UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
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FACT SHEET AND SUPPLEMENTAL INFORMATION

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES GENERAL PERMIT NOs: MAG580000 and NHG580000

PUBLIC NOTICE START AND END DATES: April 8, 2021 - May 10, 2021

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APPENDICES

1 Coverage Under This Permit

The Environmental Protection Agency, Region 1 ("EPA" or "Region 1"), is issuing the draft National Pollutant Discharge Elimination System ("NPDES") General Permit for small wastewater treatment facilities ("WWTFs") that are treatment works treating domestic sewage (collectively "facilities") which discharge treated wastewater to certain surface waters of the Commonwealth of Massachusetts (including both Commonwealth and Indian Country Lands) and the State of New Hampshire. The term "treatment works treating domestic sewage" is defined as a publicly owned treatment works ("POTW") or any other sewage sludge or wastewater treatment system involved in the storage, treatment, recycling, and reclamation of municipal or domestic sewage (see 40 CFR § 122.2). For purposes of this General Permit, "treatment works treating domestic sewage" includes POTWs that accept and treat domestic wastewater and facilities operating at schools, hotels, nursing homes, etc.

This fact sheet contains a summary of the following:

- Types of discharges eligible/ineligible for coverage;
- Proposed effluent limitations;
- Monitoring requirements;
- Reporting requirements;
- Record-keeping requirements;
- Instructions for public participation; and
- Legal information supporting this general permit.

This fact sheet provides the principal facts and the significant legal and policy questions considered during the development of the draft permit.

1.1 Background Information

General Permit MAG580000 applies to discharges in Massachusetts, and General Permit NHG580000 applies to discharges in New Hampshire. Unless otherwise specified, these two permits are collectively referred to as the "Small Wastewater Treatment Facility General Permit" ("WWTF GP" or the "General Permit") throughout this fact sheet and in the draft General Permit. The draft General Permit will replace the previous POTW GP that expired on July 6, 2016 (the "expired General Permit" or "expired POTW GP"). There are currently 17 facilities in New Hampshire and 5 facilities in Massachusetts who received coverage under the expired General Permit, all of whom have had their authorizations to discharge under the expired General Permit administratively continued in accordance with the Administrative Procedures Act (5 U.S.C. 558(c)) and 40 CFR § 122.6. It is expected that these facilities will be authorized to discharge under the WWTF GP after its reissuance.

Section 301(a) of the Clean Water Act (the "Act") provides that the discharge of pollutants is unlawful except in accordance with a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the Act. EPA's regulations provide for the issuance of two types of NPDES permits: individual permits and general permits. Individual permits are issued to individual discharges and are developed according to the specific

nature of each facility and the receiving water into which each facility discharges. Under the authority provided at 40 CFR § 122.28, EPA may issue a general permit to regulate one or more categories or subcategories of "treatment works treating domestic sewage," if the sources of "treatment works treating domestic sewage" within each category or subcategory involve the same or substantially similar types of operations, discharge the same types of wastes, require the same effluent limitations or operating conditions, require the same or similar monitoring requirements, and, in the opinion of the Director, are more appropriately controlled under a general permit than under individual permits (40 CFR § 122.28(2)(ii)(A)(B)(C)and (D)).

Based on these factors, EPA has determined that discharges from POTWs and other treatment works treating domestic sewage qualify for coverage under a general permit for the following reasons: (1) the point sources eligible for coverage under the General Permit are located in the same geographic area (*i.e.*, in Massachusetts or New Hampshire) and employ the same or similar operations in providing a minimum of secondary treatment to domestic wastewater; (2) the wastewater discharged from these sources is similar in composition and requires the same or similar effluent limitations, monitoring requirements, and other conditions to be effectively controlled; and (3) in the opinion of the Director, these point sources consist of multiple facilities within a single category of discharges that are more appropriately controlled and efficiently regulated under a general permit than under individual permits.

Once reissued, the WWTF GP will enable facilities whose coverage under the expired POTW GP has been administratively continued (pursuant to the requirements of 40 CFR § 122.6) to maintain compliance with the Clean Water Act, will extend new environmental and regulatory controls to these dischargers as well as to new Permittees, and will reduce EPA's permit issuance backlog of pending individual permit applications and expired permits.

1.2 Eligibility

Coverage under the WWTF GP is available to all privately and publicly owned treatment works treating domestic sewage in Massachusetts and New Hampshire, unless excluded in Part 1.3 below. All eligible discharges in Massachusetts and New Hampshire are listed in Attachment E of the draft General Permit.

1.3 Exclusions

The following discharges are ineligible for coverage under the WWTF GP:

1. Any facility that is not defined as a POTW or a treatment works treating domestic sewage, as defined at 40 CFR § 403.3 and 40 CFR § 122.2, respectively;
2. Any facility with design flow greater than 1 MGD.[1]
3. Any facility in Massachusetts that is categorized as a major facility.

[1] The only exception to this is the Suncook WWTF which has a design flow of 1.05 MGD and is currently authorized to discharge under the existing POTW General Permit. This WWTF will continue to be eligible for coverage.

4. Any facility that does not provide, at a minimum, secondary treatment to the discharge;

5. Any facility with one or more designated Combined Sewer Overflow (CSO) outfalls;

6. Discharges to the territorial sea, as defined at Clean Water Act (CWA) Section 502;

7. Discharges to Special Resource Waters in Massachusetts as defined in the Massachusetts water quality regulations at 314 CMR § 4.06(3) and (4), including Public Water Supplies (314 CMR § 4.06(1)(d)(1), which have been designated by the state as Class A waters, unless a variance is granted by the MassDEP, under 314 CMR § 4.04(3)(b);

8. Discharges to an Area of Critical Environmental Concern (ACEC) in Massachusetts;

9. Discharges to Massachusetts Ocean Sanctuaries, as defined at 302 CMR 5.00;

10. Discharges to Outstanding Resource Waters in Massachusetts as described in the Massachusetts surface water quality standards at 314 CMR § 4.04(3) or in New Hampshire as defined in the New Hampshire water quality regulations at Env-Wq 1708.04(a), unless allowed by the NHDES under Env-Wq 1708.04(b) and (c);

11. Discharges to Class A waters in New Hampshire, in accordance with the New Hampshire water quality regulations at Env-Wq 1708.05 and RSA 485-A:8, I;

12. Any new or increased discharge which is inconsistent with the antidegradation policy of the State in which the discharge occurs;

13. Discharges which are inconsistent with the State Coastal Zone Management Program;

14. Discharges which may adversely affect properties listed or eligible for listing in the National Registry of Historic Places under the National Historic Preservation Act of 1966, 16 U.S.C. Sections 470 et seq., as amended;

15. Discharges which may adversely affect threatened or endangered species, or critical habitats of such species, under the Endangered Species Act (ESA); and

16. Any "New Source" as defined in 40 CFR § 122.2.

Any discharge identified above will need to obtain (or maintain) coverage under an individual NPDES permit.

2 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251-1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one

of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 CFR §§ 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). *See also* 40 CFR §§ 122.4(d), 122.44(d)(1), 122.44(d)(5). CWA §§ 301 and 306 provide for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations ("TBELs") and "water quality-based" effluent limitations ("WQBELs"). *See* CWA §§ 301, 304(d); 40 CFR Parts 122, 125, 131.

2.1 Technology-Based Requirements

Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. *See* CWA § 301(b). As a class, publicly owned treatment works (POTWs) must meet performance-based requirements based on available wastewater treatment technology. *See* CWA § 301(b)(1)(B). The performance level for POTWs is referred to as "secondary treatment." Secondary treatment is comprised of technology-based requirements expressed in terms of biological oxygen demand (BOD_5), total suspended solids (TSS) and pH. *See* 40 CFR Part 133.

Under CWA § 301(b)(1), POTWs must have achieved effluent limits based upon secondary treatment technology by July 1, 1977. Since all statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired, when technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. *See* 40 CFR § 125.3(a)(1).

2.2 Water Quality Based Requirements

The CWA and federal regulations also require that permit effluent limits based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1), 122.44(d)(5).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 CFR § 131.10-12. Generally, WQSs consist of three parts: 1) beneficial designated use or uses for a water-body or a segment of a water-body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) anti-degradation requirements to ensure that once a use is attained it will not be degraded

and to protect high quality and National Resource Waters. *See* CWA § 303(c)(2)(A) and 40 CFR § 131.12. The applicable Massachusetts WQS can be found in 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00). The applicable New Hampshire WQS can be found in the New Hampshire Code of Administrative Rules, Surface Water Quality Regulations, Chapter Env-Wq 1700 *et seq*. *See also generally*, N.H. Rev. Stat. Title L, Water Management and Protection, Chapters 485-A, Water Pollution and Waste Disposal.

State WQSs specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limits, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and are therefore typically applicable to monthly average limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use," 2) based on a "case-by-case basis" using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 CFR § 122.44(d)(1)(vi)(A-C).

2.2.2 Antidegradation

Federal regulations found at 40 CFR § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

Massachusetts' statewide antidegradation policy, entitled "Antidegradation Provisions" is found in the State's WQSs at 314 CMR 4.04. Massachusetts guidance for the implementation of this policy is in an associated document entitled "Implementation Procedure for the Antidegradation Provisions of the State Water Quality Standards", dated October 21, 2009. According to the policy, no lowering of water quality is allowed, except in accordance with the antidegradation policy, and all existing in-stream uses and the level of water quality necessary to protect the existing uses of a receiving water must be maintained and protected.

The New Hampshire Anti-Degradation Policy, found at Env-Wq 1708, applies to any new or increased activity that would lower water quality or affect existing or designated uses, including increased loadings to a water body from an existing activity. The anti-degradation regulations

focus on protecting high quality waters and maintaining water quality necessary to protect existing uses. Discharges that cause "significant degradation" are defined in NH WQS (Env-Wq 1708.09(a)) as those that use 20% or more of the remaining assimilative capacity for a water quality parameter in terms of either concentration or mass of pollutants or flow rate for water quantity. When NHDES determines that a proposed increase would cause a significant impact to existing water quality, the applicant must provide documentation to demonstrate that the lowering of water quality is necessary, will provide net economic or social benefit in the area in which the water body is located, and that the benefits of the activity outweigh the environmental impact caused by the lower water quality. *See* Env-Wq 1708.10(b).

This permit is being reissued with effluent limitations sufficiently stringent to satisfy each State's antidegradation requirements, including the protection of the existing uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among to the various sources, including point source discharges, subject to NPDES permits. *See* 40 CFR § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 CFR § 122.44(d)(1)(vii)(B).

EPA confirms that for all eligible dischargers under this General Permit, there are no WLAs which have not yet been incorporated into the facility's existing permit. Therefore, no new effluent limitations are proposed in the draft General Permit based on a TMDL and any existing permit limitations based on a TMDL will be carried forward into each facility's authorization to discharge.

2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 CFR § 122.44(d)(1)(i).

2.2.5 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 permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs, the State waives (or is deemed to have waivered), its right to certify. *See* 33 U.S.C. § 1341(a)(1). 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 General Permit will be certified.

If the State believes that conditions more stringent than those contained in the Draft General Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307 or the applicable requirements of State law, the State should include such conditions in its certification and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the 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 EPA permit appeal procedures of 40 CFR Part 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft General Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to final 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." 40 CFR § 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 limitations based upon WQS and State requirements are contained in 40 CFR §§ 122.4 (d) and 122.44(d).

2.3 Effluent Flow Requirements

Sewage treatment plant discharge is encompassed within the definition of "pollutant" and is subject to regulation under the CWA. The CWA defines "pollutant" to mean, *inter alia*, "municipal...waste" and "sewage…discharged into water." 33 U.S.C. § 1362(6).

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced, and the calculated effluent limitations may not be sufficiently protective (i.e. might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying the EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may ensure the validity of its "worst-case" wastewater effluent flow assumptions through imposition of permit conditions for effluent flow.[2] In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs.

The limitation on wastewater effluent flow is within EPA's authority to condition a permit to carry out the objectives of the Act. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 CFR §§ 122.4(a) and (d); 122.43 and 122.44(d). A condition on the discharge designed to ensure the WQBEL and reasonable potential calculations account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§ 402 and 301 and implementing regulations, as they are designed to assure compliance with applicable water quality regulations, including antidegradation. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of wastewater effluent is consistent with the

[2] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id* 40 CFR § 122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.,* 14 E.A.D. 577. 599 (EAB 2010). EPA guidance directs that this "reasonable potential: analysis be based on "worst-case" conditions. *See In re Washington Aquaduct Water Supply Sys. 11 E.A.D. 565, 584* (EAB 2004).

overall structure and purposes of the CWA.

In addition, as provided in Part VIII.B.1 of this permit and 40 CFR § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the facilities wastewater treatment systems as designed includes operating within the facility's design wastewater effluent flow.

EPA has also included the effluent flow limit in the permit to minimize or prevent infiltration and inflow (I/I) that may result in unauthorized discharges and compromise proper operation and maintenance of the facility. Improper operation and maintenance may result in noncompliance with permit effluent limitations. Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes or deteriorated joints. Inflow is extraneous flow added to the collection system that enters the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity available for treatment and the operating efficiency of the treatment works and to properly operate and maintain the treatment works.

Furthermore, the extraneous flow due to significant I/I greatly increases the potential for sanitary sewer overflows (SSOs) in separate systems. Consequently, the effluent flow limit is a permit condition that relates to the Permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 CFR §§ 122.41(d), (e).

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in the Draft General Permit have been established to yield data representative of each Permittee's discharge in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft General Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the wastewater discharges. The monitoring program is needed to enable EPA and the State to assess the characteristics of each facility's effluent, whether facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.[3] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[4] (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or
- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or
- The method has the lowest ML of the analytical methods approved under 40 CFR Part 126 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

2.4.2 Reporting Requirements

The Draft General Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA Permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on EPA's

[3] 79 Fed. Reg. 49,001 (Aug 19, 2014).

[4] The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL). Minimum levels may be obtained in several ways: They may be published in a method; they may be sample concentrations equivalent to the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a lab, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* 79 Fed. Reg. 49,001 (Aug. 19, 2014).

NetDMR support portal webpage.[5]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft General Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit, such as for providing written notifications required under the Part VIII Standard Conditions.

2.5 Standard Conditions

The standard conditions, included as Part VIII of the Draft General Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 CFR Part 122.

2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified to include with less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). Anti-backsliding provisions apply to effluent limits based on technology, water quality and/or state certification requirements.

All required limitations in the draft General Permit are at least as stringent as limitations included in the 2011 POTW GP unless specific conditions exist to justify one of the exceptions listed in accordance with CWA §§ 402(o) and 303(d)(4). Discussion of any applicable exceptions are discussed in sections that follow. Therefore, the draft General Permit complies with the anti-backsliding requirements of the CWA.

2.7 Schedules of Compliance

According to 40 CFR § 122.47, a permit may, when appropriate, specify a schedule of compliance leading to compliance with the CWA and regulations. New Hampshire regulations for schedules of compliance in NPDES Permits can be found at Env-Wq 1701.03. Massachusetts regulations for schedules of compliance can be found at 314 CMR 3.11(10). Under NPDES regulations at 40 CFR § 122.47(a)(1), schedules must lead to compliance "as soon as possible." For all newly established permit limits, EPA will indicate any applicable compliance schedule(s) on the Permittee's authorization to discharge, as follows.

1. For any newly established or more stringent water quality-based effluent limits which the Permittee is not expected to be in compliance with upon the effective date of the permit (see list of these limits in Part IV.E of the draft General Permit), the Permittee will have a schedule of compliance of 18 months.
2. Within twelve (12) months of the authorization to discharge under the General Permit,

[5] https://netdmr.zendesk.com/hc/en-us/articles/209616266-EPA-Region-1-NetDMR-Information

the Permittee shall submit to EPA and either MassDEP of NHDES a status report relative to the process improvements necessary to achieve the permit limit.

If the new effluent limit goes into effect and the Permittee is still unable to comply with the new limit, the Permittee may contact EPA's Enforcement and Compliance Assurance Division (ECAD) to discuss whether issuance of a compliance schedule through an administrative order is appropriate. The Permittee will have to provide information to ECAD showing what efforts it took to comply with the new limit since the effective date of the permit. In addition, the Permittee will have to provide an explanation of what projects or actions it plans on taking to meet the new limit, along with a specific implementation schedule for these projects or actions.

Aluminum Compliance Schedule:

Based on EPA's evaluation of site-specific aluminum data, the draft General Permit proposes new or more stringent final aluminum effluent limits for five eligible WWTFs in MA (*i.e.*, Douglas, Hardwick Gilbertville, MCI – Concord, Huntington, and Oxford – Rochdale) and none in NH[6], as summarized in Attachment E of the draft General Permit. These limits are based on current Massachusetts, EPA-approved, aluminum criteria to protect freshwater aquatic life. However, EPA is aware of ongoing efforts by MassDEP to soon revise the Massachusetts aluminum criteria based, at least in part, on new EPA aluminum criteria recommendations which were finalized in 2018. For three years after the effective date of the General Permit, MassDEP will inform EPA at reasonable intervals of its progress on the development and promulgation of new aluminum criteria.

EPA's aluminum criteria recommendations indicate that the new aluminum criteria recommendations may be higher than the current recommendations. Because MassDEP has indicated to EPA that its planned revisions to its aluminum criteria will be based on EPA's recommended criteria, EPA reasonably expects its new criteria may also be higher. EPA has therefore determined that it is appropriate to include a schedule of compliance, pursuant to 40 CFR § 122.47, in the draft General Permit which provides the Permittees listed above with a 3-year period to achieve compliance with the final aluminum effluent limit. Additionally, the Permittees may apply for a permit modification to allow additional time for compliance if Massachusetts has adopted new aluminum criteria but has not yet submitted the criteria to EPA for review or EPA has not yet acted on the new criteria. If new aluminum criteria are adopted by Massachusetts and approved by EPA, and before the final aluminum effluent limit goes into effect, the Permittees may apply for a permit modification to amend the permit based on the new criteria. If warranted by the new criteria and a reasonable potential analysis, EPA may relax or remove the effluent limit to the extent consistent with anti-degradation requirements. Such a relaxation or removal would not trigger anti-backsliding requirements as those requirements do not apply to effluent limits which have yet to take effect pursuant to a schedule of compliance. *See American Iron and Steel Institute v. EPA*, 115 F.3d 979, 993 n.6 (D.C. Cir. 1997) ("EPA interprets § 402 to allow later relaxation of [an effluent limit] so long as the limit has yet become

[6] Additionally, Hillsborough NH has en existing compliance schedule for aluminum in their individual permit which was issued within the past 3 years so this provision in the permit also applies to this facility.

effective.")

3 Available Dilution and Mixing Zones

Water quality-based effluent limitations are established based, in part, on the available dilution derived from the flow in the receiving water at the point of discharge and the design flow of the facility from which the discharge occurs.

The dilution factor (DF) is calculated using the design flow (Q_d) and the critical flow in the receiving water upstream of the discharge (Q_s) as follows:

$$DF = (Q_s + Q_d) / Q_d$$

Where:

Q_s = upstream critical flow in million gallons per day (MGD)
Q_d = design flow in MGD

For freshwater rivers and streams, both the Massachusetts and New Hampshire water quality regulations establish the critical flow condition at which water quality criteria are to be applied as the "7Q10 flow" in the receiving water (see 314 CMR 4.03(3)(a) and Env-Wq 1705.02(d), respectively). The 7Q10 flow is the lowest mean flow for seven consecutive days, with a recurrence interval of once in ten years. The use of the 7Q10 flow allows for the calculation of the available dilution under critical flow (worst-case) conditions, which in turn results in the derivation of conservative water quality-based effluent limitations.

The New Hampshire water quality standards require that 10% of the receiving water's assimilative capacity be held in reserve for future needs (Env-Wq 1705.01). Therefore, a factor of 0.9 is applied to the available dilution for establishing water quality-based effluent limitations in New Hampshire.

For Massachusetts waters that are regulated by dams or similar structures and for tidal waters in New Hampshire, the specified lowest flow condition at which aquatic life criteria must be applied is the flow that results in a dilution that is exceeded 99% of the time (see the Massachusetts water quality standards at 314 CMR 4.03(3)(b) and the New Hampshire water quality standards at Env-Wq 1705.02(b)).

For marine waters in Massachusetts, the critical hydrologic condition at which water quality must be met is established on a case-by-case basis. Existing uses must be protected, and the selected critical hydrologic condition shall not interfere with the attainment of designated uses (see 314 CMR 4.03(3)(c)).

The water quality standards of both Massachusetts and New Hampshire provide for the application of mixing zones to establish the available dilution on a case-by-case basis when certain criteria are met (see the Massachusetts water quality standards at 314 CMR 4.03(2) and the *Massachusetts Water Quality Standards Implementation Policy for Mixing Zones* (MassDEP, January 28, 1993) and the New Hampshire water quality regulations at Env-W1705 and Env-Wq

1707). MassDEP is developing an interpretation of its mixing zone regulations relevant to lakes and reservoirs.

See Attachment E of the draft General Permit for a list of updated 7Q10 flows and dilution factors for all eligible WWTFs. The period of record for the updated 7Q10 flows, unless otherwise noted, is April 1, 1990 through March 31, 2020 (*i.e.*, the most recent 30 climate years) in order to account for recent hydrological changes in the watershed and changing climatic conditions. These 7Q10 flows and corresponding dilution factors have been used by EPA, as described below, in evaluating reasonable potential and, in some cases, establishing facility-specific effluent limits as described below in this Fact Sheet and as specified in Attachment E of the draft General Permit.

4 Effluent Limitations

4.1 Effluent Flow

Part II and III of the draft General Permit include effluent flow limitations for both Massachusetts and New Hampshire discharges, respectively, equal to the design flow of the WWTF from which the discharge occurs. These effluent flow limitations are specified in Attachment E of the draft General Permit. The effluent flow limit is a rolling annual average limit. The draft General Permit requires that flow be measured continuously, and the rolling annual average, monthly average, and the maximum daily flow must be reported in million gallons per day (MGD). The rolling annual average limit shall be calculated and reported as the arithmetic mean of the monthly average flows for the reporting month and the previous eleven months.

The draft General Permit also requires Permittees to submit to EPA and either NHDES or MassDEP a projection of loadings, a program for maintaining satisfactory treatment levels, and plans for facility improvements whenever the effluent flow exceeds 80 percent of the facility's design flow capacity for three consecutive months (for New Hampshire facilities) or for the previous calendar year (for Massachusetts facilities) (see Part IV.A.6.f of the draft General Permit).

4.2 BOD_5 or $CBOD_5$ and TSS

4.2.1.1 Concentration Limits

The draft permit includes average monthly and average weekly limitations for biochemical oxygen demand ("BOD_5") and total suspended solids ("TSS") of 30 mg/L and 45 mg/L, respectively, in accordance with the secondary treatment regulations for POTWs found at 40 CFR § 133.102(a) and (b). Carbonaceous biochemical oxygen demand ("$CBOD_5$") limitations may apply in lieu of BOD_5 limitations, as allowed under 40 CFR § 133.102(a)(4), if already included in a facility's existing NPDES permit. As such, the draft permit also includes average monthly and average weekly $CBOD_5$ limits of 25 mg/L and 40 mg/L, respectively, in accordance with the secondary treatment regulations for POTWs found at 40 CFR § 133.102(a)(4)(i) and (ii). The draft permit also includes maximum daily limitations for BOD_5 (or $CBOD_5$) of 50 mg/L (or 45 mg/L) and for TSS of 50 mg/L, which apply to New Hampshire discharges.

4.2.1.2 Mass Limits

In addition to concentration limits, the draft permit includes mass limits, pursuant to the requirements of 40 CFR § 122.45(f)(1). The mass limitations in the draft permit are derived using the facility's design flow, and are therefore specific to each facility. The mass limitations are calculated as follows:

BOD_5 (or $CBOD_5$) and TSS Mass Loading Calculations:

Calculations of maximum allowable loads for average monthly and average weekly BOD_5 (or $CBOD_5$) and TSS are based on the following equation:

$$L = C_d * Q_d * 8.34$$

Where:

L = Maximum allowable load in lb/day
C_d = Maximum allowable effluent concentration for reporting period in mg/L (reporting periods are average monthly and average weekly)
Q_d = Annual average design flow of WWTF in MGD
8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to lb/day

4.3 Eighty-Five Percent (85%) BOD_5 and TSS Removal Requirement

In accordance with the provisions of 40 CFR §§ 133.102(a)(3), (a)(4)(iii) and (b)(3), the draft General Permit requires that the 30-day average percent removal for BOD_5 (or $CBOD_5$) and TSS be not less than 85%.

4.4 pH

The pH limits in the Draft General Permit were established to be consistent with the criteria for pH found in the Massachusetts and New Hampshire water quality standards.

The Massachusetts water quality standards specify that the pH of Class B waters (freshwater) shall be within the range of 6.5-8.3 Standard Units (S.U.), and within 0.5 S.U. of the natural background range (see 314 CMR 4.05(3)(b)(3)); and that the pH of Class SA and SB waters (marine) shall be within the range of 6.5-8.5 S.U., and within 0.2 S.U. of the natural background range (314 CMR 4.05(4)(a)(3) and 4.05(4)(b)(3)).

The New Hampshire water quality standards require the pH of Class B waters (freshwater and marine) to be within the range of 6.5-8.0 SU, unless due to natural causes (Env-Wq 1703.18(b)).

The Draft General Permit includes pH limit ranges consistent with these regulations based on the receiving water classification for each discharge.

4.5 Bacteria

The proposed bacteria limitations in the Draft General Permit were established in accordance with the water quality standards of the state in which the discharge occurs.

Massachusetts Discharges:

The effluent limits to protect recreational uses (*E.* coli in fresh waters and enterococci in marine waters) are based on the geometric mean bacteria criteria at 314 CMR 4.05 and, for the maximum daily limit, on MassDEP implementation guidance.[7] Bacteria criteria to protect recreational uses may be applied on a seasonal basis at the discretion of MassDEP. See 314 CMR 4.05(3)(b)(4)(b), 4.05(4)(a)(4)(b), and 4.05(4)(b)(4)(b). Seasonal applicability of bacteria limits has been carried forward from previous permits for each discharger and is listed in Attachment E of the Draft General Permit.

The effluent limits to protect shellfishing uses (fecal coliform in marine waters) are based on criteria at 4.05(4)(a)(4) and 4.05(4)(b)(4).

Table 1 summarizes the applicable bacteria limits for discharges in Massachusetts. Receiving water classifications and seasonal applicability of bacteria limits for facilities identified as being eligible for coverage under this General Permit are provided in Attachment E of the Draft General Permit.

Table 1 - Bacteria Limits for Massachusetts Discharges

Indicator Organism	Receiving Water Classification	Discharge Limitation		
		Units	Average Monthly (geometric mean)	Maximum Daily
E. coli	B	colonies/100 mL	126	409
Enterococci	SA or SB	colonies/100 mL	35	104
Fecal Coliform	SA	organisms/100 mL	14	28
Fecal Coliform	SB	organisms/100 mL	88	260

New Hampshire Discharges:

The effluent limits to protect recreational uses (*E.* coli in fresh waters and enterococci in tidal waters) are based on the geometric mean bacteria criteria in statute at NH Revised Statutes Annotated (RSA) 485-A:8(I) and (V) and in regulation at Env-Wq 1700 Appendix E.

Effluent limits to protect shellfish uses (fecal coliform in tidal waters) are based on criteria in statute at NH RSA 485-A:8(V) and in regulation at Env-Wq 1700 Appendix E which require that tidal waters used for shellfishing meet criteria recommended under the National Shellfish Program Manual of Operation, US Food and Drug Administration. The National Shellfish

[7] MassDEP, "Draft 6/25/2007 Guidance on Implementation of Proposed Primary Contact Recreation Bacteria in Massachusetts Surface Water Quality Standards, 314 CMR 4.00," 2007, p. 11, Table 2.

Sanitation Program (NSSP) Manual[8] indicates that results shall not exceed fourteen (14) per 100 mL, and not more than ten (10) percent of the samples shall exceed an MPN or MF (mTEC) of:

(a) 43 MPN per 100 mL for a five-tube decimal dilution test;
(b) 49 MPN per 100 mL for a three-tube decimal dilution test;
(c) 28 MPN per 100 mL for a twelve-tube single dilution test; or
(d) 31 colony-forming units (CFU) per 100 mL for a MF (mTEC) test.

This list includes four specific test methods for measuring fecal coliform. However, the only one of these four methods that is also approved in 40 CFR Part 136 for fecal coliform is the five-tube decimal dilution test. Therefore, in order to be in compliance with the NH WQS, the draft General Permit indicates that fecal coliform samples must be tested using the 5-tube decimal dilution test included in 40 CFR Part 136.

Table 2 summarizes the applicable bacteria limits for discharges in New Hampshire based on receiving water classification and designated uses.

Table 2 - Bacteria Limits for New Hampshire Discharges

Indicator Organism	Receiving Water Classification	Discharge Limitation		
		Units	Average Monthly (geometric mean)	Maximum Daily
E. coli	B	colonies/100 mL	126	406
E. coli	B/Designated Beach Areas	colonies/100 mL	47	88
Enterococci	B/Tidal Waters used for swimming	colonies/100 mL	35	104[1]
Fecal coliform	B/Tidal Waters used for growing or taking of shellfish	organisms/100 mL	14	43[1]

[1] As a maximum daily, not more than 10 percent of collected samples (over a monthly period) shall exceed a Most Probable Number (MPN) of 43 per 100 mL for the 5-tube decimal dilution test.

4.6 Total Residual Chlorine

For WWTFs that use chlorine disinfection, the total residual chlorine ("TRC") permit limits are included the General Permit. For discharges in Massachusetts, TRC limits are based on the instream chlorine criteria defined in *National Recommended Water Quality Criteria: 2002*, EPA 822R-02-047 (November 2002), as adopted by the MassDEP into the Massachusetts water quality standards at 314 CMR 4.05(5)(e). For discharges in New Hampshire, TRC limits are based on the instream chlorine criteria defined in the New Hampshire Code of Administrative Rules, Env-Wq 1703.21 and Table 1703-1. In both cases, the instream criteria for chlorine are 11 µg/l (chronic) and 19 µg/l (acute) for freshwater discharges and 7.5 µg/L (chronic) and 13 µg/L (acute) for marine discharges. Because the upstream chlorine concentration is assumed to be

[8] https://www.fda.gov/media/143238/download

zero, the water quality-based chlorine limits for all freshwater discharges and Massachusetts marine discharges are calculated as the criteria times the dilution factor, as follows:

Chronic criteria * dilution factor = Chronic limit

Acute criteria * dilution factor = Acute limit

The water quality-based chlorine limits for New Hampshire marine discharges are calculated as the criteria times the dilution factor times 0.9 (to reserve 10% assimilative capacity), as follows:

Chronic criteria * dilution factor * 0.9 = Chronic limit

Acute criteria * dilution factor * 0.9 = Acute limit

These site-specific limits shall be included in each Permittee's authorization to discharge under the General Permit unless the facility does not utilize chlorine disinfection and, therefore, does not require TRC limits. These limits are summarized for each eligible WWTF in Attachment E of the draft General Permit.

4.7 Metals

Dissolved fractions of certain metals in water can be toxic to aquatic life. Therefore, there is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. For the development of the Draft General Permit, analyses were completed to evaluate whether there is reasonable potential for effluent discharges to cause or contribute to exceedances of the water quality criteria for aluminum, cadmium, copper, lead, nickel and zinc and/or to evaluate whether any existing limits in a facility's existing permit for these metals continue to be protective, given the updated upstream hydrologic and chemical characteristics of the receiving water.

EPA has determined that is it highly unlikely for facilities with a dilution factor greater than 50 to have reasonable potential triggering the need for metals limits. Therefore, a detailed reasonable potential analysis will only be conducted for facilities with a dilution factor below 50. See Attachment E of the draft General Permit for a list of dilution factors.

4.7.1 Applicable Metals Criteria

State water quality criteria for cadmium, copper, lead, nickel and zinc are established in terms of dissolved metals. However, many inorganic components of domestic wastewater, including metals, are in particulate form, and differences in the chemical composition between the effluent and the receiving water affects the partitioning of metals between the particulate and dissolved fractions as the effluent mixes with the receiving water, often resulting in a transition from the particulate to dissolved form (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007]). Consequently, quantifying only the dissolved fraction of metals in the effluent prior to discharge may not accurately reflect the biologically-available portion of metals in the receiving water. Regulations at 40 CFR § 122.45(c) require, with limited exceptions, that effluent limits for metals in NPDES permits be expressed as total recoverable metals.

The criteria for cadmium, copper, lead, nickel and zinc are hardness-dependent using the equations in EPA's National Recommended Water Quality Criteria: 2002, which are incorporated into the Massachusetts WQS by reference (for MA) or in NH Env Wq-1703 (for NH). The estimated hardness of the receiving water downstream of the treatment plant is calculated using the critical low flow, the design flow of the treatment plant, and the median hardness for both the receiving water upstream of the discharge and the treatment plant effluent. Using the mass balance equation discussed in Appendix A, the resulting downstream hardness is calculated and used to determine the corresponding criteria. For New Hampshire, if this downstream hardness is below 20 mg/L, the default value of 20 mg/L should be used to determine the total recoverable metals criteria. *See* Env-Wq 1703.22(f).

Massachusetts aluminum criteria are not hardness-dependent and are expressed as total recoverable aluminum.

New Hampshire aluminum criteria are not hardness dependent and should be applied in terms of acid-soluble aluminum (*See* Table 1703-1, Note S). However, without site-specific data showing the fraction of downstream aluminum in the acid-soluble form, EPA assumes that the ratio of acid soluble to total recoverable aluminum is 1:1.

4.7.2 Reasonable Potential Analysis and Limit Derivation

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for each metal, EPA uses the mass balance equation presented in Appendix A to project the concentration downstream of the discharge and, if applicable, to determine the limit required in the permit.

For any metal with an existing limit in the facility's existing permit, a reasonable potential determination is not applicable. In such cases, the same mass balance equation is used to determine if a more stringent limit would be required to meet WQS under current conditions. The limit is determined to be the more stringent of either (1) the existing limit or (2) the calculated effluent concentration (C_d) allowable to meet WQS based on current conditions.

See Attachment E of the draft General Permit for a summary of any newly established or more stringent effluent limits based on this analysis for each eligible WWTF with a dilution factor below 50.

<u>Greenville Backsliding Analysis for Copper</u>

EPA also notes that in certain cases the mass balance described above may indicate that a less stringent effluent concentration (C_d) than the current effluent limit would meet WQS under current conditions, resulting in a case-by-case analysis to determine if backsliding is allowable based on the exceptions found at CWA § 402(o).

In evaluating the limits for the Greenville WWTF, EPA determined that the current copper limits may backslide. Since the Permittee has operated its Facility properly with regards to reducing copper, an exception to the CWA's anti-backsliding provision applies and that allows an increase in the copper WQBEL. *See* CWA § 402(o). This provision specifies that a less stringent effluent

limit may be allowed if the Permittee has installed and properly operated and maintained required treatment facility but still has been unable to meet the effluent limitations. EPA notes that this backsliding is only allowable to the treatment levels actually achieved and must ensure compliance with water quality standards. Given that the Permittee has properly operated the WWTF but remains unable to meet the effluent limit and that updated background copper data indicate that there is significant assimilative capacity upstream of the discharge, EPA has determined that backsliding is allowable in this case up to the facility's current level of performance. The level of performance is based on the 95th percentile of the effluent data during the most recent 5-year period (*i.e.*, November 2015 through October 2020) and results in a maximum daily limit of 12.5 µg/L and a monthly average limit of 9.2 µg/L. Therefore, these copper limits will be included in the authorization to discharge under the General Permit for the Greenville WWTF, as specified in Attachment E of the draft General Permit.

4.8 Ammonia

Nitrogen in the form of ammonia can reduce the receiving stream's dissolved oxygen concentration through nitrification and can be toxic to aquatic life, particularly at elevated temperatures.

For Massachusetts, the ammonia criteria in EPA's *National Recommended Water Quality Criteria,* 2002 (EPA 822-R-02-047) document are included by reference in the Massachusetts WQS (*See* 314 CMR 4.05(5)(e)). The freshwater acute criterion is dependent on pH and the freshwater chronic criterion is dependent on pH, temperature and whether early life stages of fish are present in the receiving water. The marine water quality criteria are dependent on pH and temperature.

For New Hampshire, the freshwater ammonia criteria in the NH WQS (Env-Wq 1703.25 & 1703.26) are dependent on pH and temperature and the acute criterion is also dependent on whether Salmonids are present in the receiving water. The marine ammonia criteria in the NH WQS (Env-Wq 1703.27 through 1703.32) are dependent on pH, temperature and salinity.

In determining whether the discharge has the reasonable potential to cause or contribute to excursions above the instream water quality criteria for ammonia, EPA will use the mass balance equation presented in Appendix A for both warm and cold weather conditions to project the ammonia concentration downstream of the discharge. If there is reasonable potential, this mass balance equation will also be used to determine the limit that is required in the permit.

EPA has determined that is it highly unlikely for facilities with a dilution factor greater than 50 to have reasonable potential triggering the need for ammonia limits. Therefore, a detailed reasonable potential analysis will only be conducted for facilities with a dilution factor below 50. See Attachment E of the draft General Permit for a list of dilution factors.

EPA notes that if a WWTF already has a limit in its existing permit for ammonia, a reasonable potential determination is not applicable. In such cases, the same mass balance equation from Appendix A is used to determine if a more stringent limit would be required to meet WQS under current conditions. The limit is determined to be the more stringent of either (1) the existing limit

or (2) the calculated effluent concentration (C_d) allowable to meet WQS based on current conditions.

To determine the applicable ammonia criteria, EPA must determine on a case-by-case basis (if applicable) the warm weather temperature (default of 25° C unless site-specific data available), cold weather temperature (default of 5° C unless site-specific data available), ambient pH (default of 7.0 S.U. unless site-specific data available), salinity (default of 0 ppt for freshwater discharges and 30 ppt for marine discharges unless site-specific data available), and the presence/absence of salmonids and early life stages of fish in the receiving waters (determined for each receiving water). Based on this information, the applicable ammonia criteria can be used in the mass balance equation to perform a reasonable potential determination and, if necessary, establish effluent limits according to the procedure described in Appendix A.

See Attachment E of the draft General Permit for a summary of any newly established or more stringent effluent limits based on this analysis for each eligible WWTF with a dilution factor below 50.

Effluent and ambient monitoring for ammonia will continue to be required in the whole effluent toxicity tests.

4.9 Total Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities. The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter; 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; 6) producing toxic cyanobacteria during certain algal blooms. Cultural (or accelerated) eutrophication is the term used to describe dense and excessive plant growth in a water body that results from nutrients entering the system as a result of human activities. Discharges from municipal and industrial wastewater treatment plants, agriculture runoff, and stormwater are examples of human-derived (*i.e.*, anthropogenic) sources of nutrients in surface waters.

The MA WQS under 314 CMR 4.05(5)(c) requires that, unless naturally occurring, surface waters must be free from nutrients that cause or contribute to impairment of the existing or designated uses, and the concentration of phosphorus may not exceed site specific criteria developed in a TMDL. Nutrients are also prohibited in concentrations that would cause or contribute to cultural eutrophication.

The New Hampshire Surface Water Quality Regulations contain a narrative criterion, which limits phosphorus to the level that will not impair a water body's designated use. Specifically, Env-Wq 1703.14(b) states that, "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring." Env-Wq 1703.14(c), further states that, "Existing discharges containing either phosphorus or

nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards." Cultural eutrophication is defined in Env-Wq 1702.15 as, "… the human-induced addition of wastes containing nutrients which results in excessive plant growth and/or decrease in dissolved oxygen.".

When permitting nutrient discharges, EPA analyzes available information from a reasonably conservative standpoint, as it regards one key function of a nutrient limit as preventative. This protective approach is appropriate because, once begun, the cycle of eutrophication can be difficult to reverse due to the tendency of nutrients to be retained in the sediments.

When translating narrative phosphorus criteria into numeric values (and establishing WQBELs, if necessary), EPA looks to a wide range of materials, including nationally recommended criteria, supplemented by other relevant materials, such as EPA nutrient technical guidance and information published under Section 304(a) of the CWA, peer-reviewed scientific literature and site-specific surveys and data to determine instream targets that are protective of water quality. See 40 CFR § 122.44(d)(1)(vi)(A), (B).

EPA has produced several guidance documents, described below, that recommend a range of total ambient phosphorus concentrations that are sufficiently stringent to control cultural eutrophication and other adverse nutrient-related impacts, with 0.1 mg/L representing the upper end of this range. These guidance documents recommend protective in-stream phosphorus concentrations based on two different analytical approaches. An effects-based approach provides a threshold value above which adverse effects (*i.e.*, water quality impairments) are likely to occur. This approach applies empirical observations of a causal variable (*i.e.*, phosphorus) and a response variable (*i.e.*, chlorophyll-a as a measure of algal biomass) associated with designated use impairments. Alternatively, reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregion class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent conditions in waters in that ecoregion that are minimally impacted by human activities (*i.e.*, reference conditions), and thus by definition representative of water without cultural eutrophication. Dischargers in Massachusetts and New Hampshire are located within either Ecoregion VII, Nutrient-Poor, Largely Glaciated Upper Midwest and Northeast or Ecoregion XIV, Eastern Coastal Plains. The recommended total phosphorus criteria for these ecoregions are 10 µg/L and 31.25 µg/L, respectively. While reference conditions reflect in-stream phosphorus concentrations that are sufficiently low to meet the requirements necessary to support designated uses, they may also represent levels of water quality beyond what is necessary to support such uses.

EPA follows an effects-based approach. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends maximum threshold concentrations that are designed to prevent or control adverse nutrient-related impacts from occurring. Specifically, the Gold Book recommends in-stream phosphorus concentrations of no greater than 0.05 mg/L in any stream entering a lake or reservoir, 0.1 mg/L for any stream not discharging directly to lakes or impoundments, and 0.025 mg/L within a lake or reservoir.

The Gold Book recommended value of 0.1 mg/L is coterminous with the range of published, peer-review values presented in a more recent EPA technical guidance manual, *Nutrient Criteria*

Technical Guidance Manual – Rivers and Streams, EPA July 2000 [EPA-822-B-00-002], which contains recommended threshold ambient concentrations (all more stringent than 0.1 mg/L) drawn from the scientific literature that are sufficiently stringent to control periphyton and plankton (two types of aquatic plant growth associated with eutrophication). This guidance indicates that in-stream phosphorus concentrations between 0.01 mg/L and 0.09 mg/L will be sufficient to control periphyton growth and concentrations between 0.035 mg/L and 0.070 mg/L will be sufficient to control plankton.

The published, peer-reviewed phosphorus targets are thus 0.1 mg/L or below, irrespective of methodological approach employed. In addition to opting for the less stringent of the available approaches (*i.e.*, effects-based in favor of reference-based), EPA has chosen to apply the upper end of the range of all available published nutrient thresholds. However, as the Gold Book notes, there are natural conditions of a water body that can result in either increased or reduced eutrophic response to phosphorus inputs; in some waters more stringent phosphorus reductions may be needed, while in some others a higher total phosphorus threshold could be assimilated without inducing a eutrophic response.

In the development of this General Permit, EPA has determined that is it highly unlikely for facilities with a dilution factor greater than 50 to have reasonable potential triggering the need for phosphorus limits. Therefore, a detailed reasonable potential analysis will only be conducted for facilities with a dilution factor below 50. See Attachment E of the draft General Permit for a list of dilution factors.

Therefore, for all eligible discharges to freshwater with a dilution factor below 50, EPA has determined that all discharges are to free-flowing streams and, therefore, has applied the appropriate Gold Book threshold of 0.1 mg/L as part of reasonable potential determination procedure described in Appendix A.[9] EPA notes that if a WWTF already has a limit in its existing permit for phosphorus, a reasonable potential determination is not applicable. In such cases, the same mass balance equation from Appendix A is used to determine if a more stringent limit would be required to meet WQS under current conditions. The limit is determined to be the more stringent of either (1) the existing limit or (2) the calculated effluent concentration (C_d) allowable to meet WQS based on current conditions.

See Attachment E of the draft General Permit for a summary of any newly established or more stringent effluent limits based on this analysis for each eligible WWTF with a dilution factor below 50.

Finally, for Permittees discharging to freshwater with a dilution factor below 20, total phosphorus effluent monitoring shall be conducted concurrently with any whole effluent toxicity testing between April 1st and October 31st (*i.e.*, 2nd and 3rd calendar quarter). Additionally, such

[9] The threshold of 0.05 mg/L was applied to the Douglas WWTF, because the discharge is just upstream of impoundments. This threshold was also applied in the 2007 Douglas WWTF individual permit, resulting in a permit limit of 1.2 lb/day, which continues to meet WQS under current conditions and will be carried forward in this General Permit.

Permittees shall develop and implement a sampling and analysis plan for biennially collecting monthly samples at a location upstream of the facility. Samples shall be collected once per month, from May through September, every other calendar year starting on the calendar year following the date of permit issuance. Sampling shall be conducted on any calendar day that is preceded by at least 72 hours without rainfall of 0.1 inches of rainfall or greater. A sampling plan shall be submitted to EPA and the State at least three months prior to the first planned sampling date as part of a Quality Assurance Project Plan for review and State approval.

4.10 Total Nitrogen

Excessive nitrogen loadings to waterways can cause water quality problems at estuaries. Several estuaries in New England, most notably Long Island Sound, Narragansett Bay, and Buzzards Bay experience eutrophication and are subject to Total Maximum Daily Loads ("TMDLs") to reduce nutrient enrichment. If a Permittee discharges to a watershed that has an effective TMDL, the applicable Waste Load Allocation ("WLA") for that facility must be included in the authorization to discharge under the WWTF GP.

EPA is also concerned about nitrogen discharges to other estuaries, such as Great Bay, the Merrimack River estuary and Narraganset Bay, that are not subject to TMDLs but may be experiencing nitrogen enrichment. To address this concern, the draft General Permit includes year-round monitoring and reporting requirements for total nitrogen for all discharges covered under the WWTF GP. The frequency of such monitoring is based on the design flow of the facility. Facilities with design flow less than 100,000 gpd will receive quarterly monitoring; facilities with design flow greater than or equal to 100,000 gpd will receive monthly monitoring.

4.10.1 Great Bay Watershed

For facilities covered by the Great Bay Total Nitrogen General Permit (permit number NHG58A000), the nitrogen monitoring requirements described in this General Permit do not apply because these facilities are required to conduct such monitoring under the Great Bay Total Nitrogen General Permit. These facilities are Newington, Rollinsford, Milton, Newfields, Epping and Newmarket.

For the Newmarket facility, their authorization to discharge under the Great Bay Total Nitrogen General Permit is dependent on their coverage under this WWTF General Permit which will remove the nitrogen permit limits from their existing individual permit to avoid being covered by two permits for the discharge of the same pollutant concurrently. Authorization under both general permits will be done simultaneously.

4.10.2 Long Island Sound Watershed

All facilities discharging into the Long Island Sound watershed will have a requirement to optimize nitrogen removal (if design flow is 0.1 MGD or greater) or monitor only (if design flow is below 0.1 MGD). See Appendix B for more details and a table of all dischargers into the Long Island Sound watershed.

4.11 Whole Effluent Toxicity

Sections 402(a)(2) and 308(a) of the CWA provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. Whole effluent toxicity (WET) testing is conducted to ensure that the additivity, antagonism, synergism and persistence of the pollutants in the discharge do not cause toxicity, even when the pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the facility does not discharge combinations of pollutants into the receiving water in amounts that would affect aquatic life or human health.

In addition, under § 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on WQSs. Under certain narrative State WQSs, and §§ 301, 303 and 402 of the CWA, EPA and the States may establish toxicity-based limitations to implement the narrative "no toxics in toxic amounts". The Massachusetts WQSs at 314 CMR 4.05(5)(e) state, "*All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife."* New Hampshire statute and regulations state that, "*all surface waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life....*" (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Wq 1730.21(a)(1)).

National studies conducted by the EPA have demonstrated that domestic sources, as well as industrial sources, contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. Some of these constituents may cause synergistic effects, even if they are present in low concentrations. Because of the source variability and contribution of toxic constituents in domestic and industrial sources, EPA assumes that there is a reasonable potential for all WWTF discharges with a dilution factor below 1,000 that are eligible for coverage by this permit to cause or contribute to an exceedance of the "no toxics in toxic amounts" narrative water quality standard.

In accordance with EPA Region 1 and MassDEP[10] current toxic policies, whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50 % of the test organisms, known as the LC_{50}. Therefore, an LC_{50} limit equal to 100 % or ≥ 50 % means that a sample comprised of 100 % or ≥ 50 % effluent, respectively, shall not cause mortality to more than 50 % of the test organisms.

For both Massachusetts and New Hampshire discharges, the 2011 permit includes an acute (LC_{50}) WET limit of 100% for discharges having dilution factors ≤ 100, and an LC_{50} limit of ≥ 50% for discharges with a dilution factor > 100. WET testing is not required for discharges with

[10] *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters*. February 23, 1990.

a dilution factor ≥ 1,000.

The draft WWTF GP for Massachusetts requires WET testing frequency and limits as determined by dilution factor, as follows:

- ≥ 1 and < 20 — 4 per year (C-NOEC ≥ 100 % / DF and LC_{50} = 100 %)
- ≥ 20 and < 50 — 4 per year (LC_{50} ≥ 100%)
- ≥ 50 and < 100 — 2 per year (LC_{50} ≥ 100%)
- ≥ 100 and < 1,000 — 1 per year (LC_{50} ≥ 50%)
- ≥ 1,000 — None

The draft WWTF GP for New Hampshire requires WET testing frequency and limits as determined by dilution factor, as follows:

- ≥ 1 and < 10 — 4 per year (C-NOEC ≥ 100% / DF and LC_{50} = 100%)
- ≥ 10 and < 20 — 4 per year (LC_{50} ≥ 100%) and Report Chronic (C-NOEC)
- ≥ 20 and < 100 — 4 per year (LC_{50} ≥ 100%)
- ≥ 100 and < 1,000 — 1 per year (LC_{50} ≥ 50%)
- ≥ 1,000 — None

The draft General Permit requires facilities that discharge to freshwater to conduct WET tests using the daphnid (*Ceriodaphnia dubia*) and the fathead minnow (*Pimephales promelas*) as test species. Facilities that discharge to marine waters are to conduct WET tests using the mysid shrimp (*Mysidopsia bahia*) and the inland silverside (*Menidia beryllina*) as test species.

However, EPA acknowledges that some of the WWTFs eligible for coverage under this General Permit have previously been authorized for a reduction in either frequency or number of species, or both, based on a site-specific analysis of most sensitive species, effluent variability, etc. Therefore, EPA will apply the frequency and species listed above based on design flow unless a WWTF's current authorization to discharge (either under the POTW GP or under an individual permit) is less stringent, in which case the less stringent requirements will be carried forward in the authorization to discharge under this General Permit. Conversely, if a WWTF currently has a WET limit, that limit will be carried forward with at least once per year monitoring (or more as specified above) to comply with anti-backsliding regulations. Finally, an more stringent WET limits are listed in Attachment E of the draft General Permit.

The WET limitations in the draft General Permit are the same as or more stringent than those in the existing permits, and so are consistent with the anti-backsliding requirements found at 40 CFR § 122.44(l).

Toxicity testing must be performed in accordance with the updated EPA Region 1 WET test procedures and protocols specified in Attachments A and B (for freshwater discharges) or Attachments C and D (for marine discharges) of the draft General Permit.

In addition, EPA's 2018 *National Recommended Water Quality Criteria* for aluminum are calculated based on water chemistry parameters that include dissolved organic carbon (DOC), hardness and pH. Since aluminum monitoring is required as part of each WET test, an accompanying new testing and reporting requirement for DOC, in conjunction with each WET test, is warranted for freshwater discharges in order to assess potential impacts of aluminum in the receiving water.

4.12 Per- and polyfluoroalkyl substances (PFAS)

As explained at https://www.epa.gov/pfas, PFAS are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. PFAS manufacturing and processing facilities, facilities using PFAS in production of other products, airports, and military installations can be contributors of PFAS releases into the air, soil, and water. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Exposure to some PFAS above certain levels may increase risk of adverse health effects.[11] EPA is collecting information to evaluate the potential impacts that discharges of PFAS from wastewater treatment plants may have on downstream drinking water, recreational and aquatic life uses.

Massachusetts PFAS Regulation

On October 20, 2020, MassDEP published final regulations establishing a drinking water standard, or a Maximum Contaminant Level (MCL) of 20 parts per trillion (ppt) for the sum of the following six PFAS. (*See* 310 CMR 22.00)

- Perfluorohexanesulfonic acid (PFHxS)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorononanoic acid (PFNA)
- Perfluorooctanesulfonic acid (PFOS)
- Perfluorooctanoic acid (PFOA)
- Perfluorodecanoic acid (PFDA)

In December 2019, MassDEP proposed revisions to 310 CMR 22.00: Drinking Water Regulation that would set a new PFAS Maximum Contaminant Level (MCL) of 20 ppt (ng/L) for the sum of the concentrations of six PFAS compounds, including all six compounds addressed by the ORSG (listed above).

Although the Massachusetts water quality standards do not include numeric criteria for PFAS, the Massachusetts narrative criterion for toxic substances at 314 CMR 4.05(5)(e) states:

[11] EPA, *EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan,* EPA 823R18004, February 2019. Available at: https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf

> All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

The narrative criterion is further elaborated at 314 CMR 4.05(5)(e)2 which states:

> Human Health Risk Levels. Where EPA has not set human health risk levels for a toxic pollutant, the human health-based regulation of the toxic pollutant shall be in accordance with guidance issued by the Department of Environmental Protection's Office of Research and Standards. The Department's goal is to prevent all adverse health effects which may result from the ingestion, inhalation or dermal absorption of toxins attributable to waters during their reasonable use as designated in 314 CMR 4.00.

New Hampshire PFAS Regulation

On September 30, 2019, NHDES adopted Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) for drinking water at Env-DW 705.06 and Ambient Groundwater Quality Standards (AGQS) at Env-Or 603 for the following PFAS:

	MCLs	MCLGs
Perfluorohexanesulfonic acid (PFHxS)	0.000018 mg/L	0
Perfluorononanoic acid (PFNA)	0.000011 mg/L	0
Perfluorooctanesulfonic acid (PFOS)	0.000015 mg/L	0
Perfluorooctanoic acid (PFOA)	0.000012 mg/L	0

	AGQs
Perfluorohexanesulfonic acid (PFHxS)	0.018 ng/L
Perfluorononanoic acid (PFNA)	0.011 ng/L
Perfluorooctanesulfonic acid (PFOS)	0.015 ng/L
Perfluorooctanoic acid (PFOA)	0.012 ng/L

The September 2019 PFAS regulations were challenged in state court and are currently enjoined pending resolution of the litigation. On July 23, 2020, the New Hampshire legislature enacted legislation establishing MCLs and AGQSs for these PFAS in State statute at the identical levels as the challenged regulations. The statutory MCLs and AGQSs became effective on July 23, 2020.

Permit Requirements

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the Draft Permit requires that the facility conduct quarterly influent, effluent and sludge sampling for PFAS chemicals currently regulated in each state and annual sampling of certain industrial users, the first full calendar quarter beginning six months after EPA has notified the Permittee that appropriate, multi-lab validated test methods are made available by EPA to the public.

The purpose of this monitoring and reporting requirement is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality-based effluent limits on a facility-specific basis. EPA is authorized to require this monitoring and reporting by CWA § 308(a), which states:

> "SEC. 308. (a) Whenever required to carry out the objective of this Act, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this Act; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section; or (4) carrying out sections 305, 311, 402, 404 (relating to State permit programs), 405, and 504 of this Act—
>
> (A) the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require;".

Since an EPA method for sampling and analyzing PFAS in wastewater and sludge is not currently available, the PFAS sampling requirement in the Draft Permit includes a compliance schedule which delays the effective date of this requirement until the first full calendar quarter beginning 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater and biosolids is made available to the public on EPA's CWA methods program websites. For wastewater see https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical and https://www.epa.gov/cwa-methods. For biosolids, see https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-biosolids. EPA expects these methods will be available by the end of 2021. This approach is consistent with 40 CFR § 122.44(i)(1)(iv)(B) which states that in the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR Part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters.

4.13 Industrial Users

Part IV.C.1 of the Draft General Permit includes conditions that are necessary to allow EPA and either MassDEP or NHDES to ensure that pollutants discharged to a facility by an industrial user will not pass through the facility and cause violations of water quality standards and/or sludge use and disposal difficulties, or cause interference with the operation of the treatment works. The Draft General Permit requires Permittees to notify EPA and either MassDEP or NHDES whenever a process wastewater discharge to a facility from an industrial user within a primary industry category is planned or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of the

effective date of permit coverage. The Draft General Permit requires Permittees to report to EPA and either MassDEP or NHDES the name(s) of all industrial users subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-430, 432-447, 454, 455, 457-461, 463-469, and 471 as amended) and/or New Hampshire Pretreatment Standards (Env-Ws 904) who commence discharge to the facility after the effective date of permit coverage, and to forward any original pretreatment reports submitted by industrial users within ninety (90) days of their receipt to EPA and copy either MassDEP or NHDES-WD in accordance with Part VI of the General Permit.

4.14 Sludge Conditions

The draft General Permit requires that the Permittee comply with all existing federal and state laws that apply to sewage sludge use and disposal practices and with the Clean Water Act Section 405(d) technical standards (see 40 CFR Section 503).

Domestic sludge which is land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator is subject to federal 40 CFR Part 503 technical and to the New Hampshire Sludge Management Rules (Env-Wq 800) (for facilities discharging to receiving waters in New Hampshire). Part 503 regulations have a self-implementing provision; however, the CWA requires their implementation through permits. Domestic sludge that is disposed in municipal solid waste landfills is in compliance with Part 503 regulations provided the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 CFR Part 258 (Criteria for Municipal Solid Waste Landfills).

The draft General Permit has been conditioned to ensure that sewage sludge use and disposal practices meet the CWA Section 405(d) Technical Standards. Which of the 40 CFR Part 503 requirements apply to the Permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 guidance document, EPA Region 1 - NPDES Permit Sludge Compliance Guidance (EPA, November 4, 1999), may be used by the Permittee to assist in determining the applicable requirements.[12]

4.15 Infiltration/Inflow (I/I)

Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity and the efficiency of the treatment works and may cause bypasses to secondary treatment. It greatly increases the potential for sanitary sewer overflows (SSOs) in separate systems, and combined sewer overflows (CSOs) in combined systems.

The draft General Permit includes a requirement for the Permittee to control infiltration and

[12] This guidance document is available upon request from EPA Region I and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf

inflow (I/I) within the sewer collections system it owns and operates. The Permittee shall develop an I/I removal program commensurate with the severity of I/I in the collection system. This program may be scaled down in sections of the collection system that have minimal I/I.

4.16 Operation and Maintenance of the Sewer System

The standard permit conditions for 'Proper Operation and Maintenance', found at 40 CFR § 122.41(e), require the proper operation and maintenance of permitted wastewater systems and related facilities to achieve permit conditions. The requirements at 40 CFR § 122.41(d) impose a 'duty to mitigate' upon the Permittee, which requires that "all reasonable steps be taken to minimize or prevent any discharge violation of the permit that has a reasonable likelihood of adversity affecting human health or the environment. EPA maintains that an I/I removal program is an integral component of ensuring permit compliance with the requirements of the permit under the provisions at 40 CFR § 122.41(d) and (e).

General requirements for proper operation and maintenance, and mitigation have been included in Part VIII of the General Permit. Specific permit conditions have also been included in Part IV.A. and IV.B. of the draft General Permit. These requirements include mapping of the wastewater collection system, preparing and implementing a collection system operation and maintenance plan, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to separate sewer collection systems (combined systems are not subject to I/I requirements) to the extent necessary to prevent SSOs and I/I related effluent violations at the Wastewater Treatment Facility and maintaining alternate power where necessary. These requirements are included to minimize the occurrence of permit violations that have a reasonable likelihood of adversely affecting human health or the environment.

If any of these requirements are not included in a facility's existing permit, EPA has determined that these additional requirements are necessary to ensure the proper operation and maintenance of the collection system and has included schedules for completing these requirements in the draft General Permit.

4.17 Standard Conditions

The standard conditions of the permit are based on 40 CFR § 122, Subparts A, C, and D and 40 CFR § 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

5 Obtaining Authorization to Discharge

5.1 Obtaining Coverage

To obtain coverage under the WWTF GP, regulations at 40 CFR § 122.28(b)(2) provide three distinct options found in subparts (i), (v), and (vi). Subpart (i) indicates that eligible dischargers may submit a notice of intent (NOI) to be covered by the General Permit. Subpart (v) indicates that a discharger may be authorized under the General Permit without a notice of intent when EPA determines a NOI requirement would be

inappropriate. Subpart (vi) indicates that EPA may notify a discharger that it is covered by a General Permit even if the discharger has not submitted a NOI to be covered.

Among these three options, EPA notes that the language of subpart (v) specifically excludes "publicly owned treatment works" (POTWs) from being authorized by means of this option. Given that most of the facilities eligible for coverage under this General Permit are POTWs, EPA must provide authorization to discharge by means of either subpart (i) or subpart (vi), or both. EPA has determined that both subpart (i) and subpart (vi) are appropriate options to obtaining coverage for all eligible dischargers listed in Attachment E of the General Permit, as specified below.

To obtain coverage under the General Permit, facilities identified in Attachment E of the General Permit may, at their election, submit a Notice of Intent (NOI) to EPA **within 60 days of the effective date of the General Permit** in accordance with 40 CFR § 122.28(b)(2)(i) & (ii). The contents of the NOI shall include at a minimum, the legal name and address of the owner or operator, the facility name and address, type of facility or discharges, the receiving stream(s) and be signed by the operator in accordance with the signatory requirements of 40 CFR § 122.22, including the certification statement found at § 122.22(d), as follows:

> *I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

All NOIs must be submitted to EPA either electronically to R1NPDESReporting@epa.gov (Note: electronic submittals must include electronic signature) or physically to the following address:

United States Environmental Protection Agency
ATTN: Municipal Permits Section
5 Post Office Square – Suite 100
Mail Code – 06-1
Boston, Massachusetts 02109-3912

Alternately, the Director may notify a discharger that it is covered this General Permit, even if the discharger has not submitted a notice of intent to be covered in accordance with 40 CFR § 122.28(b)(2)(vi). EPA has determined that the eligible dischargers listed in Attachment E of the General Permit may be authorized to discharge under the General Permit by this type of notification. Such authorization to discharge will be effective upon the date indicated in written notice from EPA.

Facilities currently covered under the expired POTW GP will maintain coverage under that administratively continued permit until receiving written notification from EPA of authorization

to discharge under the reissued WWTF GP. Such authorization will be effective upon the date indicated in written notice from EPA.

Facilities to be covered under this General Permit for the first time will maintain coverage under their existing individual permits until receiving written notification from EPA of authorization to discharge under the reissued WWTF GP. Such authorization will be effective upon the date indicated in written notice from EPA. As a precondition to obtaining authorization to discharge under the WWTF GP, authorization to discharge pursuant to their individual permits will be removed using appropriate procedures under Part 124. Therefore, authorization to discharge under the WWTF GP will be subject to completion of appropriate Part 124 proceedings and will be effective upon the date indicated in written notice from EPA.

5.2 When the Director May Require Application for an Individual NPDES Permit

The Director may require any operator authorized by or requesting coverage under this general permit to apply for and obtain an individual NPDES permit. Any interested person may petition the Director to take such action based on 40 CFR § 122.28(b)(3).

5.3 When an Individual Permit May Be Requested

In accordance with 40 CFR § 122.28(b)(3)(iii), any owner or operator authorized by this General Permit may request to be excluded from the coverage of this General Permit. The owner or operator shall submit an application under § 122.21, with reasons supporting the request, to the Director no later than 90 days after the publication by EPA of the Notice of Availability of the General Permit in the Federal Register. The request shall be processed under Part 124. The request shall be granted by issuing of an individual permit if the reasons cited by the owner or operator are adequate to support the request.

When an individual NPDES permit is issued to an operator otherwise subject to this General Permit, the applicability of this permit to that owner or operator is automatically terminated on the effective date of the individual permit.

5.4 EPA Determination of Coverage

Any operator may request to be covered under this General Permit but the final authority rests with EPA. Coverage under this general permit will not be effective until receipt of notification of inclusion (*i.e.*, authorization to discharge) from EPA. The effective date of coverage will be the date indicated in the authorization to discharge provided by EPA in writing.

Any operator authorized to discharge under this General Permit will receive written notification from EPA. Failure to receive from EPA written notification of permit coverage means that the operator is not authorized to discharge under this General Permit.

6 Federal Permitting Requirements

6.1 Endangered Species Act

The Endangered Species Act (ESA) of 1973 requires federal agencies such as EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration Fisheries Office (NOAA Fisheries), also known collectively as "the Services", that any actions authorized, funded, or carried out by the EPA (e.g., EPA issued NPDES permits authorizing discharges to waters of the United States) are not likely to jeopardize the continued existence of any Federally listed endangered or threatened species or adversely modify or destroy critical habitat of such species (see 16 U.S.C. 1536(a)(2), 50 CFR § 402 and 40 CFR § 122.49(c)).

Section 7 of the ESA provides for formal and informal consultation with the Services. For NPDES permits issued in Massachusetts and New Hampshire where EPA is the permit issuing agency and the action area of the permitted discharge overlaps with the presence of federally protected species, draft NPDES permits and Fact Sheets are routinely submitted to the Services along with biological assessments (BAs) in order to complete informal consultation prior to final issuance of the permit. In this case, EPA will initiate consultation with the Services through the Draft Permit and Fact Sheet during the General Permit's public comment period. Based on EPA's working experience with the Services on numerous prior permits and identification of certain endangered species, general geographic areas of concern in the States and the potentially affected waters, including critical habitats, EPA has prepared this Draft WWTF GP to ensure adequate protection of listed threatened or endangered species and the critical habitat of such species protected under the ESA.

The following are ESA species found in Massachusetts and New Hampshire:

Massachusetts
Dwarf Wedgemussel (*Alasmidonta heterodon*)
Northeastern Bulrush (*Scirpus ancistrochaetus*)
Piping Plover (*Charadrius melodus*)
Red Knot (*(Calidris canutus rufa))*
Roseate Tern (*Sterna dougallii dougallii*)
Small Whorled Pogonia (*Isotria medeoloides*)
Plymouth Redbelly Turtle (*Pseudemys rubriventis bangsi*)
Bog Turtle (*Clemmys muhlenbergii*)
Puritan Tiger Beetle (*Cicindela puritana*)
American Burying Beetle (*Nicrophorus americanus*)
Northeastern Beach Tiger Beetle (*Cicindela dorsalis dorsalis*)
Northern Long-Eared Bat *(Myotis septentrionalis)*
Atlantic Sturgeon (*Acipenser oxyrinchus*)*
Shortnose Sturgeon (*Acipenser brevirostrum*)*
Leatherback Sea Turtle (*Dermochelys coriacea*)*
Loggerhead Sea Turtle (*Caretta caretta*)*
Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)*
Green Sea Turtle (*Chelonia mydas*)*

North Atlantic Right Whale (*Eubalaena* glacialis)*
Fin Whale (*Balaenoptera physalus*)*

* Under the jurisdiction of NOAA Fisheries Protected Resources Division.
All other species are under the jurisdiction of the US Fish and Wildlife Service.

New Hampshire
Dwarf Wedgemussel (*Alasmidonta heterodon*)
Northeastern Bulrush (*Scirpus ancistrochaetus*)
Piping Plover (*Charadrius melodus*)
Red Knot (*(Calidris canutus rufa))*
Roseate Tern (*Sterna dougallii dougallii*)
Small Whorled Pogonia (*Isotria medeoloides*)
Karner Blue Butterfly *(Lycaeides melissa samuelis)*
Canada Lynx *(Lynx canadensis)*
Jesup's Milkvetch (*Astragalus robbinsii var. jesupii*)
Northern Long-Eared Bat *(Myotis septentrionalis)*
Atlantic Sturgeon (*Acipenser oxyrinchus*)*
Shortnose Sturgeon (*Acipenser brevirostrum*)*
Leatherback Sea Turtle (*Dermochelys coriacea*)*
Loggerhead Sea Turtle (*Caretta caretta*)*
Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)*
Green Sea Turtle (*Chelonia mydas*)*
North Atlantic Right Whale (*Eubalaena* glacialis)*
Fin Whale (*Balaenoptera physalus*)*

* Under the jurisdiction of NOAA Fisheries Protected Resources Division.
All other species are under the jurisdiction of the US Fish and Wildlife Service.

The discharges eligible/ineligible to be authorized under the WWTF GP are described in Section 1 of this Fact Sheet and listed in Attachment E of the draft General Permit. The WWTF GP specifically excludes coverage to facilities whose discharge(s) are likely to jeopardize the continued existence of listed threatened or endangered species or the critical habitat of such species. The WWTF GP effluent limits are sufficiently stringent to assure that water quality standards are achieved which protect both aquatic life and human health. The effluent limitations established in the WWTF GP ensure the maintenance of the receiving water as an aquatic habitat. Further, the WWTF GP requires that individual permits be issued if actual environmental conditions (including the preservation of endangered species) are not adequately covered by the WWTF GP.

Of the species listed above, the expected presence of a number of plants and animals, based on their terrestrial, semi-aquatic or near shore beach habitats, do not overlap with the effluent discharges expected to be covered under the General Permit. For the following species that do not overlap with the action areas of the expected discharges, EPA has made the determination that no consultation with the Services is required:

Northeastern Bulrush (*Scirpus ancistrochaetus*)
Piping Plover (*Charadrius melodus*)
Red Knot (*(Calidris canutus rufa))*
Roseate Tern (*Sterna dougallii dougallii*)
Small Whorled Pogonia (*Isotria medeoloides*)
Plymouth Redbelly Turtle (*Pseudemys rubriventis bangsi*)
Bog Turtle (*Clemmys muhlenbergii*)
Puritan Tiger Beetle (*Cicindela puritana*)
American Burying Beetle (*Nicrophorus americanus*)
Northeastern Beach Tiger Beetle (*Cicindela dorsalis dorsalis*)
Karner Blue Butterfly *(Lycaeides melissa samuelis)*
Canada Lynx *(Lynx canadensis)*
Jesup's Milkvetch (*Astragalus robbinsii var. jesupii*)

However, one terrestrial listed threatened species, the northern long-eared bat (*Myotis septentrionalis*) is identified as occurring statewide in Massachusetts and New Hampshire and could potentially come in contact with the aquatic action area of the facilities seeking coverage under the WWTF GP.[13]

The threatened northern long-eared bat is under the jurisdiction of the USFWS. According to the USFWS, the bat is found in the following habitats based on seasons, "winter – mines and caves; summer – wide variety of forested habitats." This species is not considered aquatic. However, because the regulated discharges from the 34 facilities expected to seek coverage in Massachusetts and 32 facilities in New Hampshire are located throughout the two states, EPA prepared an Effects Determination Letter for the WWTF GP reissuance and submitted it to USFWS. Based on the information submitted by EPA, the USFWS notified EPA by letter, dated March 22, 2021, that the permit reissuance is consistent with activities analyzed in the USFWS January 5, 2016, Programmatic Biological Opinion (PBO)[14, 15]. The PBO outlines activities that are excepted from "take" prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.). The USFWS consistency letter concluded EPA's consultation responsibilities for the WWTF GP NPDES permitting action under ESA Section 7(a)(2) with respect to the northern long-eared bat. No further ESA section 7 consultation is required with USFWS.

Of the 32 facilities expected to seek coverage under the WWTF GP in New Hampshire, EPA has made the preliminary determination that nine of the facilities contain action areas that likely overlap with federally protected species. Four of these facilities (Town of Newington, Newfields WWTF, Newmarket and Rollinsford) are in the Piscataqua River Watershed and overlap with life stages of shortnose sturgeon and Atlantic sturgeon, as well as Atlantic sturgeon Gulf of Maine Critical Habitat in the Piscataqua River (Unit 4). The sturgeon species and critical habitat

[13] See §7 resources for USFWS at https://ecos.fws.gov/ipac/.
[14] USFWS Massachusetts Event Code: 05E1NE00-2021-E-06233, March 22, 2021.
[15] USFWS New Hampshire Event Code: 05E1NE00-2021-E-06238, March 22, 2021.

are under the jurisdiction of NOAA Fisheries. The remaining five facilities, all located in the Connecticut River Watershed, potentially overlap with the dwarf wedgemussel. This federally endangered mussel is under the jurisdiction of the USFWS.

Of the 34 facilities expected to seek coverage under the WWTF GP in Massachusetts, EPA has made the preliminary determination that eleven of the facilities contain action areas that likely overlap with federally protected species. Three of these facilities (Shorecliff, USCG Boston Light and Cohasset WWTP) discharge to coastal waters and overlap with life stages of federally listed shortnose sturgeon, Atlantic sturgeon, leatherback sea turtles, loggerhead sea turtles, Kemp's ridley sea turtles and green sea turtles, along with North Atlantic right whales and fin whales. Two of these four facilities discharge to designated critical habitat for North Atlantic right whale feeding. An additional two of the eleven facilities discharge to river segments that overlap with life stages of both shortnose sturgeon and Atlantic sturgeon. One of these two facilities (*i.e.*, Merrimac WWTP) also discharges to Atlantic sturgeon Gulf of Maine Merrimack River Critical Habitat (Unit 5). All of the remaining six facilities are located in the Connecticut River Watershed, upstream of the Holyoke Dam, and their discharges overlap with lifestages of shortnose sturgeon. These marine and anadromous species are all under the jurisdiction of NOAA Fisheries. Of the facilities that discharge to the Connecticut River Watershed, two facilities potentially overlap with the dwarf wedgemussel (Hatfield and Hadley Indian Hill WWTP). These two facilities also overlap with shortnose sturgeon and are included in the eleven facilities identified above. The federally endangered dwarf wedgemussel is under the jurisdiction of the USFWS.

These protected species life stages, as well as the designated critical habitats, may be influenced by the operation of these facilities. Because these species may be affected by the discharges authorized by the proposed general permit, EPA has thoroughly evaluated the potential impacts of the permit action on these protected species through the preparation of a Biological Assessment (BA). EPA is in the process of finalizing the BA. On the basis of the evaluation, taking into consideration the location of the facilities, the characteristics of the outfalls and the rate of flow of the discharges (under 1 million gallons per day [MGD]) EPA has made the preliminary determination that adoption of the WWTF GP is not likely to adversely affect any threatened or endangered species. In addition, EPA has made the preliminary determination that the proposed action may affect, but is not likely to adversely affect, the designated North Atlantic right whale critical habitat and the Atlantic sturgeon critical habitat that overlaps the action areas listed above.

Therefore, EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from the Services regarding this determination through the information in the Draft Permit, this Fact Sheet, as well as the supporting BA that will be sent to NOAA Fisheries Protected Resources Division and the USFWS as part of the informal consultation process during the Draft Permit's public comment period.

Services Contact Information:

US Fish and Wildlife Service National Marine Fisheries Service
New England Field Office

70 Commercial Street, Suite 300 Office
Concord, NH 03301-5087
Phone: (603) 223-2541

Greater Atlantic Region Fisheries
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930-2298
Phone: (978) 281-9300 ext. 6505

6.2 Essential Fish Habitat

Background: Under the 1996 Amendments (PL 104267) to the Magnuson Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801 et seq. (1998)), EPA is required to consult with NOAA Fisheries Service (NOAA Fisheries) if EPA's actions or proposed actions that it funds, permits or undertakes, "may adversely impact any essential fish habitat." (16 U.S.C. § 1855(b)) The amendments broadly define "essential fish habitat" (EFH) as "waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." (16 U.S.C. § 1802(10)) Adverse impact means any impact which reduces the quality and/or quantity of EFH. (See 50 CFR § 600.910(a)) Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site specific or habitat wide impacts, including individual, cumulative or synergistic consequences of actions.

An EFH designation is only available where a Federal Fisheries Management Plan exists. (See 16 U.S.C. § 1855(b)(1)(A)) EFH designations for New England were approved by the US Department of Commerce on March 3, 1999. In a letter to EPA New England dated October 10, 2000, NOAA Fisheries Service agreed that for NPDES permit actions, EFH notification for purposes of consultation can be accomplished in the EFH section of the permit's Fact Sheet or Federal Register Notice.

Proposed Action: EPA is reissuing the National Pollutant Discharge Elimination System ("NPDES") General Permit for wastewater treatment facilities ("WWTF GP"). The WWTF GP provides coverage to facilities located in Massachusetts and New Hampshire whose discharge consists of wastewaters described in Part 1 of this Fact Sheet.

Resources: Part 1.3 of this Fact Sheet lists the specific discharges excluded from coverage, including discharges to territorial seas, areas of critical environmental concern (MA), ocean sanctuaries (MA), outstanding resource waters (NH), Class A waters (NH), and discharges which may adversely affect threatened or endangered species, or critical habitats of such species, under the Endangered Species Act (ESA).

EPA's EFH assessment considers all federally managed species with designated EFH in the coastal and inland waters of Massachusetts and New Hampshire. The following is a list of the 37 EFH species and applicable life stage(s) for the area in Massachusetts and New Hampshire that overlap with discharges potentially covered by the WWTP GP. In addition,

two Habitat Areas of Particular Concern that overlap with discharges potentially covered by the General Permit are included[16]:

Table 5 – List of EFH Species and Life Stages In The Vicinity of WWTF GP Potential Discharges in New Hampshire and Massachusetts.

Coastal Area	Species/Management Unit	Lifestage(s) Found at Location
NH, NMA, SMA	Atlantic Sea Scallop	ALL
NH, NMA	Atlantic Salmon	ALL
NH, NMA, SMA	Atlantic Wolffish	ALL
NMA, SMA	Haddock	Juvenile
NH, NMA, SMA	Winter Flounder	Eggs, Juvenile, Larvae/Adult
NH, NMA, SMA	Little Skate	Juvenile, Adult
NMA, SMA	Ocean Pout	Adult, Eggs, Juvenile
NH, NMA, SMA	Atlantic Herring	Juvenile, Adult, Larvae
NH, NMA, SMA	Atlantic Cod	Larvae, Adult, Juvenile, Eggs
NH, NMA, SMA	Pollock	Adult, Juvenile, Eggs, Larvae
NH, NMA, SMA	Red Hake	Adult, Eggs/Larvae/Juvenile
NMA, SMA	Silver Hake	Eggs/Larvae, Adult
NMA, SMA	Yellowtail Flounder	Adult, Juvenile, Larvae, Eggs
NMA, SMA	Monkfish	Eggs/Larvae
NMA, SMA	White Hake	Larvae, Adult, Eggs, Juvenile
NH, NMA, SMA	Windowpane Flounder	Adult, Larvae, Eggs, Juvenile
NH, NMA, SMA	Winter Skate	Adult, Juvenile
NH	Smooth Skate	Juvenile
NH	White Hake	Adult, Eggs, Juvenile
NMA, SMA	Witch Flounder	Adult
NMA, SMA	American Plaice	Adult, Juvenile, Larvae, Eggs
NMA, SMA	Acadian Redfish	Larvae
NH, NMA, SMA	Thorny Skate	Juvenile
NH, NMA, SMA	Bluefin Tuna	Adult, Juvenile
NMA	Basking Shark	ALL
NMA, SMA	White Shark	Juvenile/Adult
SMA	Sand Tiger Shark	Neonate/Juvenile
NMA, SMA	Northern Shortfin Squid	Adult
NMA, SMA	Longfin Inshore Squid	Juvenile, Adult

[16] NOAA EFH Mapper available at http://www.habitat.noaa.gov/protection/efh/efhmapper/

Coastal Area	Species/Management Unit	Lifestage(s) Found at Location
NH, NMA, SMA	Atlantic Mackerel	Eggs, Larvae, Juvenile, Adult
NH, NMA, SMA	Bluefish	Adult, Juvenile
NH, NMA, SMA	Atlantic Butterfish	Eggs, Larvae, Adult, Juvenile
NMA, SMA	Spiny Dogfish	Sub-Adult Female, Adult Male, Adult Female
NMA, SMA	Atlantic Surfclam	Juvenile, Adult
NMA, SMA	Scup	Juvenile, Adult
SMA	Summer Flounder	Larvae
NMA, SMA	Black Sea Bass	Juvenile, Adult

River System	Species/Management Unit	
NH – CR, MR, AR, LR MA- CR, MR	Atlantic Salmon	ALL

Coastal Area	HAPC Name
NH, NMA, SMA	Inshore 20m Juvenile Cod
SMA	Freshwater and Tidal Macrophytes Adult and Juvenile Summer Flounder

NH = New Hampshire coastal waters near the mouth of the Piscataqua River
NMA = North Coastal Massachusetts waters near Gloucester
SMA = South Coastal Massachusetts waters near Cohasset
CR = Connecticut River Watershed
MR = Merrimack River Watershed
AR = Androscoggin River Watershed
LR = Lamprey River

Of the 32 facilities in New Hampshire identified for potential coverage under the WWTF GP, 28 facilities overlap with EFH habitat. Of these, 27 are located on river systems designated as EFH for Atlantic salmon (Connecticut River Watershed, Merrimack River Watershed, Androscoggin River Watershed and the Lamprey River) and one facility discharges into coastal EFH species habitat (Town of Newington Wastewater Facility; see WWTF Draft Permit Attachment E).

Of the 34 facilities in Massachusetts identified for potential coverage under the WWTF GP, 28 facilities overlap with EFH habitat. Of these, 23 are located on river systems designated as EFH for Atlantic salmon (Connecticut River Watershed and Merrimack River Watershed) and five facilities discharges into coastal EFH species habitat. The coastal facilities are the Merrimac WWTP, the Governor Dummer Academy Facility, the Shorecliff Maintenance Trust Facility, the USCG Boston Light Facility and the Cohasset Wastewater Treatment Plant (see WWTF Draft Permit Attachment E).

Analysis of Effects: As described above, the WWTF GP covers a variety of substantially similar discharges which could occur anywhere in Massachusetts and New Hampshire, except into those waters excluded in Part 1.3 of this Fact Sheet. EPA has identified the

following potential sources of impact to aquatic species associated with discharges from WWTFs:

(a) Effluent Toxicity: Certain chemicals used in wastewater treatment processes have the potential to cause toxicity in the receiving water. In particular, disinfection (by addition of chemicals designed to kill pathogens) has the potential for the toxic agent to be present in the discharges. The disinfection is commonly done by chlorination. Therefore, the WWTF GP establishes monitoring and limits for Total Residual Chlorine (TRC) in cases where wastewater has previously been chlorinated or which may contain TRC. The TRC limits are based on the states' water quality standards to protect against toxicity to aquatic species.

Coagulation, which removes dirt and other particles suspended in water, is commonly carried out at WWTFs. Facilities may use aluminum-based coagulants, which results in the presence of aluminum in wastewater discharges.

The WWTF GP prohibits the discharge of pollutants in amounts that would be toxic to aquatic life. It prohibits any discharge that violates State or Federal water quality standards. Finally, it prohibits the discharge of any wastewater treatment additives without notification of the regulatory agencies. Examples of wastewater treatment additives that potentially could be found within discharged wastewater include chemicals used for coagulation, pH neutralization, disinfection, and dechlorination.

To further ensure that WWTFs covered under the General Permit are not discharging toxics into receiving water or adversely impacting aquatic life, EPA has added several additional monitoring requirements. WET Testing, a type of biological test, is conducted to determine whether certain effluents, which may contain potentially toxic pollutants, are discharged in a combination which produces a toxic amount of pollutants in the receiving water.

For discharges into freshwater, EPA is proposing the daphnid (*Ceriodaphnia dubia*) and the fathead minnow *(Pimiphales promelas)* for WET testing unless a WWTF's current permit allows fewer species.

For discharges into marine waters, EPA is proposing the inland silverside (*Menidia beryllina)* and the mysid shrimp (*Mysidopsia bahia*) for WET testing unless a WWTF's current permit allows fewer species.

(b) Discharge of Solids: Secondary treatment is comprised of technology-based requirements expressed in terms of BOD_5, TSS and pH. *See* 40 CFR § 133.The WWTF GP contains effluent limits for total suspended solids that are consistent with secondary treatment standards. The monthly average, weekly average, and maximum daily limitation for BOD_5 and TSS are 30 mg/l, 45 mg/L, and 50 mg/L, respectively. These are sufficiently stringent to achieve the water quality standards of Massachusetts and New Hampshire. Additionally, the permit contains narrative prohibitions on the discharge of oil and grease, settleable solids, and unacceptable color in the receiving water.

EPA's Opinion of Potential Impacts:

EPA has concluded that the operation of the facilities, as governed by the WWTF GP action, is not likely to adversely affect the species of concern or the Habitat Areas of Particular Concern (if designated) for the following reasons:

- This is the reissuance of a general permit for facilities covered by the existing POTW GP or for facilities covered by an individual permit that will be authorized by this General Permit for the first time. This action is not expected to cover discharges that constitute a new source of pollutants;
- The effluent limitations established in the WWTF GP ensure protection of aquatic life and maintenance of the receiving water as an aquatic habitat;
- The proposed limits and coverage requirements for the WWTF GP are sufficiently stringent to assure that state and federal water quality standards will be met and the permit prohibits violation of these standards;
- The WWTF GP includes proposed water quality-based limits for BOD_5, TSS, pH, total residual chlorine (TRC), bacteria, metals, total phosphorus, and ammonia nitrogen;
- The WWTF GP includes Whole Effluent Toxicity (WET) limitations and monitoring requirements for facilities with a dilution factor less than 1,000 to ensure that the discharges do not cause acute or chronic toxic effects.

EPA concludes that the effluent limitations, conditions, and monitoring requirements contained in the WWTF GP minimize adverse effects to aquatic organisms, including EFH species, as well as their habitat and forage species.

Proposed Mitigation: It is EPA's opinion that the effluent limitations, conditions, and monitoring requirements proposed in the WWTF GP adequately protects all aquatic life, including EFH designated species in the receiving water. Potential impacts governed by these discharge requirements will be insignificant. Further mitigation is not warranted. If adverse impacts to EFH do occur, either as a result of noncompliance or from unanticipated effects from this activity, authorization to discharge under the WWTF GP can be revoked.

Furthermore, the General Permit contains provisions that require the applicant to perform toxicity testing and/or a priority pollutant scan if EPA or the State believes it is warranted and/or to require that an individual permit be issued if actual environmental conditions are not adequately covered by the General Permit. Should new information become available that changes the basis for EPA's assessment, then consultation with NOAA Fisheries under the appropriate statute(s) will be reinitiated.

At the beginning of the public comment period, EPA notified NOAA Fisheries Habitat and Ecosystem Services Division that the Draft General Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

In addition to this Fact Sheet and the Draft General Permit, information to support EPA's finding has been included in a letter under separate cover that will be sent to the NOAA Fisheries

Habitat and Ecosystem Services Division during the public comment period.

6.3 Historic Preservation

Facilities which adversely affect properties listed or eligible for listing in the National Registry of Historic Places under the National Historic Preservation Act of 1966 (NHPA), 16 USC §§470 et seq. are not authorized to discharge under the WWTF GP. Based on the nature and location of the discharges, EPA has determined that the WWTFs eligible for authorization under this General Permit do not have the potential to affect a property that is either listed or eligible for listing on the National Register of Historic Places.

Electronic listings of National and State Registers of Historic Places are maintained by the National Park Service (http://www.nps.gov/nr/) and the New Hampshire Historical Commission (http://www.nh.gov/nhdhr/programs/national_register.html).

6.4 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), l6 U.S.C. 145l et seq., and its implementing regulations (15 CFR part 930) require a determination that any federally licensed activity affecting the coastal zone with an approved Coastal Zone Management Program (CZMP) is consistent with the CZMA. In the case of general permits, EPA has the responsibility for making the consistency certification request and submitting it to the state for concurrence. EPA will request that both the Executive Office of Environmental Affairs, MA CZM, Project Review Coordinator, 251 Causeway Street, Suite 800, Boston, MA 02114; and the Federal Consistency Officer, New Hampshire Coastal Program, 222 International Drive, Suite 175, Portsmouth, NH 03801, provide a consistency concurrence that the proposed WWTF GP is consistent with the MA and NH CZMPs.

MA CZM Consistency Review

Of the 34 Massachusetts facilities eligible for potential coverage under the WWTF GP, four facilities discharge to the coastal zone. The facilities are the Governor Dummer Academy Facility, the Shorecliff Maintenance Trust Facility, the USCG Boston Light Facility and the Cohasset Wastewater Treatment Plant (see WWTF Draft Permit Attachment E). The Draft WWTF GP requires a consistency review to ensure that the discharges from these facilities are consistent with the MA CZMPs. Facilities located in Massachusetts must conduct proposed activities (*i.e.*, discharges) in a manner consistent with the applicable Massachusetts Coastal Zone Management (MACZM) policies as outlined below.

WATER QUALITY POLICY #1 - Ensure that point-source discharges in or affecting the coastal zone are consistent with federally approved state effluent limitations and water quality standards.

HABITAT POLICY #1 - Protect coastal resource areas including salt marshes, shellfish beds, dunes, beaches, barrier beaches, salt ponds, eelgrass beds, and freshwater wetlands for their important role as natural habitats.

All WWTF GP Permittees must control discharges as necessary to meet applicable numeric and

narrative state water quality standards for any discharges so authorized. EPA New England has requested that the MACZM Office review the Region's determination and confirm that the Draft WWTF GP is consistent with the State's CZMP.

NH CZM Overview

Of the 32 New Hampshire facilities eligible for potential coverage under the WWTF GP, four facilities discharge to the coastal zone. The facilities are the Town of Newington, Rollinsford, Newmarket and Newfields WWTFs (see Attachment E of the Draft WWTF GP). The Draft WWTF GP requires a consistency review to ensure that the discharges from these facilities are consistent with the NH CZMPs. Facilities located in New Hampshire must conduct proposed activities (*i.e.*, discharges) in a manner consistent with applicable New Hampshire Coastal Zone Management Enforceable Policies listed below. EPA has addressed policies identified as applicable by New Hampshire CZM to the issuance of the Draft WWTF GP. Policies that were not applicable to the federal action (reissuance of this permit) are noted with "NA".

Protection of Coastal Resources:

1. Protect and preserve and, where appropriate, restore the water and related land resources and uses of the coastal and estuarine environments. The resources of primary concern are coastal and estuarine waters, tidal and freshwater wetlands, beaches, sand dunes, and rocky shores.

> The Draft WWTF GP is consistent to the maximum extent practicable with this enforceable policy by prohibiting any discharge that EPA determines will cause, have the reasonable potential to cause or contribute to a violation of water quality standards. Discharges under the WWTF GP are from wastewater treatment facilities. The Draft WWTF GP requires facilities to meet discharge limits based on water quality standards. Discharge limits for the State of New Hampshire may be found in Part III of the Draft WWTF GP.
>
> EPA has determined that compliance with this permit will protect and preserve and, where appropriate, restore water resources in the various receiving waters and will, in turn, ensure that the uses of the receiving waters (*e.g.*, fishing) are likewise protected and preserved and, where appropriate, restored.

2. Protect, manage, conserve and where appropriate, undertake measures to maintain, restore, and enhance the fish and wildlife resources and related uses, including but not limited to commercial and recreational fishing, of the state.

> The Draft WWTF GP is consistent to the maximum extent practicable with this enforceable policy by prohibiting any discharge that EPA determines will cause, have the reasonable potential to cause, or contribute to a violation of water quality standards. The Draft WWTF GP requires Permittees to meet WQBELs for New Hampshire in Part III of the Draft WWTF GP. These requirements are designed to, among other things, maintain fish and wildlife resources by preventing the discharge of pollutants to surface waters of the United States. The entrainment and impingement of aquatic organisms is not expected

in association with this general permit, as sites covered under this general permit do not utilize cooling water intake structures.

EPA has determined that compliance with this permit will protect, manage, conserve, maintain, and where appropriate, restore and enhance the fish and wildlife resources in the various receiving waters and will, in turn, ensure that the uses of the various receiving waters, including but not limited to commercial and recreational fishing, are likewise protected, managed, conserved, maintained, restored and enhanced.

3. Regulate the mining of sand and gravel resources in offshore and onshore locations so as to ensure protection of submerged lands, marine and estuarine life, and existing uses. Ensure adherence to minimum standards for restoring natural resources impacted from onshore sand and gravel operations. **- NA**

4. Undertake oil spill prevention measures, safe oil handling procedures and when necessary, expedite the cleanup of oil spillage that will contaminate public waters. Institute legal action to collect damages from liable parties in accordance with state law. – **NA**

5. Encourage investigations of the distribution, habitat needs, and limiting factors of rare and endangered animal species and undertake conservation programs to ensure their continued perpetuation.

The Draft WWTF GP is consistent to the maximum extent practicable with this enforceable policy by allowing coverage under this Draft Permit only if the authorized discharges are not likely to adversely affect any species that are federally listed as endangered or threatened under the ESA or result in the adverse modification or destruction of habitat that is federally designated as critical under ESA. EPA New England shall complete consultation under the Endangered Species Act section 7 for this general permit before any coverage is granted to facilities whose discharge may overlap the range of a federally protected species listed as threatened or endangered.

6. Identify, designate, and preserve unique and rare plant and animal species and geologic formations which constitute the natural heritage of the state. Encourage measures, including acquisition strategies, to ensure their protection. **See answer to 5, above.**

Recreation and Public Access:

7. Provide a wide range of outdoor recreational opportunities including public access in the seacoast through the maintenance and improvement of the existing public facilities and the acquisition and development of new recreational areas and public access. - **NA**

Managing Coastal Development:

8. Preserve the rural character and scenic beauty of the Great Bay estuary by limiting public investment in infrastructure within the coastal zone in order to limit development to a mixture of low and moderate density. - **NA**

9. Reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to preserve the natural and beneficial value of floodplains, through the implementation of the National Flood Insurance Program and applicable state laws and regulations, and local building codes and zoning ordinances. – **NA**

10. Maintain the air resources in the coastal area by ensuring that the ambient air pollution level, established by the New Hampshire State Implementation Plan pursuant to the Clean Air Act, as amended, is not exceeded. - **NA**

11. Protect and preserve the chemical, physical, and biological integrity of coastal water resources, both surface and groundwater.

> The Draft WWTF GP is consistent with this enforceable policy by prohibiting any discharge that EPA determines will cause, have the reasonable potential to cause or contribute to a violation of applicable water quality standards and by setting discharge limits. These requirements are designed to protect the waters of the coastal and estuarine environment.

12. Ensure that the siting of any proposed energy facility in the coast will consider the national interest and will not unduly interfere with the orderly development of the region and will not have an unreasonable adverse impact on aesthetics, historic sites, coastal and estuarine waters, air and water quality, the natural environment, public health and safety, and existing uses. - **NA**

Coastal Dependent Uses:

13. Allow only water dependent uses and structures on state properties in Portsmouth, Little Harbor, Rye Harbor, and Hampton, Seabrook Harbor, at state port and fish pier facilities and state beaches (except those uses or structures which directly support the public recreation purpose). For new development, allow only water dependent uses and structures over waters and wetlands of the state. Allow repair of existing overwater structures within guidelines. Encourage the siting of water dependent uses adjacent to public waters. - **NA**

14. Preserve and protect coastal and tidal waters and fish and wildlife resources from adverse effects of dredging and dredge disposal, while ensuring the availability of navigable waters to coastal-dependent uses. Encourage beach re-nourishment and wildlife habitat restoration as a means of dredge disposal whenever compatible. - **NA**

Preservation of Historic and Cultural Resources:

15. Support the preservation, management, and interpretation of historic and culturally significant structures, sites and districts along the Atlantic coast and in the Great Bay area.

> The Draft WWTF GP is consistent to the maximum extent practicable with this enforceable policy by ruling ineligible for coverage under this general permit any discharges which may adversely affect properties listed or eligible for listing in the

National Registry of Historic Places under the National Historic Preservation Act of 1966, 16 U.S.C. Sections 470 et seq., as amended.

Marine and Estuarine Research and Education:

16. Promote and support marine and estuarine research and education that will directly benefit coastal resource management. - **NA**

7 Public Comments, Hearing Requests and Permit Appeals

All persons, including applicants, who believe any condition of the draft General Permit 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:

Michael Cobb
Email: cobb.michael@epa.gov

Prior to the close of the public comment period, any person, may submit a written request to EPA for a public hearing to consider the draft General Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the draft General Permit, the EPA will respond to all significant comments in a Response to Comments document attached to the final General Permit and make these responses available to the public at EPA's Boston office and on EPA's website.

Following the close of the comment period, and after any public hearings, if such hearings are held, the EPA will issue a final General Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice.

General permits may not be appealed to the Environmental Appeals Board. Procedures governing actions by persons affected by a general NPDES permit, including petitions and applications for individual permits, as well as judicial appeals, are set forth in 40 CFR § 124.19(o) and 40 CFR § 122.28.

8 EPA Contact

Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any documents relating to this draft can be requested from the individual listed above.

The administrative record on which this Draft Permit is based may be accessed by contacting Michael Cobb, via email at cobb.michael@epa.gov.

_____
Date

_____
Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

Appendix A – Reasonable Potential Analysis and Limit Derivation

For establishing facility-specific effluent limits, EPA will conduct a reasonable potential analysis and, if necessary, derive effluent limits according to the methodology described below. This methodology distinguishes between freshwater and marine discharges and may be applied to any pollutants of concern, including total phosphorus (for freshwater discharges only), ammonia nitrogen, total recoverable metals and other pollutants for which the facility has submitted monitoring data.

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of the *Technical Support Document for Water Quality-based Toxics Control* (TSD)[1] to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory detection limits). For datasets of 10 or more samples, EPA uses the upper bound effluent concentration at the 95th percentile of the dataset. For datasets of less than 10 samples, EPA uses the maximum value of the dataset.

For Freshwater Discharges

For freshwater discharges, EPA uses the calculated upper bound of the effluent data, along with a concentration representative of the parameter in the receiving water, the critical effluent flow, and the critical upstream flow to project the downstream concentration after complete mixing using the following simple mass-balance equation:-

$$C_s Q_s + C_e Q_e = C_d Q_d$$

Where:

C_s = upstream concentration[1]
Q_s = upstream flow (critical low flow upstream of the outfall)
C_e = effluent concentration[2]
Q_e = effluent flow of the facility (design flow)
C_d = downstream concentration
Q_d = downstream flow ($Q_s + Q_e$)

Solving for the downstream concentration results in:

[1] Median concentration for the receiving water just upstream of the facility's discharge taken from all available information over the most recent 5-year period, including WET testing data, for each Permittee.
[2] The 95th percentile (for $n \geq 10$) or maximum (for $n < 10$) concentrations from all available date over the most recent 5-year period, including DMR data and/or WET testing data, for each Permittee.

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

When both the downstream concentration (C_d) and the effluent concentration (C_e) exceed the applicable criterion (multiplied by 0.9[3] for discharges in New Hampshire), there is reasonable potential for the discharge to cause, or contribute to an excursion above the water quality standard. *See* 40 C.F.R. § 122.44(d). When EPA determines that a discharge causes, has the reasonable potential to cause, or contribute to such an excursion, the permit must contain WQBELs for the parameter. *See* 40 C.F.R. § 122.44(d)(1)(iii). Limits are calculated by using the criterion as the downstream concentration (C_d) (multiplied by 0.9 for discharges in New Hampshire) and rearranging the mass balance equation to solve for the effluent concentration (C_e). Refer to the pollutant-specific section of the Fact Sheet for a detailed discussion of these calculations, any assumptions that must be made and other relevant permit requirements.

For Marine Discharges

For marine discharges, EPA uses the dilution factor, the calculated upper bound of the effluent data and a concentration representative of the parameter in the receiving water outside of the zone of influence of the discharge to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$C_s(DF - 1) + C_e = C_d(DF)$$

Where:

C_s = upstream concentration[4]
C_e = effluent concentration[5] (95th percentile or maximum of effluent concentration)
C_d = downstream concentration
DF = dilution factor (See Dilution Factor section of Fact Sheet)

Solving for the downstream concentration results in:

$$C_d = \frac{C_s(DF - 1) + C_e}{DF}$$

When both the downstream concentration (C_d) and the effluent concentration (C_e) exceed the applicable criterion (multiplied by 0.9[6] for discharges in New Hampshire), there is reasonable potential for the discharge to cause, or contribute to an excursion above the water quality standard. *See* 40 C.F.R. § 122.44(d). When EPA determines that a discharge causes, has the

[3] For discharges in New Hampshire, as required by Env-Wq 1705.01, 10% of the assimilative capacity of the receiving water is reserved by using a multiplying factor of 0.9 in this calculation.
[4] Median concentration for the receiving water outside of the zone of influence of the facility's discharge taken from all available information over the most recent 5-year period, including WET testing data, for each Permittee.
[5] The 95th percentile (for $n \geq 10$) or maximum (for $n < 10$) concentrations from all available date over the most recent 5-year period, including DMR data and/or WET testing data, for each Permittee.
[6] For discharges in New Hampshire, as required by Env-Wq 1705.01, 10% of the assimilative capacity of the receiving water is reserved by using a multiplying factor of 0.9 in this calculation.

reasonable potential to cause, or contribute to such an excursion, the permit must contain WQBELs for the parameter. *See* 40 C.F.R. § 122.44(d)(1)(iii). Limits are calculated by using the criterion as the downstream concentration (C_d) (multiplied by 0.9 for discharges in New Hampshire) and rearranging the mass balance equation to solve for the effluent concentration (C_e). Refer to the pollutant-specific section of the Fact Sheet for a detailed discussion of these calculations, any assumptions that must be made and other relevant permit requirements.

Appendix B - Total Nitrogen Requirements in the Long Island Sound Watershed

As explained below, since 2019 EPA has adopted a systemic, state-by-state approach to control nitrogen pollution discharging from "out-of-basin" point sources in Massachusetts, New Hampshire and Vermont into tributaries of LIS, a severely impaired water body shared by New York and Connecticut. EPA's methodology for establishing TN limitations for out-of-basin POTWs in Massachusetts and New Hampshire has been challenged in the United States Environmental Appeals Board, where the case is now pending. EPA's Response to the Petition was filed on December 11, 2020, and EPA incorporates that filing herein, inclusive of attachments (*e.g.*, Exhibit S, Response to the Comments, as it relates to TN.[1]

In 2000, New York and Connecticut finalized a Total Maximum Daily Load[2] (TMDL) that addressed dissolved oxygen impairments in Long Island Sound due to excessive nitrogen loading. It was approved by EPA in 2001. While the TMDL included waste load allocations (WLAs) for point sources in Connecticut and New York, out-of-basin facilities were not assigned WLAs. However, the Connecticut and New York WLAs included in the TMDL were based on an assumption that out-of-basin point source loads of total nitrogen would be reduced in aggregate by 25% from the baseline through enforceable permit requirements imposed by permitting authorities in the out-of-basin states to protect downstream waters.

EPA implemented optimization requirements in many out-of-basin permits issued in the LIS watershed from 2007 through early 2019 in accordance with an agreement forged in 2012 among the five LIS watershed states, known as the "Enhanced Implementation Plan" (EIP).[3] However, concerns raised in recent public comments by the downstream state (Connecticut) and citizens highlighted the need for clearly enforceable, numeric, loading-based effluent limits to ensure that the annual aggregate nitrogen loading from out-of-basin point sources are consistent with the assumptions of the TMDL WLA of 19,657 lb/day and to ensure that current aggregate loadings do not increase. This is in accordance with the State of Connecticut's antidegradation policy, which requires existing uses to be fully maintained and protected. These uses are already being compromised given the continued, severe nitrogen-driven impairments in LIS. After further review of federal and state requirements, EPA agreed with the concerns raised by the downstream affected state and the public and noted that optimization requirements, by themselves, do not prevent further increases in nitrogen due to population growth (and consequent flow increases) or new industrial dischargers.

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[1] https://yosemite.epa.gov/OA/EAB_WEB_Docket.nsf/Filings%20By%20Appeal%20Number/11443A888232A1C88525863B006D4491/$File/Springfield%20Response%20to%20Petition_Final_12_11_2020.pdf.

[2] Connecticut Department of Environmental Protection and New York State Department of Environmental Conservation, *A Total Maximum Daily Load Analysis to Achieve Water Quality Standards for Dissolved Oxygen in Long Island Sound* (LIS TMDL), December 2000.

[3] Long Island Sound Study Steering Committee, NY, CT, MA, NH, VT, *Enhanced Implementation Plan for the Long Island Sound Total Maximum Daily Load*, 2012. Available at: https://neiwpcc.org/our-programs/pollution-control/lis-tmdl/.

Scientific, Statutory and Regulatory Implementation Considerations

As discussed in Section 2 of this Fact Sheet, statutory and regulatory requirements regarding the development of water quality-based effluent limits include: (1) consideration of applicable water quality requirements of downstream states, including provisions to prevent further degradation of receiving waters that are already impaired, pursuant to a state's antidegradation policy, and provisions to implement other applicable water quality standards, including translation of narrative water quality criteria, and (2) provisions to ensure consistency with the assumptions of any available WLAs.

LIS covers about 1,300 square miles and borders Connecticut and New York. It drains a densely populated watershed area of over 16,000 square miles, including portions of Maine, Vermont, New Hampshire and Massachusetts. About 613 square miles of LIS fall within Connecticut. Connecticut classifies LIS as Class SA and Class SB and designates these waters as, *inter alia,* suitable for recreation and aquatic life habitat. R.C.S.A. § 22a-426-4(f), (j).

Connecticut regulations establish DO, biological condition, and nutrient criteria for each water class. For Class SA and SB waters, DO must not be less than 3 mg/L and may be less than 4.8 mg/L for only limited periods of time. R.C.S.A. § 22a-426-9(a)(1). Regarding biologic condition, "Surface waters… shall be free from…constituents…which…can reasonably be expected to…impair the biological integrity of aquatic or marine ecosystems…" *Id*. at § 22a-426-4(a)(5). "The loading of…nitrogen…to any surface water body shall not exceed that which supports maintenance or attainment of designated uses." *Id*. at § 22a-426-9; *see also* § 22a-426-4(a)(11) (authorizing "imposition of discharge limitations or other reasonable controls… for point…sources of …nitrogen…which have the potential to contribute to the impairment of any surface water, to ensure maintenance and attainment of existing and designated uses, restore impaired waters, and prevent excessive anthropogenic inputs of nutrients or impairment of downstream waters.")

Connecticut regulations mandate protection of "existing" and "designated" uses. R.C.S.A. § 22a-426-8(a)(1). "Tier 1" antidegradation review provides:

> The Commissioner shall determine whether the discharge or activity is consistent with the maintenance, restoration, and protection of existing and designated uses assigned to the receiving water body by considering all relevant available data and the best professional judgment of department staff. *All narrative and numeric water quality standards, criteria and associated policies contained in the Connecticut Water Quality Standards shall form the basis for such evaluation considering the discharge or activity both independently and in the context of other discharges and activities in the affected water body and considering any impairment listed pursuant to 33 USC 1313(d) or any Total Maximum Daily Load (TMDL) established for the water body.*

R.C.S.A. § 22a-426-8(f) (emphasis added). The standards further provide, "The procedures for review outlined in this policy apply to any discharge or activity that is affecting or *may affect* [emphasis added] water quality in Connecticut, including but not limited to any existing, new or increased activity or discharge requiring a permit, water quality certificate or authorization

pursuant to chapters 439, 440, 445 or 446i to 446k, inclusive of the Connecticut General Statutes."

Although nitrogen driven impairments in LIS have been reduced in recent years, they have not been eliminated, and they remain significant. In EPA's technical and scientific judgment, the current quantity of nitrogen in LIS exceeds the narrative and numeric nutrient-related criteria applicable to LIS, and designated aquatic life uses are not being protected, based on analyses of water quality data and information in the administrative record.[4] While there have been significant reductions in the size of the hypoxic zone in LIS due largely to in-basin point source TN reductions, LIS continues to be impaired.[5] It is undisputed that significant amounts of nitrogen from out-of-basin facilities are discharged to the LIS watershed (as much as 6 million pounds per year, based on the sum of the maximum annual discharge from each out-of-basin discharger from 2013 to 2017). The out-of-basin loads in the aggregate necessarily contribute, or have the reasonable potential to contribute, to these violations.

Since the LIS TMDL was approved by EPA in 2001, the study of water quality conditions in LIS and the nitrogen loadings that contribute to hypoxia and other impairments there has continued. Annual monitoring of hypoxia and dissolved oxygen conditions in Long Island continues, as most recently documented in the *2019 Long Island Sound Hypoxia Season Review*[6] which notes that while the area of hypoxia has been reduced, water quality standards have not yet been met.[7]

In 2015, the Long Island Sound Study (LISS)[8] updated its Long Island Sound Comprehensive Conservation and Management Plan (CCMP)[9] which sets watershed targets, implementation actions to meet those targets, and monitoring strategies. One of the objectives of the CCMP is to improve water quality by further reducing nitrogen pollution from sources that are more distant from the Sound, [10] such as wastewater treatment plants in Massachusetts and New Hampshire.

A study published in 2008 used both measurements and mass-balance modeling to evaluate the potential for nitrogen attenuation in the main stem of the Connecticut River in April and August 2005. One of the reaches studied was a 55 km stretch of the Connecticut River in Massachusetts. The study found no nitrogen loss in that reach either in April or August, most likely due to the depth and higher velocities in the main stem of the river compared to the shallower, slower tributaries where previous models and studies had demonstrated varying degrees of nitrogen

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[4] *See* e.g. Long Island Sound Report Card 2018, at https://www.ctenvironment.org/wp content/uploads/2018/09/ReportCard2018-BestView.pdf
[5] Long Island Sound Study, *A Healthier Long Island Sound: Nitrogen Pollution*, 2019, page 2.
[6] CTDEEP, Interstate Environmental Commission, EPA, *2019 Long Island Sound Hypoxia Season Review*, available at: http://www.iec-nynjct.org/sites/default/files/2020-07/FINAL_LISound-Hypoxia-2019-Combined-Report_april2020.pdf
[7] *2019 Long Island Sound Hypoxia Season Review* (page 13)
[8] The Long Island Sound Study (LISS) is a bi-state partnership, formed by EPA, New York and Connecticut in 1985, consisting of federal and state agencies, user groups, concerned organizations, and individuals dedicated to restoring and protecting the Long Island Sound. For more information see https://longislandsoundstudy.net/
[9] LISS, Long Island Sound Comprehensive Conservation and Management Plan 2015 Returning the Urban Sea to Abundance (CCMP), 2015.
[10] CCMP, page 19.

attenuation.[11]

In addition, subsequent studies refined the understanding of out-of-basin baseline nitrogen loading which suggest lower out-of-basin baseline point source loading to the Connecticut River than the 21,672 lb/day assumed in the 2000 TMDL. In 2013, the United States Geological Survey (USGS) published an estimation of the total nitrogen load to Long Island Sound from Connecticut and contributing areas to the north for October 1998 to September 2009.[12] Available total nitrogen and continuous flow data from 37 water-quality monitoring stations in the LIS watershed, for some or all of these years, were used to compute total annual nitrogen yields and loads. In order to extract the non-point source loadings from the total nitrogen measured, the authors relied on point source estimates from the SPARROW model of nutrient delivery to waters in the Northeastern and Mid-Atlantic states in 2002, including the Connecticut River, that was published by Moore and others in 2011.[13] The SPARROW model estimated that 1,776.7 metric tons per year (MT/yr) (or annual average 10,820 lb/day) of total nitrogen was discharged to the Connecticut River from Massachusetts, New Hampshire and Vermont in 2002[14]. These estimates were based on an approach by Maupin and Ivahnenko, published the same year, which used discharge monitoring data available from EPA's Permit Compliance System (PCS) database for 2002.[15,16] Where no data was available, an estimated typical pollutant concentration (TPC) and flow was used to approximate nitrogen loading from point sources according to their industrial category.[17]

Finally, Long Island Sound continues to be listed as impaired on Connecticut's latest EPA-approved list of impaired waters and is experiencing ongoing effects of eutrophication, including low DO, although the system has experienced improvements since the TMDL was approved.

In light of the foregoing, EPA is establishing water quality-based effluent limitations for total nitrogen on three grounds: (1) to ensure compliance with the State of Connecticut's antidegradation provisions, a downstream affected state under 401(a)(2) of the Act and 40 CFR § 122.4(d); (2) to translate and fully implement the state's narrative water quality criterion for nutrients, pursuant to 40 CFR § 122.44(d)(1)(vi)(A); and (3) to ensure consistency with the

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[11] Smith, Thor E., et al, *Nitrogen Attenuation in the Connecticut River, Northeastern USA; A Comparison of Mass Balance and N_2 Production Modeling Approaches, Biogeochemistry*, Mar., 2008, Vol. 87, No. 3 (Mar., 2008), pp. 311-323

[12] Mullaney, J.R., and Schwarz, G.E., 2013, Estimated Nitrogen Loads from Selected Tributaries in Connecticut Draining to Long Island Sound, 1999–2009: U.S. Geological Survey Scientific Investigations Report 2013–5171, 65

[13] Moore, Richard B., Craig M. Johnston, Richard A. Smith, and Bryan Milstead, 2011. Source and Delivery of Nutrients to Receiving Waters in the Northeastern and Mid-Atlantic Regions of the United States. Journal of the American Water Resources Association (JAWRA) 47(5):965-990. DOI: 10.1111⁄j.1752-1688.2011.00582.x

[14] Extrapolated from Moore, et.al 2011, Table 3 on page 977 which estimated that for 2002 an 33.2 % of the total 4,553 MT/yr Massachusetts nitrogen load was from point sources, 2.5% of the total 3,795 MT/yr Vermont nitrogen load was from point sources and 6.1 percent of the total 2,790 MT/yr New Hampshire nitrogen load was from point sources.

[15] Moore (2011), page 968.

[16] Maupin, Molly A. and Tamara Ivahnenko, 2011. Nutrient Loadings to Streams of the Continental United States From Municipal and Industrial Effluent. *Journal of the American Water Resources Association* (JAWRA) 47(5):950-964.

[17] Maupin (2011), page 954.

assumptions and requirements of the available WLA, pursuant to 40 CFR § 122.44(d)(1)(vii)(B).

Compliance with Antidegradation Requirements of Downstream Affected State

One of the principal objectives of the CWA, articulated in CWA § 101(a) is to "maintain the chemical, physical and biological integrity of the Nation's waters." The antidegradation requirements in federal regulations at 40 CFR § 131.12 provide a framework for maintaining and protecting water quality that has already been achieved and require states to adopt provisions in their water quality standards that prevent further degradation of both degraded waters and waters which are meeting or exceeding the water quality necessary to protect designated and existing uses. As noted above, antidegradation provisions of Connecticut's water quality standards require that existing uses be fully maintained and protected. They expressly required consideration of any applicable TMDL, as well as narrative and numeric water quality criteria. EPA therefore undertakes Tier 1 review in light of the LIS TMDL, which has still not resulted in attainment of water quality standards in LIS, as well as Connecticut's numeric water quality criteria for dissolved oxygen, which are routinely violated, and its narrative water quality criteria nutrients, which is likewise not being met. Authorizing a significantly increased nitrogen loading into an impaired water body that is suffering the ongoing effects of cultural eutrophication would further compromise receiving water conditions and uses and be inconsistent with applicable antidegradation requirements. In arriving at this conclusion, EPA also notes that Connecticut's antidegradation procedures are precautionary in nature and apply to discharges that "may affect" water quality.

To ensure that the out-of-basin point-source load does not violate Connecticut's antidegradation standards, the new total nitrogen loading limits (for dischargers with design flows greater than 1 MGD) along with the requirement to minimize nitrogen discharge by facility optimization (for all dischargers with design flow greater than 0.1 MGD) are intended to ensure that nitrogen loads are held at current loadings.

Translation of Narrative Nutrient Criteria

Using the TMDL as the "calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use" under the regulatory provision used to translate narrative water quality criteria into numeric effluent limitations, 40 CFR § 122.44(d)(1)(vi)(A), EPA has determined that an effluent limitation is necessary to ensure compliance with the State's narrative water quality criterion for nutrients. In order to assure compliance with water quality standards, and fully implement and translate the states' narrative nutrient and related criteria, out-of-basin loads in EPA's judgment should not be increased, because water quality data indicates that the assimilative capacity for nitrogen has been reached in portions of LIS and cultural eutrophication, the impacts of which include hypoxia, is ongoing. It is reasonable, in EPA's view, to issue permits to out-of-basin dischargers that hold loads constant and in so doing curtail the potential for these out-of-basin loadings to contribute to further impairment and degradation of a water that is already beyond its assimilative capacity for nitrogen. The TN effluent limits and optimization requirements are necessary to assure that the out-of-basin load does not cause or contribute to further violation of water quality criteria in the downstream LIS.

Holding these loads level, in conjunction with significant nitrogen pollution reduction efforts being pursued by in-basin dischargers will, under EPA's analysis, be sufficient to make a finding that the out-of-basin permits taken as a whole contain nutrient controls sufficient to ensure that the discharges comply with water quality standards under Section 301 of the Act, based on information in the record currently before EPA. EPA acknowledges the complexity of the system and the receiving water response, and EPA recognizes that work that is currently ongoing with regards to additional water quality modeling, point source load reductions and WWTP upgrades in other states, particularly New York and Connecticut. In order to ensure that water quality standards are met, EPA has determined that, at most, TN should be no greater than that resulting from nitrogen currently being discharged from all sources. Holding the load from out-of-basin sources, along with reductions resulting from the nitrogen optimization special condition, combined with other ongoing work to further reduce in-basin loadings, are in EPA's judgment together sufficient to assure that the discharge is in compliance with standards.

Consistency with Assumptions of Available WLA

Finally, EPA is imposing enforceable total nitrogen limitations for dischargers with design flow above 1 MGD to ensure consistency with the assumptions and requirements of the applicable WLA, which calls for out-of-basin loads to be capped at 25% of the baseline in fact at the time of TMDL approval. A WQBEL for a discharge must ensure compliance with WQS and be "consistent with the assumptions and requirements" of an available WLA. 40 CFR § 122.44(d)(1)(vii)(B). Capping the aggregate out-of-basin load at current levels will ensure that this requirement is met.

In sum, the permit conditions at issue here have been fashioned to ensure full implementation of CWA §§ 301(b)(1)(C), 401(a)(2) and 402, as well as consistency with the assumptions of the LIS WLA. A permitting authority has wide discretion to determine appropriate effluent limits for a permit. "Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve these statutory mandates of establishing effluent limitations, including narrative permit conditions, to attain and maintain water quality standards. *Arkansas v. Oklahoma*, 503 U.S. 91, 105 (1992). Section 402 provides that a permit may be issued upon condition "that such discharge will meet either all applicable requirements under sections 301, 302, 306, 307, 308 and 403 of this Act, or prior to taking of necessary implementing actions relating to all such requirements, such conditions as the Administrator determines are necessary to carry out the provisions of this Act." 33 U.S.C. §1342(a). "This provision gives EPA considerable flexibility in framing the permit to achieve a desired reduction in pollutant discharges." *Id.* An increased discharge of nitrogen beyond current loads into nitrogen-degraded waters experiencing the effects of cultural eutrophication (*e.g.*, DO impairments) under the circumstances here would not be consistent with the Act. Holding the load from these facilities will maintain and protect existing uses. This allows EPA to ensure that the nitrogen limits are applied fairly and in a technologically feasible manner while ensuring that antidegradation provisions of Connecticut's water quality standards are being met.

EPA's decision to cap the out-of-basin TN loads in the aggregate was consistent with a gross approach to pollutant control, which is appropriate here given the need to ensure reasonable further progress toward restoration of uses in LIS based on reductions that have already occurred

and whose impact is still being realized. It is also appropriate in light of the fact that more sophisticated models to precisely define the exact level of pollutant controls needed are not available. EPA has explained that when permitting for nutrients, time is of the essence, because of the tendency of nutrients to recycle in the ecosystem and exacerbate existing impairments, as outlined in EPA's Nutrient Technical Guidance Manual. Rather than wait for the development of that information, a daunting task because of the size and complexity of LIS and vast areal extent of loading, EPA determined that it would be reasonable to move forward. This decision is also reasonable because the permits for many other contributing sources are long expired. The D.C. Circuit has described the CWA's balance when confronted with a difficult situation and the obligation to eliminate water quality impairments: "EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels. This may well mean opting for a gross reduction in pollutant discharge rather than the fine-tuning suggested by numerical limitations. *But this ambitious statute is not hospitable to the concept that the appropriate response to a difficult pollution problem is not to try at all.*" *Natural Resources Defense Council, Inc. v. Costle,* 568 F.2d 1369, 1380 (D.C. Cir. 1977) (emphasis added) (finding unlawful a rule that would have exempted certain discharges from permitting requirements based on the difficulty in setting limits).

Derivation of Effluent Limits

As mentioned above, the TMDL did not assign each out-of-basin POTW a specific WLA but instead specifies an aggregate reduction target. Therefore, the task of allocating nitrogen loads among these facilities in a manner that ensures compliance with water quality standards, as required under Section 301 of the Act, falls to EPA. That EPA would implement any necessary reductions through the issuance and oversight of NPDES permits was expressly assumed by the TMDL. EPA notes that as much as 6 million pounds of nitrogen per year from out-of-basin facilities are discharged to the LIS watershed and that ongoing nitrogen-driven water quality impairments exist in LIS.

In developing allocations for Massachusetts and New Hampshire dischargers, EPA began with two facts: first, that significant amounts of nitrogen from out-of-basin facilities are discharged to the LIS watershed (as much as 6 million pounds per year, based on the sum of the sum of the maximum annual discharge from each out-of-basin discharger from 2013 to 2017) and, second, that ongoing nitrogen water quality impairments exist in LIS.

When confronting the difficult environmental regulatory problem of controlling or accounting for dozens of discharges into a complex water body like Long Island Sound, EPA was presented with a variety of potential permitting approaches. Long Island Sound is a nitrogen-impaired water body spanning 1,268 square miles that implicates the sometimes-divergent interests of five states, dozens of municipalities and numerous non-governmental organizations (NGOs), along with interested members of the public. In developing its overarching permitting approach, as well as each individual permit, EPA carefully considered, but ultimately rejected, several possible alternatives, on two principal grounds: (1) that they were not sufficiently protective to assure that all the applicable requirements of the Act would be met (*i.e.*, they lacked enforceable TN effluent limitations to *ensure* as a matter of law that nitrogen loads would be maintained at protective levels), or (2) that they would entail unwarranted uncertainty and delay (*i.e.*, they

called for the development of new or revised TMDLs or for development of extensive new data collection or modelling in an attempt refine or pinpoint necessary targets and loads, even though the permits at issue have long-since expired and water quality impairments are ongoing).

Rather than approach this complex permitting task on an *ad hoc* basis, EPA instead fashioned a systemic permitting approach designed to comprehensively regulate nitrogen loading from out-of-basin nitrogen sources on a gross, basin-level scale. EPA addressed the existing TN loading to ensure achievement of the following overarching objectives:

- the overall out-of-basin TN load does not increase in accordance with antidegradation requirements, given that the LIS is already nitrogen impaired, through the imposition of enforceable effluent limits that are annual average mass-based, consistent with the assumptions of the TMDL;
- no individual facility is left with an effluent limit that is not achievable using readily available treatment technology at the facility's design flow; and
- smaller facilities can achieve their limits through optimization.

EPA's derivation of effluent limitations to implement these objectives, based on its best professional judgment and information reasonably available to the permit writer at the time of permit issuance, consists of three essential parts:

- First, EPA *identified* the existing aggregate load from all contributing facilities in a given state.
- Second, because Long Island Sound is already nitrogen impaired and failing to achieve applicable water quality standards,[18] EPA *capped* that load to avoid contributing to further impairments and fully protect existing uses.
- Third, EPA *allocated* the load according to a water quality-related consideration rationally related to achieving water quality standards in Long Island Sound and carrying out the objectives of the Act.

In the case of Massachusetts and New Hampshire, that consideration was facility *size*, with loads distributed based on the design flow of the POTW treatment plants. In deriving design-flow-based effluent limitations, EPA utilized the following methodology:

- EPA estimated the current maximum out-of-basin annual point source load using data for the five year period of 2014 to 2018, consistent with Region 1's ordinary practice of using the most recent five years of data in the derivation of effluent limits for permits, which is in accordance with the recommendation in EPA guidance to use three to five

[18] CTDEEP, Interstate Environmental Commission, EPA, *2019 Long Island Sound Hypoxia Season Review*, available at: http://www.iec-nynjct.org/sites/default/files/2020-07/FINAL_LISound-Hypoxia-2019-Combined-Report_april2020.pdf

years and, by use of the longer timeframe, is intended to more fully capture a representative data set[19] (see estimate of recent effluent loadings in Exhibit 1 below);

- It prioritized effluent limits for major POTW facilities with design flow greater than 1 MGD for Massachusetts, consistent with the definition of major facility[20] in 40 CFR § 122.2, and 1.5 MGD for New Hampshire;
- It developed mass-based rolling annual average TN effluent limits based on design flow (consistent with 40 CFR § 122.45(b)(1)) and effluent concentrations that can achieved by means of currently available nitrogen removal technology for all facilities and the design flow for each facility, where effluent limit (lb/day) = Concentration (mg/L) x Design Flow (MGD) x 8.34;
- EPA based limits on concentrations that can typically be achieved through optimization for POTW facilities with design flow less than 10 MGD, with more aggressive optimization expected for facilities with design flow greater than 5 MGD; and,
- For the four POTW facilities with design flow greater than 10 MGD (which together comprise more than half of the total Massachusetts load to LIS), EPA based limits on concentrations achievable through optimization or upgrades.

Although EPA considered caps for individual dischargers at their current loadings, that approach was rejected because these effluent limits are subject to statutory anti-backsliding requirements of CWA § 402(o) which would prevent a limit from being increased if flows increase due to new residential or industrial development. Therefore, a facility currently discharging well below its design flow, could be put in a position of having a load limit that is below the limit of technology at its design flow. For example, if a new industrial discharger was to tie in, even if that discharger was willing to invest in readily available treatment technology, the load would preclude the facility from operating at its design flow.

Instead, EPA examined out-of-basin loads across the watershed and developed effluent limits that are achievable through optimization or readily available treatment technologies for all facilities, even if they are operating at their design flow. EPA has determined that this approach will be protective of water quality and will carefully monitor receiving water response over the permit term and adjust as necessary. EPA recognizes that Connecticut and New York have very substantially reduced their nitrogen loadings into LIS and water quality conditions have improved, although LIS is not yet fully achieving water quality standards. Additional work is being undertaken in New York and Connecticut to further reduce nitrogen loadings into LIS. It will take time to allow the impact of these reductions to be fully realized and for designated uses to be fully restored. EPA believes that this approach reasonably balances the need to hold overall TN loadings constant to avoid exacerbating ongoing nitrogen-driven environmental degradation against the inherent scientific and technical uncertainty associated with receiving water response

[19] *NPDES Permit Writer's Manual*, EPA-833-K-10-001, September 2010, page 5-30, available at: https://www.epa.gov/sites/production/files/2015-09/documents/pwm_2010.pdf.
[20] *NPDES Permit Writer's Manual*, EPA-833-K-10-001, September 2010, page 2-17, available at: https://www.epa.gov/sites/production/files/2015-09/documents/pwm_2010.pdf.

in a water body as complex as LIS. More stringent limitations on the out-of-basin dischargers are therefore not necessitated at this time.

Based on the approach described above, Tables 1 and 2 summarize EPA's approach since 2019 to update TN requirements for permits in the LIS watershed in Massachusetts and New Hampshire, respectively.

Table 1 - Annual Average Total Nitrogen Limits for Massachusetts WWTF Dischargers to the Long Island Sound Watershed

Facility Design Flow, Q_D (MGD)	**Annual Average TN Limit (lb/day)**
$Q_D > 10$	Q_D (MGD) * 5 mg/L * 8.34 + optimize
$5 < Q_D \leq 10$	Q_D (MGD) * 8 mg/L * 8.34 + optimize
$1 \leq Q_D \leq 5$	Q_D (MGD) * 10 mg/L * 8.34 + optimize
$0.1 \leq Q_D < 1$	Optimize
$Q_D < 0.1$	TN monitoring only

Table 2 - Annual Average Total Nitrogen Limits for New Hampshire WWTF Dischargers to the Long Island Sound Watershed

Facility Design Flow, Q_D (MGD)	**Annual Average TN Limit (lb/day)**
$1.5 \leq Q_D$	Q_D (MGD) * 10 mg/L * 8.34 + optimize
$0.1 \leq Q_D < 1.5$	Optimize
$Q_D < 0.1$	TN monitoring only

In addition to the effluent limits described above, EPA is also requiring all POTWs with a design flow of 0.1 MGD or greater to optimize for nitrogen removal to ensure that the aggregate 25% reduction is maintained or increased. The optimization condition in the Draft Permit requires the Permittee to evaluate alternative methods of operating their treatment plant to optimize the removal of nitrogen, and to describe previous and ongoing optimization efforts. Specifically, the Draft Permit requires an evaluation of alternative methods of operating the existing wastewater treatment facility to control total nitrogen levels, including, but not limited to, operational changes designed to enhance nitrification (seasonal and year-round), incorporation of anoxic zones, septage receiving policies and procedures, and side stream management. This evaluation is required to be completed and submitted to EPA and either MassDEP or NHDES within one year of the effective date of the permit, along with a description of past and ongoing optimization efforts. The permit also requires implementation of optimization methods to ensure that the facility is operated in such a way that discharges of total nitrogen are minimized. The permit requires annual reports to be submitted that summarize progress and activities related to optimizing nitrogen removal efficiencies and track trends relative to previous years.

EPA notes that none of the dischargers eligible for coverage under this General Permit fall into the category of requiring an effluent limit. Rather, all facilities will have a requirement to optimize nitrogen removal (if design flow is 0.1 MGD or greater) or monitor only (if design flow is below 0.1 MGD).

The nitrogen requirements in this draft General Permit are intended to meet the requirements of the LIS TMDL which was developed to address hypoxic conditions in the bottom waters of LIS[21]. In December 2015, EPA signed a letter detailing a post-TMDL EPA nitrogen reduction strategy for waters in the LIS watershed. The strategy recognizes that more work may need to be done to reduce nitrogen levels, further improve DO conditions, and attain other related water quality standards in LIS, particularly in coastal embayments and the estuarine portions of rivers that flow into LIS. Documents regarding the EPA Nitrogen Reduction Strategy are available for public review on EPA's Long Island Sound website (http://longislandsoundstudy.net/issues-actions/water-quality/nitrogen-strategy/).

[21] For more information see http://longislandsoundstudy.net/about/our-mission/management-plan/hypoxia/

EXHIBIT 1

NH, VT, MA Nitrogen Discharges to Long Island Sound Watershed

Summary of Massachusetts Out-Of-Basin Wastewater Treatment Plant and Industrial Discharger Total Nitrogen Effluent Data

Permit #	Name	Type	Design Flow (MGD)	2014-2018 Avg Flow (MGD)	2014 Average Load (lb/day)	2015 Average Load (lb/day)	2016 Average Load (lb/day)	2017 Average Load (lb/day)	2018 Average Load (lb/day)	2014-2018 Avg Load (lb/year)
Total Massachusetts Out-of-Basin Load			**262**	**146**	**11,528**	**11,215**	**9,767**	**10,557**	**10,631**	**10,740**
Total Massachusetts Connecticut River Load			**179.6**	**98**	**9,184**	**8,945**	**7,695**	**8,390**	**8,341**	**8,511**
MA0101613	SPRINGFIELD REGIONAL WTP	POTW	67.00	36.26	2,303	2,377	1,643	1,953	1,684	1,992
MA0101508	CHICOPEE WPC	POTW	15.50	7.83	2,220	2,092	1,854	1,872	1,895	1,987
MA0101630	HOLYOKE WPCF	POTW	17.50	8.05	584	644	687	747	593	651
MA0101214	GREENFIELD WPCF	POTW	3.20	3.23	436	467	460	386	482	446
MA0100994	GARDNER WWTF	POTW	5.00	2.89	413	470	377	455	404	424
MA0101818	NORTHAMPTON WWTP	POTW	8.60	3.85	489	412	355	393	453	420
MA0100218	AMHERST WWTP	POTW	7.10	3.76	456	411	335	342	377	384
MA0100455	SOUTH HADLEY WWTF	POTW	4.20	2.37	393	325	288	364	315	337
MA0101478	EASTHAMPTON WWTP	POTW	3.80	3.44	202	186	262	329	639	324
MA0101800	WESTFIELD WWTP	POTW	6.10	2.88	276	225	221	189	211	224
MA0110264	AUSTRALIS AQUACULTURE, LLC	IND	0.30	0.13	149	138	116	107	74	117
MA0101168	PALMER WPCF	POTW	5.60	1.47	142	92	84	100	125	109
MA0100137	MONTAGUE WWTF	POTW	1.80	0.84	107	78	55	215	78	107
MA0100099	HADLEY WWTP	POTW	0.54	0.38	73	76	65	109	67	78
MA0100889	WARE WWTP	POTW	1.00	0.55	62	89	87	72	78	77
MA0101257	ORANGE WWTP	POTW	1.10	0.98	72	62	58	91	91	75
MA0003697	BARNHARDT MANUFACTURING	IND	0.89	0.33	58	78	49	54	96	67
MA0103152	BARRE WWTF	POTW	0.30	0.19	77	81	50	50	49	61
MA0101567	WARREN WWTP	POTW	1.50	0.26	45	42	124	38	55	61

Permit #	Name	Type	Design Flow (MGD)	2014-2018 Avg Flow (MGD)	2014 Average Load (lb/day)	2015 Average Load (lb/day)	2016 Average Load (lb/day)	2017 Average Load (lb/day)	2018 Average Load (lb/day)	2014-2018 Avg Load (lb/year)
MA0000469	SEAMAN PAPER OF MASSACHUSETTS	IND	1.10	0.83	26	97	53	62	46	57
MA0100005	ATHOL WWTF	POTW	1.75	0.79	76	56	40	39	44	51
MA0101061	NORTH BROOKFIELD WWTP	POTW	0.62	0.32	62	51	40	47	50	50
MA0110043	MCLAUGHLIN STATE TROUT HATCHERY	IND	7.50	7.12	39	44	43	41	37	41
MA0100919	SPENCER WWTP	POTW	1.08	0.35	28	33	31	29	71	38

Summary of Massachusetts Out-Of-Basin Wastewater Treatment Plant and Industrial Discharger Total Nitrogen Effluent Data

Permit #	Name	Type	Design Flow (MGD)	2014-2018 Avg Flow (MGD)	2014 Average Load (lb/day)	2015 Average Load (lb/day)	2016 Average Load (lb/day)	2017 Average Load (lb/day)	2018 Average Load (lb/day)	2014-2018 Avg Load (lb/year)
MA0100862	WINCHENDON WPCF	POTW	1.10	0.50	25	33	29	48	40	35
MA0101290	HATFIELD WWTF	POTW	0.50	0.17	51	37	28	28	27	34
MA0101052	ERVING WWTP #2	POTW	2.70	1.78	35	38	38	33	25	34
MA0100340	TEMPLETON WWTF	POTW	2.80	0.27	19	35	18	21	35	26
MAG580004	SOUTH DEERFIELD WWTP	POTW	0.85	0.37	15	33	18	18	27	22
MA0040207	CHANG FARMS INC	IND	0.65	0.22	22	15	34	20	20	22
MA0110035	MCLAUGHLIN/SUNDERLAND STATE FISH HATCHERY	IND	2.10	2.16	25	22	19	20	25	22
MA0102148	BELCHERTOWN WRF	POTW	1.00	0.36	61	13	11	11	5.6	20
MAG580002	SHELBURNE WWTF	POTW	0.25	0.16	15	13	17	17	21	17
MAG580005	SUNDERLAND WWTF	POTW	0.50	0.17	20	12	13	10	9.3	13
MAG580001	OLD DEERFIELD WWTP	POTW	0.25	0.068	13	14	13	12	12	13
MA0110051	MCLAUGHLIN/BITZER STATE TROUT HATCHERY	IND	1.43	1.70	23	12	12	8.2	8.2	13
MA0032573	NORTHFIELD MT HERMON SCHOOL WWTP	POTW	0.45	0.072	22	7.6	15	10	10	13
MA0100102	HARDWICK WPCF	POTW	0.23	0.12	8.2	5.9	13	4.3	17	10
MA0100200	NORTHFIELD WWTF	POTW	0.28	0.080	3.8	6.8	6.5	10	14	8.1
MA0101516	ERVING WWTP #1	POTW	1.02	0.14	7.2	6.1	3.7	10	7.5	6.9
MA0102776	ERVING WWTP #3	POTW	0.010	0.0049	6.1	2.9	6.9	8.0	7.5	6.3
MA0102431	HARDWICK WWTP	POTW	0.040	0.016	7.4	1.5	11	6.9	2.3	5.9
MAG580003	CHARLEMONT WWTF	POTW	0.050	0.016	7.5	4.2	4.8	4.8	4.8	5.2
MA0101265	HUNTINGTON WWTP	POTW	0.20	0.067	4.6	4.1	5.6	4.3	5.2	4.7
MA0100188	MONROE WWTF	POTW	0.020	0.013	*1.4*	1.4	1.2	2.3	1.7	1.6
MA0000272	PAN AM RAILWAYS YARD	IND	0.015	0.011	0.06	0.13	0.12	0.47	0.18	0.19
MA0001350	LS STARRETT PRECISION TOOLS	IND	0.025	0.014	0.03	0.0	0.08	0.07	0.04	0.05
MA0100161	ROYALSTON WWTP	POTW	0.039	0.01298	*0.9*	0.49	0.43	0.49	0.60	0.59
Total Massachusetts Housatonic Load			**29.4**	**18**	**1,667**	**1,605**	**1,509**	**1,612**	**1,707**	**1,626**
MA0101681	PITTSFIELD WWTF	POTW	17.00	10.55	1,179	1,176	1,145	1,245	1,319	1,213
MA0000671	CRANE WWTP	POTW	3.10	3.07	155	142	108	116	107	126

Summary of Massachusetts Out-Of-Basin Wastewater Treatment Plant and Industrial Discharger Total Nitrogen Effluent Data

Permit #	Name	Type	Design Flow (MGD)	2014-2018 Avg Flow (MGD)	2014 Average Load (lb/day)	2015 Average Load (lb/day)	2016 Average Load (lb/day)	2017 Average Load (lb/day)	2018 Average Load (lb/day)	2014-2018 Avg Load (lb/year)
MA0101524	GREAT BARRINGTON WWTF	POTW	3.20	0.97	110	120	100	99	124	111
MA0100935	LENOX CENTER WWTF	POTW	1.19	0.61	49	67	59	71	78	65
MA0001848	ONYX SPECIALTY PAPERS INC - WILLOW MILL	IND	1.10	0.94	51	39	44	33	22	38
MA0005011	PAPERLOGIC TURNERS FALLS MILL(6)	IND	0.70	0.73	85	17	12	6.5	Term	30
MA0100153	LEE WWTF	POTW	1.25	0.64	18	17	14	15	35	20
MA0101087	STOCKBRIDGE WWTP	POTW	0.30	0.15	10	15	16	13	10	13
MA0103110	WEST STOCKBRIDGE WWWTF	POTW	0.076	0.014	*5.3*	*3.8*	4.3	5.0	3.7	4.4
MA0001716	MEADWESTVACO CUSTOM PAPERS LAUREL MILL	IND	1.5	0.34	4.3	7.9	5.7	7.2	7.8	6.6
Total Massachusetts Thames River Load			**11.8**	**6**	**677**	**666**	**564**	**556**	**583**	**609**
MA0100439	WEBSTER WWTF	POTW	6.00	2.97	389	393	328	292	344	349
MA0100901	SOUTHBRIDGE WWTF	POTW	3.77	1.97	*178*	149	154	151	130	152
MA0101141	CHARLTON WWTF	POTW	0.45	0.21	40	75	41	68	70	59
MA0100421	STURBRIDGE WPCF	POTW	0.75	0.51	44	21	18	19	20	24
MA0101796	LEICESTER WATER SUPPLY WWTF	POTW	0.35	0.19	24	27	22	26	19	24
MA0100170	OXFORD ROCHDALE WWTP	POTW	0.50	0.24	2.4	1.0	0.23	0.57	0.49	0.9

NOTES:

1) italics = estimated load based on average conc & flow from other years, or if no data for any years, assumed concentration of 19.6 mg/L.

2) The loads represent annual totals, based on annual daily average flow and daily average nitrogen concentration.

3) Term = Permit was terminated in that year

4) This summary only includes POTWs and Industrial sources for which there was nitrogen monitoring at the outfalls for treated effluent and/or process wastewater.

Summary of New Hampshire Out-Of-Basin Wastewater Treatment Plant and Industrial Discharger Total Nitrogen Effluent Data

Permit #	Name	Type	Design Flow (MGD)	2014-2018 Avg Flow (MGD)	2014 Average Load (lb/day)	2015 Average Load (lb/day)	2016 Average Load (lb/day)	2017 Average Load (lb/day)	2018 Average Load (lb/day)	2014-2018 Avg Load (lb/day)
Total New Hampshire Out-of-Basin Load			**31.5**	**18.6**	**1,662**	**1,457**	**1,370**	**1,555**	**1,154**	**1,440**
NH0000621	BERLIN STATE FISH HATCHERY	IND	6.1	6.30	8.8	13	13	15	8.7	12
NH0000744	NH DES (TWIN MTN STATE FISH HATCHERY)	IND	1.0	0.78	2.0	5.8	6.2	5.5	5.1	4.9
NH0100099	HANOVER WWTF	POTW	2.3	1.30	*341*	*341*	313	350	361	341
NH0100145	LANCASTER WWTF	POTW	1.2	0.79	84	78	45	72	63	68
NH0100153	LITTLETON WWTP	POTW	1.5	0.69	32	36	24	31	45	34
NH0100200	NEWPORT WWTF	POTW	1.3	0.59	97	63	80	80	79	80
NH0100366	LEBANON WWTF	POTW	3.2	1.49	*136*	*136*	132	127	152	137
NH0100382	HINSDALE WWTP	POTW	0.3	0.19	*18*	17	11	20	16	16
NH0100510	WHITEFIELD WWTF	POTW	0.2	0.08	35	22	15	18	24	23
NH0100544	SUNAPEE WWTF	POTW	0.6	0.40	*32*	*32*	*32*	50	33	35
NH0100765	CHARLESTOWN WWTP	POTW	1.1	0.28	22	13	12	19	22	17
NH0100790	KEENE WWTF	POTW	6.0	2.89	*533*	*397*	*394*	*452*	40	363
NH0101052	TROY WWTF	POTW	0.3	0.08	23	15	12	13	25	18
NH0101150	WEST SWANZEY WWTP	POTW	0.2	0.07	6.1	6.4	7.8	7.8	15	8.7
NH0101168	MERIDEN VILLAGE WATER DISTRICT	POTW	0.1	0.03	0.53	2.5	1.4	2.9	1.3	1.7
NH0101257	CLAREMONT WWTF	POTW	3.9	1.51	*161*	*161*	*161*	163	146	158
NH0101392	BETHLEHEM VILLAGE WWTP (1)	POTW	0.3	0.21	25	26	25	29	25	26
NHG580226	GROVETON WWTP	POTW	0.4	0.12	18	13	10	12	14	13
NHG580315	COLEBROOK WWTP	POTW	0.5	0.22	26	23	21	31	31	26
NHG580391	CHESHIRE COUNTY MAPLEWOOD NURSING HOME	POTW	0.040	0.02	2.1	1.6	1.3	1.5	1.3	1.5
NHG580404	WINCHESTER WWTP	POTW	0.28	0.14	6.1	11	3.9	13	8.3	8.3
NHG580421	LISBON WWTF	POTW	0.3	0.12	26	23	19	17	17	20
NHG580536	STRATFORD VILLAGE SYSTEM	POTW	0.1	0.01	2.2	1.9	3.9	2.5	2.8	2.7
NHG580978	WOODSVILLE WWTF	POTW	0.3	0.19	22	15	19	19	13	18
NHG581206	NORTHUMBERLAND VILLAGE WPCF	POTW	0.1	0.04	2.7	3.3	3.5	2.6	3.1	3.0
NHG581214	STRATFORD-MILL HOUSE	POTW	0.0	0.01	1.4	1.5	2.2	1.8	2.3	1.8
NHG581249	LANCASTER GRANGE WWTP	POTW	0.0	0.00	0.45	0.53	0.45	0.49	0.44	0.47

NOTES:

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2) The loads represent annual totals, based on annual daily average flow and daily average nitrogen concentration.

3) Term = Permit was terminated in that year

4) This summary only includes POTWs and Industrial sources for which there was nitrogen monitoring at the outfalls for treated effluent and/or process wastewater.

Summary of Vermont Out-Of-Basin Wastewater Treatment Plant and Industrial Discharger Total Nitrogen Effluent Data

Permit #	Name	Type	Design Flow (MGD)	2014-2018 Avg Flow (MGD)	2014 load (lb/day)	2015 load (lb/day)	2016 load (lb/day)	2017 load (lb/day)	2018 load (lb/day)	2014-2018 Avg Load (lb/day)
	Total Vermont Out-of-Basin Load		**18.3**	**7.8**	**1,273**	**1,255**	**1,146**	**1,221**	**1,421**	**1,263**
VT0000019	WEIDMANN ELECTRICAL TECHNOLOGY INC	IND	0.25	0.15	2.4	1.4	1.4	1.2	1.7	1.6
VT0000108	PUTNEY PAPER COMPANY MILL & LAGOONS	IND	0.28	0.16	22	26	20	22	17	22
VT0000248	FIBERMARK	IND	2.00	1.06	117	82	89	106	92	97
VT0100013	BELLOWS FALLS WWTF	POTW	1.40	0.44	136	136	136	102	179	138
VT0100048	BETHEL	POTW	0.13	0.06	10.4	4.0	2.4	6.5	3.5	5.4
VT0100064	BRATTLEBORO WWTF	POTW	3.01	1.27	487	487	446	501	421	469
VT0100081	CHESTER MTP	POTW	0.19	0.16	16	5.0	4.5	5.6	7.6	7.6
VT0100145	LUDLOW WWTF	POTW	0.71	0.37	35	27	35	41	42	36
VT0100277	PUTNEY	POTW	0.09	0.05	16	16	11	16	21	16
VT0100285	RANDOLPH	POTW	0.41	0.17	23	23	21	20	28	23
VT0100374	SPRINGFIELD WWTF	POTW	2.20	0.98	133	133	133	120	130	130
VT0100447	WINDSOR-WESTON HEIGHTS	POTW	0.02	0.01	0.40	0.53	1.2	0.88	1.0	0.8
VT0100579	ST JOHNSBURY	POTW	1.60	0.83	34	23	13	24	146	48
VT0100595	LYNDON WWTP	POTW	0.76	0.15	21	21	16	24	21	20
VT0100625	CANAAN MTP	POTW	0.19	0.10	17	15	16	19	17	17
VT0100633	DANVILLE WPCF	POTW	0.07	0.03	2.9	3.5	7.6	4.4	4.3	4.5
VT0100706	WILMINGTON WWTP	POTW	0.15	0.08	3.8	15.9	10.0	4.7	17.2	10
VT0100731	READSBORO WPC	POTW	0.76	0.04	3.6	3.2	2.8	3.8	4.0	3.5
VT0100749	S. WOODSTOCK WWTF	POTW	0.06	0.01	1.9	1.9	0.7	1.2	3.9	1.9
VT0100757	WOODSTOCK WWTP	POTW	0.46	0.22	25	23	24	26	22	24
VT0100765	WOODSTOCK - TAFTSVILLE	POTW	0.02	0.00	0.32	0.24	0.20	0.55	0.87	0.44
VT0100803	BRADFORD WPCP	POTW	0.15	0.08	9.1	9.1	7.7	9.4	8.5	8.8
VT0100846	BRIDGEWATER WWTF	POTW	0.05	0.01	1.1	0.91	1.0	1.1	1.1	1.1
VT0100854	ROYALTON WWTF	POTW	0.08	0.02	5.2	4.6	4.7	7.7	5.0	5.4
VT0100862	CAVENDISH WWTF	POTW	0.16	0.06	15	10	9	11	15	12
VT0100919	WINDSOR WWTF	POTW	1.13	0.25	69	69	66	65	71	68
VT0100943	CHELSEA WWTF	POTW	0.07	0.02	8.2	8.2	4.8	8.9	9.9	8.0
VT0100951	RYEGATE FIRE DEPARTMENT .#2	POTW	0.01	0.00	0.55	1.1	1.9	2.1	0.76	1.3
VT0100978	HARTFORD - QUECHEE	POTW	0.31	0.22	24	53	12	12	10	22
VT0101010	HARTFORD WWTF	POTW	1.23	0.61	11	31	30	34	89	39
VT0101044	WHITINGHAM(JACKSONVILLE)	POTW	0.06	0.02	3.2	3.5	3.4	2.8	3.1	3.2
VT0101061	LUNENBURG FIRE DISTRICT #2	POTW	0.09	0.06	7.6	6.9	5.6	3.2	7.8	6.2
VT0101109	WHITINGHAM	POTW	0.02	0.01	1.2	1.4	1.5	1.2	3.0	1.7
VT0101141	SHERBURNE WPCF	POTW	0.31	0.08	8.9	8.3	7.7	10	16	10

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