UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

STATEMENT OF BASIS FOR:

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMITS FOR REGION 1 AQUACULTURE FACILITIES TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NUMBER: VTG130000

PUBLIC NOTICE START AND END DATES: July 27, 2022 – August 26, 2022

1.0 PROPOSED ACTION

On May 6, 2021, Region 1 of the U.S. Environmental Protection Agency ("EPA") issued a NPDES General Permit for aquaculture facilities in the Commonwealth of Massachusetts and States of New Hampshire and Vermont ("Final AQUAGP"). The Final AQUAGP extended coverage to twelve land-based hatcheries that were previously covered under existing individual permits. All twelve facilities were granted authorization to discharge by the end of 2021 and their individual permits were terminated upon authorization.

On March 23, 2022, EPA received a request for permit modification from the United States Department of the Interior, Fish and Wildlife Service (USFWS). USFWS requested a reduction and/or elimination of the monitoring requirements for formaldehyde and hydrogen peroxide for three of their hatcheries covered under the Final AQUAGP. Upon consideration of their request and additional information summarized below, EPA has determined that a modification to the monitoring requirement for formaldehyde is acceptable but that a change in the hydrogen peroxide requirement is not warranted. **Specifically, the Draft Permit Modification proposes to replace the once per discharge event formaldehyde monitoring requirement with a modified monitoring frequency (minimum of twice monthly) and a new calculation requirement. The monitoring frequency reduction will only change monitoring frequency during periods of fish egg treatment and not full raceway treatment which will still require once per discharge event sampling.**

This statement of basis explains the rationale for the Permit Modification to the Final NPDES Permit pursuant to federal regulations found at 40 Code of Federal Regulations (CFR) §122.62.

2.0 BASIS OF PERMIT MODIFICATION

The Final AQUAGP required that authorized facilities monitor formaldehyde and hydrogen peroxide once per discharge event by grab sample. Both parameters were subject to water-quality based effluent limitations of 1.6 and 4.6 mg/L for formaldehyde and a daily maximum limitation of 0.7 mg/L for hydrogen peroxide. In addition, dissolved oxygen monitoring (and temperature monitoring for discharges to New Hampshire waterbodies) was required concurrent with formaldehyde monitoring due to the potential for formaldehyde to deplete the oxygen content of the waterbody. EPA's understanding in setting the monitoring frequency at once per discharge event was that the annual use of formalin (the source of formaldehyde) and hydrogen peroxide were rare. Therefore, monitoring the discharge only when these chemicals were in use (i.e., once per discharge event) would not be particularly burdensome and would demonstrate compliance with the effluent limitations and states' toxics standard.

In subsequent conversations with USFWS culminating in their March 23, 2022, permit modification request, EPA learned that use of these chemicals at national hatcheries is much more frequent than assumed in coming up with the original monitoring frequencies.[1] Specifically, Dwight D. Eisenhower National Fish Hatchery (VTG130001) and White River National Fish Hatchery (VTG130002) use formalin-containing products as frequently as 15 days per month from mid-October through January to treat finfish eggs. By comparison, state-run fish hatcheries in New Hampshire use formalin 1-3 times per month and state-run fish hatcheries in Massachusetts do not use formalin. Similarly, Nashua National Fish Hatchery (NHG130001) treats fish eggs with hydrogen peroxide up to 6 times per week from November through January. Through the General Permit application process, permittees disclosed a wide range of hydrogen peroxide use, with both state run and national fish hatcheries reporting that they do not use it at all and some hatcheries using it daily during a given month when fish egg treatment is required.

In determining whether a reduction in monitoring frequencies is warranted, EPA analyzed monitoring data provided by USFWS and submitted by other AQUAGP-covered permittees in their discharge monitoring reports (DMRs). In addition, EPA reviewed documents associated with the Region 10 General Permit for Federal Aquaculture Facilities and Facilities Located in Indian Country in Washington, including the August 2017 report *Water Sampling and Testing for Formaldehyde at Northwest Fish Hatcheries* and the December 2015 Biological Evaluation.[2]

Formaldehyde

Formalin is used for the therapeutic treatment of fungal infections on the eggs of finfish and to control certain external protozoa and monogenetic trematodes on all finfish species. Aquaculture facilities commonly use formalin-based biocides, such as Paracide-F, Formalin-F or Parasite-S, which contain approximately 37 percent by weight of formaldehyde gas. Formaldehyde is toxic to a wide range of aquatic species and the AQUAGP has set effluent limitations of 1.6 mg/L (monthly average) and 4.6 mg/L (daily maximum) based on criteria developed in the paper:

[1] It should be noted that the frequency of use assumptions were not used in setting effluent limitations and therefore discharges that meet those effluent limitations will still meet water quality standards.
[2] Available at https://www.epa.gov/npdes-permits/npdes-general-permit-federal-aquaculture-facilities-and-aquaculture-facilities-located.

Hohreiter, D.W. and Rigg, D.K., 2001. *Derivation of Ambient Water Quality Criteria for Formaldehyde*, Journal of Science for Environmental Technology in Chemosphere, Vol. 45: 471-486.

Five hatcheries covered under the AQUAGP use and discharge formalin, three state-run hatcheries in New Hampshire and the two USFWS-run facilities in Vermont. The New Hampshire hatcheries that use formalin have reported that they use it infrequently 1-3 times per month at most. By contrast, the Vermont federal facilities use formalin as frequently as fifteen days per month when new eggs are introduced to the hatchery and are in an incubation stage of development. Treatment of eggs involves dosing stacks of eggs gradually over a fifteen-minute period, every other day. In addition, Dwight D. Eisenhower has reported use of formalin for treating age-2 fish for bacterial gill disease in raceways. Raceway treatment requires a much higher dose of formalin than egg treatment. Given the high concentrations that may result from full-raceway treatment, a reduction in monitoring frequency is not being considered for this permit modification. Finfish egg treatment for the two Vermont hatcheries has resulted in maximum concentrations of 0.42 mg/L, well below the 4.6 mg/L daily maximum effluent limitation.[3]

In addition to the low observed effluent concentrations during egg treatment, the financial burden of monitoring for these specific hatcheries is disproportionate to the one EPA envisioned when drafting the original condition. Specifically, the cost of testing (including sampling, courier services, and laboratory analysis) given the short hold-time for formaldehyde analysis[4] is a financial and logistical challenge for these rural hatcheries and outweighs the compliance benefit from collecting additional data, given the historical monitoring results. As a result, EPA finds that a reduction in formaldehyde monitoring frequency for the Vermont hatcheries is warranted. EPA is only modifying the Vermont portion of the permit because of the site-specific reasons for the USFWS request. The Draft Permit Modification is proposing to change Footnote 16 in part 3.1.

> Original Language: Monitoring and reporting is only required during formalin use. When formalin is not in use, the Permittee should report a "NODI: 9" code in the applicable DMR.
>
> New Language: Monitoring and reported is required once per discharge event during raceway treatment with formalin. For egg treatment, at a minimum, monitoring is required twice per month during different treatment weeks. On days when formalin is used but no sampling is required, the Expected Environmental Concentration (EEC) of formaldehyde shall be calculated using the following equation:
>
> > EEC = concentration of formaldehyde used (mg/L) * volume of product used (gallons) / estimated volume water discharged (gallons)

[3] Dwight D. Eisenhower (VTG130001) reported concentrations higher than this on their February 2022 DMR, a daily maximum concentration of 33 mg/L and a monthly average concentration of 1.18 mg/L. These concentrations are representative of raceway treatment and represent an effluent limitation violation and a reduction in monitoring frequency for this use of formalin is not being considered.
[4] EPA Method 1667 has a 3-day hold time.

Where the concentration of formalin would be multiplied by the percent formaldehyde (0.37) to get the concentration of formaldehyde used, the volume of product used would be the volume of formaldehyde product used, and the volume discharged is the entire daily water discharge through the hatchery minus the volume of formalin product added. Formalin shall not be discharged if the EEC is above the daily maximum effluent limitation unless effluent sampling demonstrates compliance with the limitation. EEC calculations shall be submitted as an attachment to the monthly DMR. When formalin is not in use, the Permittee should report a "NODI:9" code on the applicable DMR.

Monitoring for dissolved oxygen is required during formalin use. When formalin is not in use, the Permittee should report a "NODI: 9" code on the applicable DMR.

EPA has chosen to provide a calculation requirement to offset the reduction in monitoring frequency. This will help ensure that hatchery operators are still able to track the expected concentration leaving the hatchery. Twice monthly monitoring will ensure these calculations are accurately representing the discharge concentrations. The calculations are expected to overestimate the concentration discharged due to biodegradation of formaldehyde as it passes through the hatchery and mixes with the receiving water.

Hydrogen Peroxide

Hatcheries use 35% PEROX-AID® (hydrogen peroxide solution) as an external microbiocide for the control of mortality in freshwater-reared finfish eggs due to saprolegniasis, in freshwater-reared salmonoids due to bacterial gill disease (Flavobacterium branchiophilum), and in freshwater-reared cool water finfish due to external columnaris disease (Flavobacterium columnae). PEROX-AID® is a USFDA-approved drug for freshwater-reared finfish, and its use must adhere to USFDA label instructions.

State water quality standards do not include criteria for hydrogen peroxide, but the USFDA has derived water quality benchmarks for use by NPDES permitting authorities (See "*Environmental Assessment for the Use of Hydrogen Peroxide in Aquaculture for Treating External Fungal and Bacterial Diseases of Culture Fish and Fish Eggs*", United State Geological Survey, 2006, p.72). For freshwater aquatic life, the acute benchmark (criteria maximum concentration) is 0.7 mg/L. The USFDA determined that a corresponding chronic benchmark was unnecessary. The AQUAGP includes a maximum daily limitation of 0.7 mg/L based on USFDA's recommended acute benchmark and requires monitoring when hydrogen peroxide is used at the facility.

Seven of the AQUAGP-authorized hatcheries have reported the potential to use and discharge hydrogen peroxide. As of March 2022, three hatcheries have used and monitored for hydrogen peroxide in their discharge under the general permit, Nashua National Fish Hatchery, New Hampton State Fish Hatchery, and Mclaughlin State Fish Hatchery. DMR data for these hatcheries show concentrations ranging from non-detect to 0.6 mg/L. Of note, for the USFWS-run Nashua National Fish Hatchery, 50% of samples (n=20) collected during December 2021 – January 2022 resulted in concentrations of 0.6 mg/L, right below the effluent limitation.

Unlike formaldehyde, hydrogen peroxide does not have a Clean Water Act-approved test method. As a result, laboratory analysis is not required for permit compliance. Instead, most hatcheries covered under the AQUAGP use testing kits, costing between $1-2 per test, that can

be used on site. Given the low-cost of hydrogen peroxide monitoring relative to other monitoring requirements, the acute toxicity of the chemical, and the reported concentrations relative to the AQUAGP effluent limitation, EPA does not find once per discharge event testing particularly burdensome. As a result, no changes have been made to the hydrogen peroxide requirements. However, in the future, during the reissuance of the next general permit, EPA will reconsider a reduction in hydrogen peroxide monitoring.

3.0 STATE CERTIFICATION

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the Draft Permit Modification are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs or it is deemed that the state has waived its right to certify. Regulations governing state certification are set forth in 40 CFR §124.53 and §124.55. EPA has requested permit certification by the State pursuant to 40 CFR §124.53 and expects that the Draft Permit Modification will be certified.

If the State believes that any conditions more stringent than those contained in the Draft Permit Modification are necessary to meet the requirements of either the Clean Water Act (CWA) §§208(e), 301, 302, 303, 306 and 307, and with appropriate requirements of State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The only exception to this is that the sludge conditions/requirements implementing §405(d) of the CWA are not subject to the §401 State Certification requirements. Reviews and appeals of limitations and conditions attributable to State Certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 CFR §124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit Modification can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." See 40 C.F.R. §124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR §122.4(d) and 40 CFR §122.44(d).

4.0 ADMINISTRATIVE RECORD, PUBLIC COMMENT PERIOD, HEARING REQUESTS, AND PROCEDURES FOR FINAL DECISION

All persons, including applicants, who believe any condition of the Draft Permit Modification is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to: Nathan Chien, U.S. EPA, Water Division, Industrial Permits Section, 5 Post Office Square, Suite 100 (06-1), Boston, Massachusetts 02109-3912; or to Chien.Nathan@epa.gov.

Any person, prior to such date, may submit a request in writing for a public hearing to consider the Draft Permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public meeting may be held if the criteria stated in 40 CFR §124.12 are satisfied. In reaching a decision on the Final Permit Modification, EPA will respond to all significant comments and make these responses available to the public on EPA's website and at EPA's Boston office.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a decision regarding the proposed Draft Permit Modification and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the final permit decision, any interested person may submit a petition for review of the permit to EPA's Environmental Appeals Board consistent with 40 CFR §124.19.

The administrative record on which this Draft Permit Modification is based may be accessed at EPA's Boston office by appointment, Monday through Friday, excluding holidays from Nathan Chien, EPA Region 1, 5 Post Office Square, Suite-100 (06-1), Boston, MA 02109- 3912, or via email to Chien.Nathan@epa.gov. Additional inquiries may be made of the EPA contacts below:

Nathan Chien, Wastewater Permits Section
5 Post Office Square - Suite 100 - Mailcode 06-1
Boston, MA 02109-3912
Email: Chien.Nathan@epa.gov
Telephone: (617) 918-1649