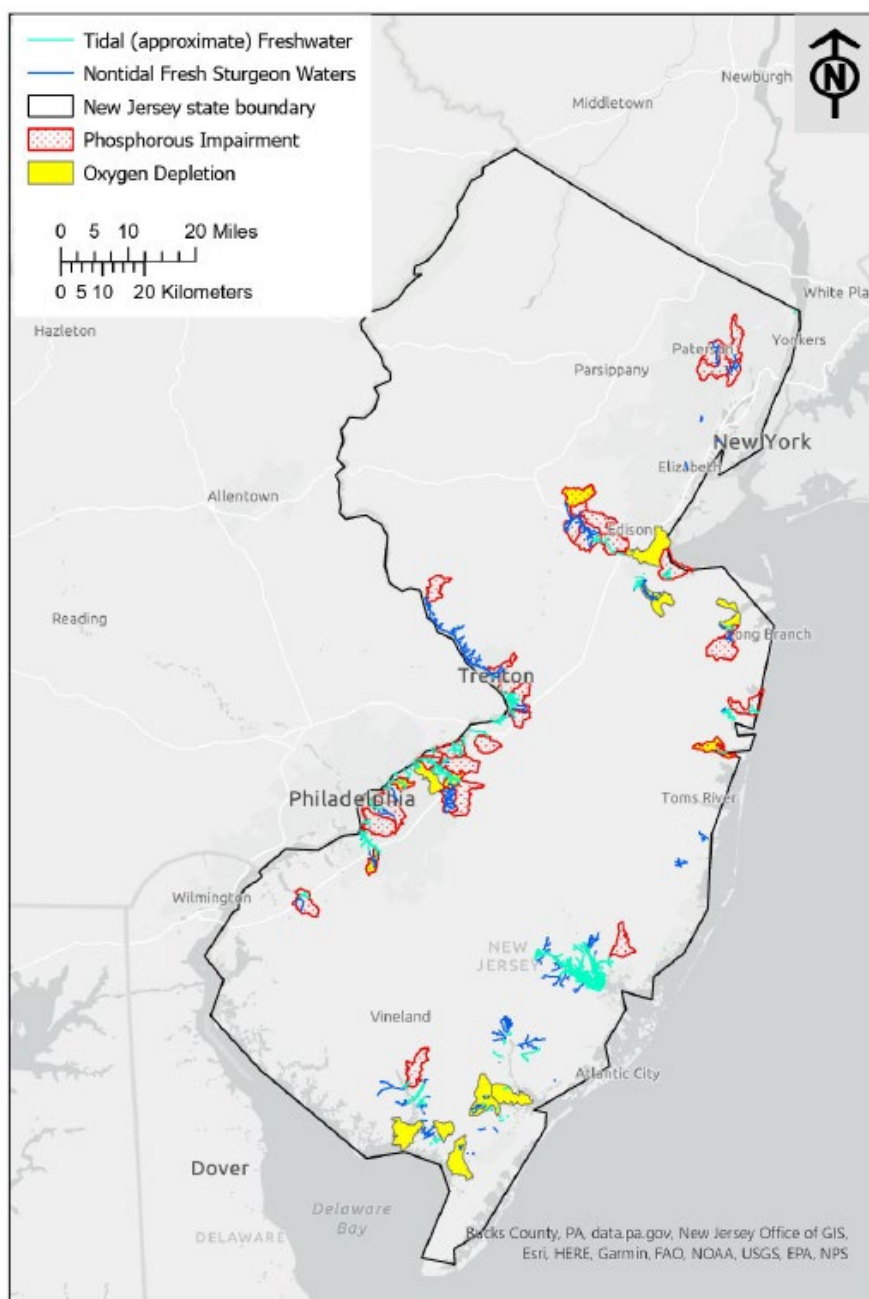


Figure 3. TP and oxygen depletion impairments in freshwater assessment units with Sturgeon Waters

Table 2. Contingency table (with proportions) describing the eutrophy indicator oxygen depletion conditioned on compliance with the numeric TP criterion in assessment units with tidal freshwaters

	TP criterion compliant	TP criterion non-compliant
Oxygen not depleted	16 (0.8)	19 (0.83)
Oxygen depleted	4 (0.2)	4 (0.17)

Fisher's exact test the effect of total TP criterion compliance on the indicator of eutrophy, oxygen depletion, returns a P value of 1, which suggests no effect of criterion compliance on oxygen depletion. The test has a power of 0.65, indicating only a 65% chance of detecting an effect due to the small sample size. This contrasts with a contingency analysis for New Jersey's non-tidal freshwaters (Table 3) where assessment units that are compliant with the TP criterion are half as likely to be impaired by depleted oxygen.

Table 3. Contingency table (with proportions) describing the eutrophy indicator oxygen depletion conditioned on compliance with the numeric TP criterion in assessment units with only non-tidal freshwaters

	TP criterion compliant	TP criterion non-compliant
Oxygen not depleted	317 (0.87)	196 (0.76)
Oxygen depleted	45 (0.12)	63 (0.24)

Fisher's exact test for the effect of criterion compliance on oxygen depletion returns a P value of 0.0002 and is calculated to have a power of 1. Oxygen depletion is less likely to occur in non-tidal freshwaters when they are compliant with the TP criterion.

We must note that the criteria used to identify oxygen depletion impairments are not necessarily compatible with the optimal dissolved oxygen conditions described earlier for Atlantic sturgeon critical habitat. The NJDEP criteria for the tidal freshwaters along the Delaware River between Rancocas Creek and Big Timber Creek (Figure 4) is not to be less than 4 mg/L at any time, but there is no limit for the 24-hour average. On the other hand, the dissolved oxygen criteria for the remaining tidal freshwaters along the Delaware River main stem are not to be less than 4 mg/L at any time and the 24-hour average must not be below 5.0 mg/L. NJDEP defers to the DRBC water quality standards for the tidal portions of the Delaware River. The DRBC established water quality objectives for zones along the Delaware River (Figure 4, Table 4). Zone 3 roughly corresponds with the NJDEP Rancocas Creek to Big Timber Creek limit and is less stringent, with a 24-hour average not less than 3.5 mg/L. The DRBC criteria also include a seasonal criterion for presumed spawning period averages not below 6.5 mg/L.

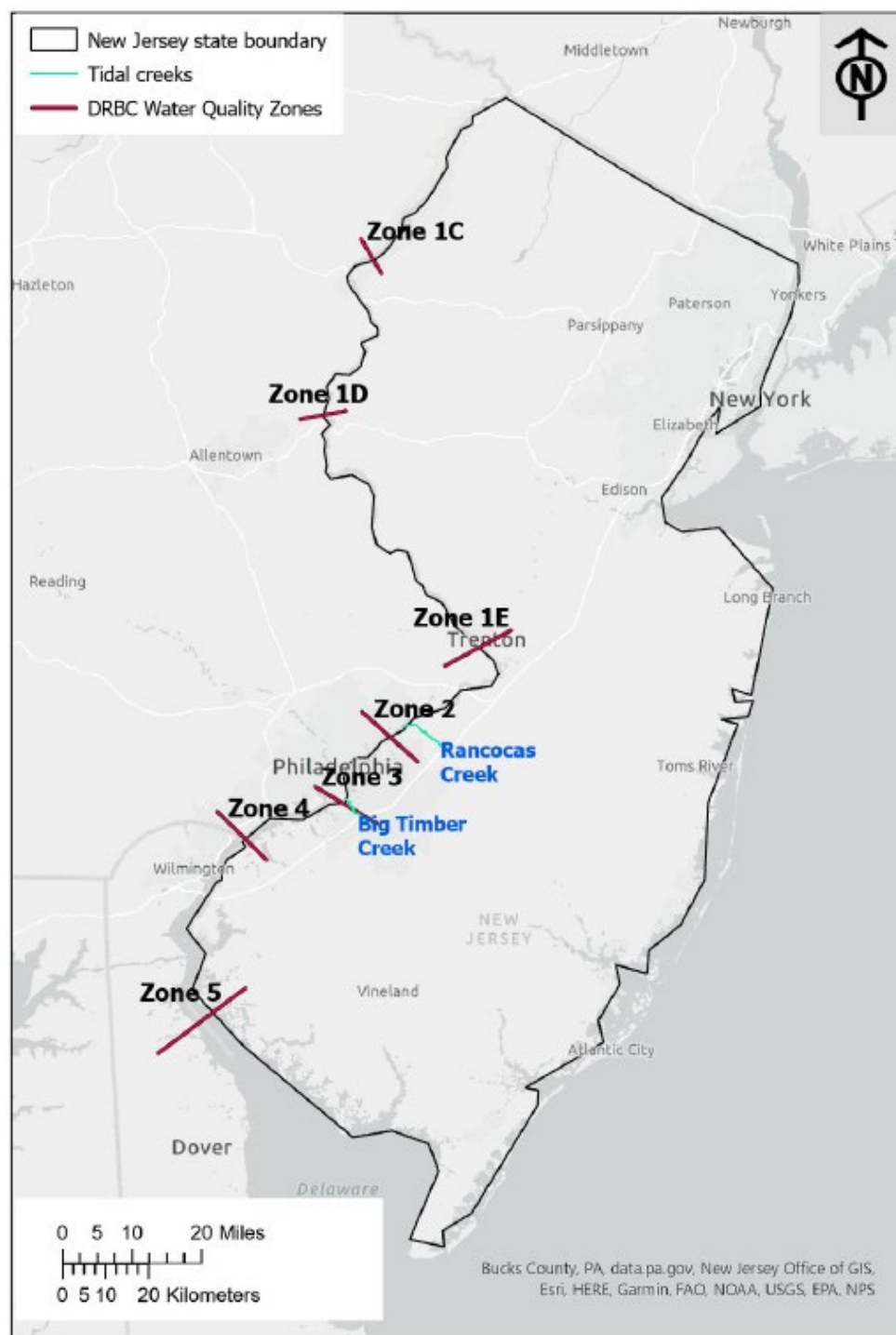


Figure 4. Delaware River water quality zones and Rancocas Creek and Big Timber Creek tidal tributaries

Table 4. DRBC dissolved oxygen objectives

DRBC Zone	Seasonal Dissolved Oxygen Objective	24 hour Dissolved Oxygen Objective	Temperature Objective
Zone 1 C Zone 1 D Zone 1 E	None	5 mg/L ^a	not exceed 5°F (2.8°C) above ambient until 87°F (30.6°C); above 87°F (30.6°C) if natural condition ^b
Zone 2	seasonal average not lower than 6.5 mg/L from April 1 to June 15, and September 16 to December 31	5 mg/L	minimum of 5°F (2.8°C) above 1961-66 24-hour temperature gradient or 86°F (30.0°C)
Zone 3		3.5 mg/L	
Zone 4		3.5 mg/L 4.5 mg/L 6.0 mg/L	not exceed 4°F (2.2°C) above ambient September through May, nor 1.5°F (0.8°C) June through August, nor exceed 86°F (30.0°C)
Zone 5 mile 78.8 mile 70.0 mile 59.5			

a Never below 4 mg/L

b Except heat dissipation areas

Managing Tidal Freshwater Quality in the Absence of the Numeric TP criterion

Until a TP criterion for tidal waters is developed, future condition assessments will rely on a narrative criterion that nutrient conditions must not render the water unsuitable for the designated uses, the anti-degradation provisions at N.J.A.C. 7:9B-1.5(d), and the anti-backsliding provisions at N.J.A.C. 7:14A-13.19. The shortcoming in this strategy is that conditions need to render the tidal freshwater unsuitable for its designated use before action is taken to reduce loading. With a protective numeric criterion, action will be taken when conditions stray from the protective threshold.

EPA indicated in the BE that, without a numeric TP criterion for tidal freshwaters, these waters may be vulnerable to future degradation because the numeric TP criterion of 0.1 mg/L does not apply to the wastewater treatment plants (WWTPs) discharging to the tidal freshwater portions of the Delaware River Basin (Figure 5). According to data in EPA's Enforcement and Compliance History Online (ECHO) database,⁴ 6 of the 19 WWTPs NJPDES permits discharging along the Delaware River do not have TP or oxygen demand limits. Those discharging to other waters used by sturgeon do not have TP limits but are covered under a general permit issued in January of 2023. The remaining 13 WWTPs discharging to Delaware River tidal waters have both TP limits and oxygen demand limits. Three are administratively continued and the remaining permits expire and are due for renewal between January of 2025 and September of 2028. Over the past 3 years, all of these facilities submitted discharge monitoring reports and none have violated their TP limits. This is also true for the non-WWTP facilities along the Delaware River with TP limits in their NJPDES permits. Even so, 7 of the WWTPs are identified in ECHO as contributing to aquatic phosphorous impairments but these impairments are in tidal waters that are not accompanied by oxygen depletion.

⁴ <https://echo.epa.gov/> Accessed December 18, 2023

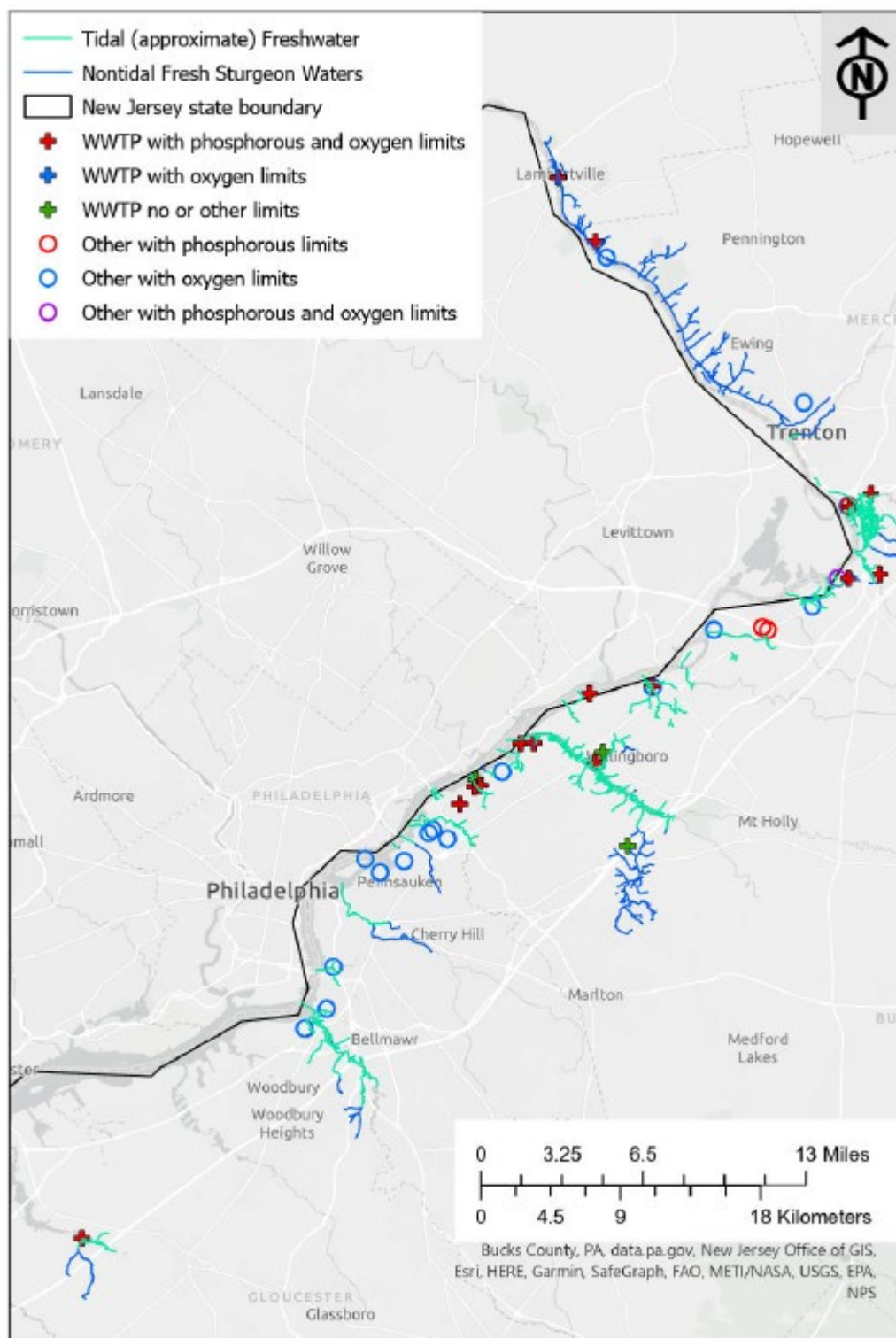


Figure 5. Detail of permitted discharges with TP or oxygen limits discharging to the middle Delaware River.

There is no reason to expect that the discharges from these facilities would change if the TP limit were replaced by the narrative standard in their permits. Further, the DRBC has effluent limits

for TP for new treatment facilities and substantial alterations of existing facilities and NJPDES permits for major dischargers are subject to DRBC review. Permit limits for oxygen demand, and other pollutants such as pathogens and nitrogen, are expected to be retained in renewed permits. Maintaining control of these pollutants would likely attenuate phosphorous in the discharges to the same extent. With removal of the TP criterion from tidal freshwaters, these waters would no longer be identified as impaired by phosphorous, but the existing co-occurring impairments identified for these waters, metals, pollutants in fish tissue, impaired biological integrity, and pathogens, would remain and require recovery efforts.

Further, the eutrophication model used by the DRBC for Delaware River aquatic use attainability studies do not indicate that phosphorus is the limiting nutrient at this time but do indicate that nitrogenous biochemical oxygen demand is the primary stressor resulting in dissolved oxygen depletion. Because the tidal tributaries and the Delaware River main stem are a contiguous system, this is expected to be the case for the tributaries as well (Nyer 2023). Eutrophication modelling is not used in assessments of other tidal freshwaters of New Jersey. Among the 5 depleted oxygen-impaired assessment units with tidal freshwaters but not within the DRBC jurisdiction, the Metedeconk River is the only unit impaired by both depleted oxygen and TP. This assessment unit is also impaired by total nitrogen. The remaining 4 oxygen depleted assessment units were not assessed for nitrogen impairment.

Effects Determination

The analysis indicating that oxygen depletion and TP impairments are poorly associated in tidal freshwaters is consistent with the DRBC finding that nitrogenous oxygen demand is the causal stressor for oxygen depletion impairments and the expected influence of bi-directional tidal forces on nutrient dynamics, in general (Bukaveckas and Isenberg 2013; Marshall et al. 2009; Odum and Team 1984; Tee et al. 2021). In addition, permitted discharges to tidal freshwaters are not expected to change appreciably in the absence of a numeric TP criterion. Taken together, the effects of removing the TP criterion from tidal waters on ESA listed shortnose sturgeon and Atlantic sturgeon is expected to be insignificant and thus not likely to adversely affect these species. This determination may need to be reconsidered if revisions to oxygen criteria to meet sturgeon needs results in identification of additional tidal freshwater oxygen depletion impairments that are associated with elevated TP.

Ammonia

Total in-water ammonia nitrogen includes both the ionized form (ammonium) and the un-ionized form (ammonia). The 2 forms exist in water in dynamic equilibrium. It is the un-ionized form of ammonia, when in excess, that is highly toxic and can result in damaged gill tissue and disruption of ion metabolism and blood pH in fish (Ip et al. 2001; Thurston and Russo 1981). The ratio of un-ionized ammonia to ammonium ion depends upon both pH and temperature, and generally increases 10-fold for each rise of a single pH unit and approximately 2-fold for each 10 °C rise in temperature over the 0-30 °C range (Erickson 1985). Elevated ammonia contributes to depressed oxygen levels when oxidizing microbes convert ammonia into nitrite and nitrate. The resulting dissolved oxygen

reductions can decrease species diversity and cause fish kills (Constable et al. 2003). Accordingly, the 2013 Ammonia Guidelines account for the influence of pH and temperature on toxicity.

Exposure to Total Ammonia Nitrogen within Criteria Limits

Important anthropogenic sources of ammonia are WWTPs and confined animal feeding operations (CAFOs). Assessment units with freshwater Sturgeon Waters assessed for ammonia impairment all meet the ammonia criteria in effect at the time of assessment for the NJDEP [2018/2020 integrated report](#). EPA's ECHO database currently identifies NJPDES permits for 15 WWTPs and 1 recycling facility that are required to monitor for ammonia discharges to freshwaters in catchments associated with Sturgeon Waters. All receiving waters for these permits are classified as impaired. Twelve are impaired by eutrophication-related (oxygen depletion, nutrients) or potentially eutrophication-related (turbidity, benthic community impairment) indicators. The ECHO records for 5 of the permits indicate that ammonia discharge violations potentially contributed to these impairments. Four additional permits have not reported ammonia discharge violations, but ammonia in these discharges is identified as potentially contributing to impairments.

Because the action is EPA's approval of NJDEP adopting and implementing EPA's Ammonia Guidelines as water quality criteria, this consultation addresses exposures that are within criteria limits.

Responses of ESA-listed Species and Designated Critical Habitat to Total Ammonia Nitrogen within Criteria Limits

The data collection and screening strategy used in this and previous consultations was fully described in Section 2.1.2, pages 18-24, of the biological opinion for EPA's approval of various criteria adopted by New Hampshire and Massachusetts ([OPR-2022-00203](#)). A search of the Web of Science database for research on the aquatic toxicity of ammonia did not identify data for exposures not already represented in EPA's Ecotoxicology Knowledgebase (ECOTOX) at the time of the consultation with EPA on its approval of Delaware and Maryland's adoption and implementation of EPA's Ammonia Guidelines. We therefore incorporate the dataset from the opinion documenting consultation on EPA's approval of Delaware and Maryland's adoption of the Ammonia Guidelines as is ([OPR-2022-030402](#)). This dataset includes 1,073 entries for 48 fish species, including shortnose sturgeon and 32 invertebrate families for which pH and temperature data were reported, allowing test-specific criteria to be calculated (Figure 6).

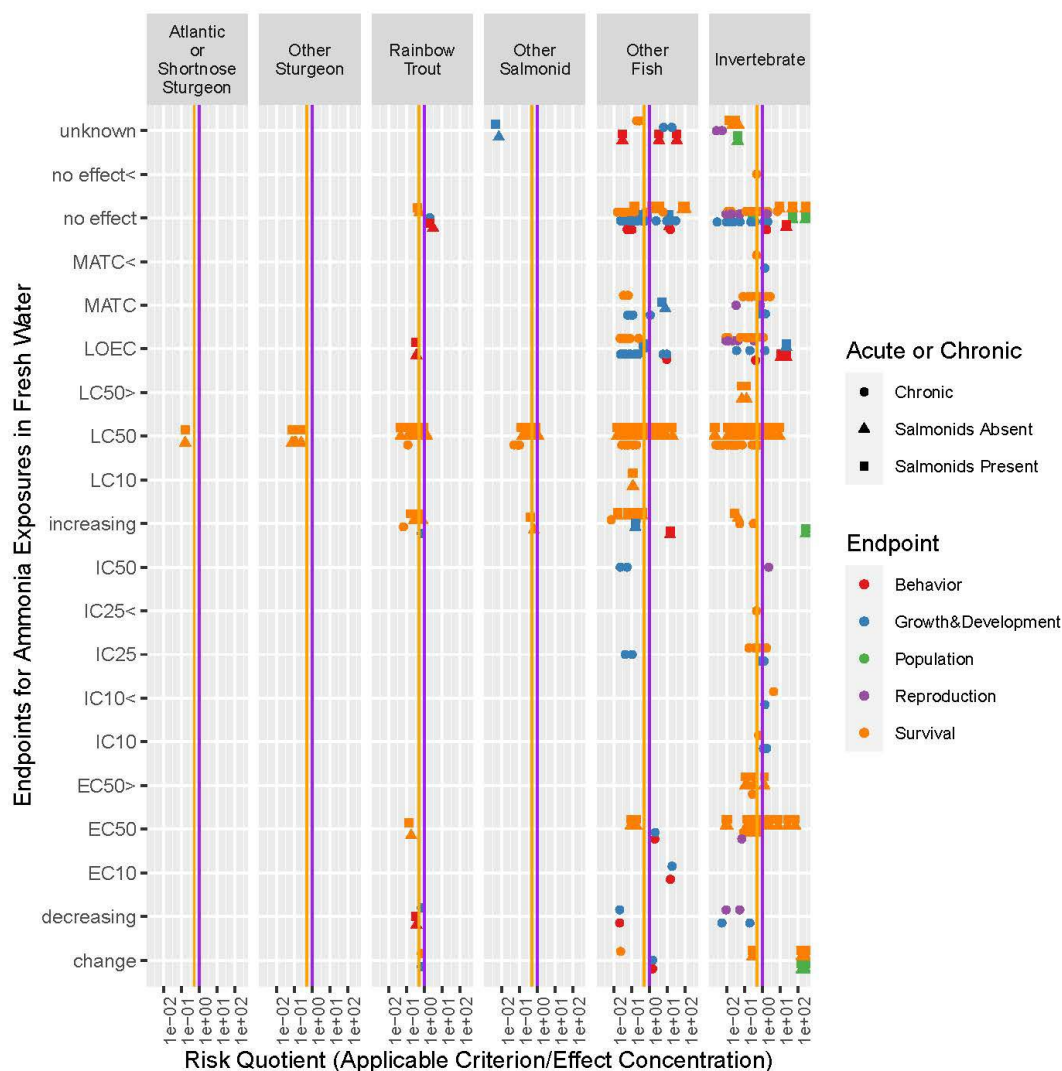


Figure 6. Distribution of risk quotients for freshwater exposures to ammonia in context of reference lines representing the applicable criterion (purple) and one-half the applicable criterion (orange)

Data on the toxic effects of chemicals on ESA-listed species are rare, so it is often necessary to rely on data for surrogate species to represent acute lethality and chronic sublethal effects on the species of concern, in this case Atlantic and shortnose sturgeon. Section 2.1.1, pages 16-18, of the biological opinion for EPA's approval of various criteria adopted by New Hampshire and Massachusetts ([OPR-2022-00203](#)) describes our rationale for selecting rainbow trout as a surrogate species for toxic effects on ESA-listed sturgeon. Where data are absent for sturgeon and rainbow trout, we must rely on available data for other fish species.

The availability of acute toxicity data for shortnose sturgeon simplifies NMFS's evaluation of exposures within the acute ammonia criterion. Under standard conditions, the acute criterion for salmonids present and salmonids absent are essentially the same. The criteria diverge from each other at and below temperatures of 15 °C (59 °F). A four-day total ammonia nitrogen LC50 for fingerling shortnose sturgeon was reported by (Fontenot 1998) at 149.86 +/- 55.20 mg/L under a

temperature range of 17.9 +/- 0.62 °C and a pH between 6.8 and 7.3. The ammonia criteria calculated using these temperature and pH values range from 13.76-24.43, yielding risk quotients from 0.107 to 0.161. The Ammonia Guideline document, and the BE normalized the Fontenot (1998) shortnose sturgeon LC50-156.7 mg/L under standard conditions of 20 °C and a pH of 7 (USEPA 2013). The confidence interval around the reported LC50 indicates a coefficient of variation (mean/standard deviation) of about 37%. This suggests a confidence interval for EPA's normalized LC50 of 99-214 mg/L total ammonia nitrogen and the estimated LC05 would range from about 69-150 mg/L total ammonia nitrogen. Although the confidence intervals of EPA's estimated LC05 for shortnose sturgeon overlaps with the confidence interval for the LC50, the acute effect threshold is at least 4-fold the mean acute ammonia criterion under standard conditions of 17 mg/L, indicating a risk quotient between 0.25 to 0.11 for the estimated LC05. While there are no toxicity data available for ammonia effects on Atlantic sturgeon, the shortnose sturgeon data serves as a genus-level surrogate, indicating responses to exposures within acute criterion limits for ammonia would be similar in Atlantic sturgeon.

Data for sublethal exposures of fish to ammonia include responses for survival, behavior, growth, and development. While there are no data classified as a reproduction endpoint, there are early life stage survival data. The chronic ammonia criterion was derived using fathead minnow hatchability data expressed as an LC50 (Thurston et al. 1983) and, although not found in ECOTOX, there are additional EC50s from a study by the same authors for a five-year life cycle test for rainbow trout (Thurston et al. 1984b).

The implications of the “salmonids present” and “salmonids absent” acute criteria are illustrated in Figure 7. At 3 °C (37.4 °F), test-specific LC50 risk quotients increased by 36% under the salmonids absent criteria. While there are no data for sturgeon exposures below the salmonids present-salmonids absent divergence at 15 °C, a 36% increase in sturgeon risk quotients that are available indicate that lethality would not be expected under a worst-case acute criterion scenario (Figure 7, black triangles).

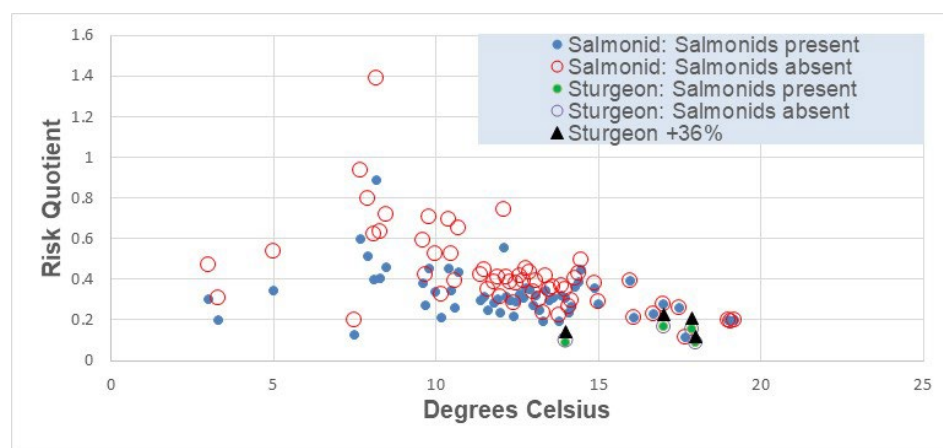


Figure 7. Comparison of test-specific LC50 risk quotients using the salmonids present (solid circles), salmonids absent (hollow circles) criteria calculations, and risk quotients for sturgeon increased by 36 % (black triangles) to represent worst-case acute criterion scenario

In the absence of growth and development data for sturgeon, we consider data reported for rainbow trout. Exposures of rainbow trout to 4.05 or 6.32 mg/L ammonia nitrogen exhibited increased feeding rate and weight gain, and those exposed to 6.32 mg/L ammonia nitrogen had reduced mesenteric fat (Hanna 1992). The responses occurred at exposure thresholds above the test-specific chronic ammonia criterion of 2.7 mg/L ammonia nitrogen, resulting in risk quotients of 0.7 and 0.1. The screened ECOTOX dataset did not include fish data for the effects of ammonia on reproduction. One data line for effect on sperm motility was excluded because the response threshold was reported as a range from 10-1000 mg/L ammonia nitrogen (Stroganov and Pozhitkov 1941). Two other studies on the effects of ammonia on fathead minnow were not reported in the ECOTOX database. Adverse effects were observed in fish at all exposure concentrations, so a no effect concentration was calculated to be 2.19 mg/L ammonia at a pH of 7.3 and temperature of 25.1 °C (Armstrong et al. 2012). The applicable chronic criterion under these exposure conditions is about half that concentration, at 1.17 mg/L total ammonia. In a second study under the same conditions, ammonia exposures were evaluated at the estimated no effect threshold and, in combination with estradiol, at the estradiol no effect threshold. While a mixture effect was not evident, the study confirmed that adverse effects did not occur at 2.19 mg/L total ammonia nitrogen (Armstrong et al. 2015).

Ammonia exposures resulted in avoidance/preference/activity-type behaviors and changes in feeding at exposures below test-specific criterion concentrations for bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), and pikeperch (*Sander lucioperca*, Lubinski et al. 1980; Morgan 1979; Schram et al. 2014). The bluegill exposure was an abrupt gradient that resulted in a temporary exploratory response at low exposure concentrations, but either preference or avoidance responses of individual fish at higher exposures (Lubinski et al. 1980). Similarly, the largemouth bass study reported aberrations in behavior, but did not clearly suggest avoidance (Morgan 1979). The pikeperch study exposed fish to a continuous concentration of ammonia for 42 days and found that specific growth rate and consumption of food, provided above satiation levels, was decreased at all concentrations, yet the final weights of exposed and control fish were not significantly different and there were no effects on physiological metrics (Schram et al. 2014). The purpose of this study was to identify optimal aquaculture conditions to maximize production. Wild fish are not expected to have access to food in excess of satiety and absence of detectable effects on fish weight and physiological markers suggest that similar ammonia exposure conditions in the wild would not have fitness implications. In summary, the bluegill, largemouth bass, and pikeperch studies reporting effects on behavior and food consumption within criteria limits do not suggest effects on the fitness of wild fish would be detectable, and would thus be insignificant.

The PBFs for Atlantic sturgeon designated critical habitat in the action area do not include biological features that would be directly affected by ammonia toxicity. Ammonia nitrogen may contribute to eutrophication and subsequent dissolved oxygen depression, but this requires a complex suite of enriched nutrients and physical conditions such that the contribution of

ammonia within criteria limits is expected to be insignificant and therefore not likely to adversely affect critical habitat designated for Atlantic listed sturgeon.

While prey are not identified as a PBF of critical habitat designated for Atlantic sturgeon, ammonia effects on the quantity and quality of prey species can indirectly affect both shortnose and Atlantic sturgeon. About 17% of the screened ECOTOX data indicate adverse effects to invertebrate species. The plotted risk quotients for the effects of ammonia on invertebrates include growth and development, reproduction, behavior, population productivity, and mortality responses. The bulk of the invertebrate data indicate responses occurring above criteria limits. Risk quotients with a reported endpoint (n=34) indicated effects occurring for exposures within criteria limits in species likely to serve as forage for early life stage sturgeon: mayflies, amphipods, rotifers, and *Daphnia* (Ankley et al. 1995; Hickey et al. 1999; Kaniewska-Prus 1982; Khangarot and Das 2009; Liang et al. 2018; Snell and Persoone 1989; Whiteman et al. 1996). There were also risk quotients (n=60) indicating effects would not occur within criterion limits for these same prey species groups (Ankley et al. 1995; Besser et al. 1998; Borgmann 1994; Buikema et al. 1974; Cowgill and Milazzo 1991; De Rosemond and Liber 2004; Diamond et al. 2006; Hickey et al. 1999; Hyne and Everett 1998; McDonald et al. 1997; Mount 1982; Reinbold and Pescitelli 1982; Thurston et al. 1984a; Whiteman et al. 1996). Given the greater abundance of data indicating effects to prey species for early life state sturgeon would not result from exposures within criteria limits, the criteria are likely to have insignificant effects on the quantity and quality of invertebrate prey for sturgeon and thus not likely to adversely affect these species.

Effects Summary

The best available data indicate that it is reasonably certain that shortnose sturgeon and Atlantic sturgeon will be exposed to waters subject to implementation of the ammonia criteria and that New Jersey will use the criteria in the regulation of discharges and identification and restoration of impaired waters. The best available toxicity data indicate the salmonid present and salmonid absent acute criteria and the chronic criterion for total ammonia nitrogen are expected to be between 4-fold and an order of magnitude lower than effect thresholds for ESA-listed sturgeon. While adverse effects may occur in some invertebrate species that serve as prey for shortnose and Atlantic sturgeon in Sturgeon Waters, the implications of any effects on the abundance and quality of forage species for shortnose and Atlantic sturgeon will be attenuated by the wide variety of forage species sturgeon consume. A reduction in the abundance of a particular benthic species is likely to be compensated for by an increase in other species (Wesolek et al. 2010). Therefore, NMFS does not expect that ammonia exposures within chronic criterion or acute criterion limits will reduce the abundance or quality of forage for shortnose sturgeon and the New York Bight DPS, and Chesapeake Bay, Gulf of Maine, Carolina, and South Atlantic DPSs of Atlantic sturgeon migrating and foraging in New Jersey waters.

NMFS concludes that EPA's approval of adoption of the Ammonia Guidelines as criteria by NJDEP may affect, but is not likely to adversely affect, shortnose sturgeon or New York Bight, Gulf of Maine, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon because

the effects of exposures to ammonia within criterion limits are expected to be insignificant for both sturgeon and the abundance and quality of food. EPA's approval may affect, but is not likely to adversely affect critical habitat designated for Atlantic sturgeon because the contribution of ammonia within criteria limits is not expected to promote or sustain eutrophication and impairment of the dissolved oxygen PBF and the critical habitat PBFs do not include biological features that would be directly affected by ammonia toxicity.

Conclusion

Based on this analysis, NMFS concurs with EPA that its action may affect, but is not likely to adversely affect, shortnose sturgeon or New York Bight, Gulf of Maine, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon or designated critical habitat for the New York Bight DPS Atlantic sturgeon.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on ESA-listed species or designated critical habitat, to help implement recovery plans or develop information (50 CFR § 402.02). Actions or measures that could minimize or avoid adverse effects of NJDEP discharge authorizations include:

1. Collaborate with the DRBC and NJDEP to expedite development, finalization, and implementation of a coherent, statewide nutrient management strategy that integrates nutrient levels (including ammonia), biological condition, early indicators of eutrophic condition, and seasonality on a location-specific basis, as appropriate.
2. Collaborate with NMFS and EPA Region 3 on the establishment of a programmatic framework for consulting on EPA approval of nutrient-related actions in the Delaware River Basin.
3. Collaborate with NMFS on the development of a baseline water quality condition tool for aquatic impairments and analysis of the aggregate effects of discharges to New Jersey waters where ESA-listed species under NMFS's jurisdiction occur.
4. Periodically review water quality conditions potentially affecting ESA-listed species and critical habitat under NMFS's jurisdiction and meet with NMFS to discuss changes in water quality, gaps in recovery efforts and in information regarding water quality, and approaches to improving conditions and resolving gaps.
5. Considering that surface water criteria for the protection of human health via primary and secondary contact recreation are de facto exposure conditions for aquatic species, evaluate the potential effects of exposures of ESA-listed species and their forage species to aquatic pollutants lacking criteria for the protection of aquatic life.

In order for the NMFS Office of Protected Resources ESA Interagency Cooperation Division to be kept informed of actions minimizing or avoiding adverse effects on, or benefiting, ESA-listed species or their designated critical habitat, EPA should notify us of any conservation recommendations they implement in their final action at nmfs.hq.esa.consultations@noaa.gov with the subject line “Implementing OPR-2023-03635 Conservation Recommendations.”

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the Federal agency where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect an ESA-listed species or designated critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the ESA-listed species or designated critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR § 402.16).

Please direct questions regarding this letter to Dr. Patricia Shaw-Allen, Consulting Biologist, at (301) 427-8473, or by email at pat.shaw-allen@noaa.gov, or me at (240) 723-6321, or by email at tanya.dobrzynski@noaa.gov

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Sincerely,

[Signed]

Tanya Dobrzynski
Chief, ESA Interagency Cooperation Division
Office of Protected Resources

cc: Jennifer Anderson
Christine Vaccaro
Samantha Nyer

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