COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
THE OFFICE OF APPEALS AND DISPUTE RESOLUTION

In re Easterly Wastewater Treatment Facility)	OADR No. 2026-013
Groundwater Discharge Permit No. 1018-0)	DEP No. 25-WP79-0137-APP/1018-0

Petitioner's Pre-hearing Memorandum of Law

Nitrogen pollution on Cape Cod has degraded water quality for decades. Development pressure has exacerbated the problem. The more wastewater discharged into the ground, the more nitrogen added to our sensitive coastal waters, and the more those once pristine waters of the Cape degrade. This appeal challenges a groundwater discharge permit that would further pollute an impaired coastal estuary, the Coonamessett River and Great Pond in Falmouth. Because that permit violates the Department's regulations, it should be annulled.

Petitioners' pre-filed testimony demonstrates that excessive levels of nitrogen authorized by the permit to be discharged would exceed the Total Maximum Daily Load ("TMDL") and would further degrade an already impaired waterbody in violation of Massachusetts Surface Water Quality Standards ("SWQS") and the Department's own regulations. As with other similar permits issued on Cape Cod, this one should require specific quantified offsets to ensure the Easterly's discharge results in a net-zero nitrogen load that does not exceed the limits of the TMDL in order to attain, maintain and protect MSQWS. As demonstrated below, and in the pre-filed testimony ("PFT") of Petitioners' experts, Andrew Gottlieb, Scott Horsley and Chris Neill, net-zero offsets have been required as a condition in several other similar permits on the Cape. The laws and regulations enacted to protect the unique waters of Cape Cod mandate this. The same net-zero nitrogen offsets should be a condition of this permit as well to ensure there will be no net increase in nitrogen load above the limits set by the TMDL that protects Great Pond.

Background

The underlying facts pertinent to this appeal are undisputed. Sound scientific research confirms that excessive nitrogen, the limiting nutrient for algae growth, causes eutrophication, which degrades water quality. (Neill PFT ¶¶ 9-12) Increased nitrogen leads to the proliferation of algae, which in turn impedes dissolved oxygen, degrades water quality and diminishes estuarine habitat. (Id.) It has also been well established that the main source of nitrogen loading stems from wastewater leachfields. (Id. ¶¶ 13-18) That is because leachfields release nitrogen below the root line so little can be attenuated in plants and most flows freely in groundwater. (Id. ¶ 14)

The wastewater discharge from the Easterly authorized by this permit, including most all of the nitrogen, would end up in the Coonamessett River and Great Pond watershed. (Horsley PFT ¶¶ 9-11). Applicant's own hydrogeological report acknowledges "Groundwater generally flows to the southeast . . . toward the Coonamessett River". (10/9/24 Hydrogeologic Evaluation, p. 6, ¶ 3.1) It is also undisputed that those receiving waters, Coonamessett River and Great Pond, are already impaired by excessive nitrogen, and have been listed as such on the Section 303(d) list of impaired waterbodies for the past two decades. (Gottlieb PFT ¶ 19; Horsley PFT ¶ 10 & n.3; Neill PFT ¶ 28) Section 303(d) refers to the provision of the federal Clean Water Act that mandates each state to maintain an "Integrated List of Waters" that identifies "waterbodies that are not expected to meet surface water quality." 33 U.S.C. § 1313(d). The Great Pond estuary in Falmouth has been on the § 303(d) list since 2002. (Neill PFT ¶ 28; Horsley PFT ¶ 10)

In 2006, the Department issued a detailed report on the Total Maximum Daily Load ("TMDL") for nitrogen in the Great Pond watershed. (Great, Green and Bournes Pond Total Maximum Daily Loads For Total Nitrogen, Apr. 6, 2006 "TMDL Report") That TMDL Report determined "as a result of the study to produce this TMDL document the Coonamessett River

was also deemed impaired." ("TMDL Report, p. i) The TMDL Report identified environmental degradation to Falmouth's coastal waters, including "extreme decreases in dissolved oxygen", "periodic algae blooms", loss of eelgrass habitat and reduction in aquatic populations. (Id. p. ii) For coastal communities like Falmouth, water degradation not only damages the environment, it also impacts tourism, boating, fishing, swimming and other economic activities that sustain towns on the Cape. (Id.)

With input from the Massachusetts Estuaries Project ("MEP") and data from U. Mass. Dartmouth School for Marine Science and Technology ("SMAST"), the TMDL Report evaluated the sources of excessive nitrogen causing water quality degradation and calculated a target threshold concentration of nitrogen below which those impaired waterbodies could be restored. (TMDL Report, p. iii) By modeling the assimilative capacity of the watershed, the TMDL Report set maximum nitrogen loads necessary to comply with the Clean Water Act and SWQS. (Horsley PFT ¶ 10) According to the TMDL Report, nitrogen loads in Great Pond must be reduced by over 81%, which amounts to a reduction of 12,154 kilograms/year of nitrogen discharged into that watershed. (Id.; Gottlieb PFT ¶ 18; Neill PFT ¶ 31)

New discharges into impaired watersheds on the § 303d list cannot increase nutrient pollution loads that exceed the limits of a TMDL. The nitrogen reduction targets calculated from SMAST Technical Reports, the basis for all of Cape Cod's nitrogen TMDLs, are predicated on discharges from new development not increasing the maximum nitrogen load of the TMDL Report. (Gottlieb PFT ¶ 19) New discharges to highly impaired watersheds like Great Pond therefore must offset existing nutrient pollution to ensure no net increase above the TMDL limit for the § 303d listed receiving water. (Id.)

Applicant's own engineer recognized this requirement explicitly: "The overall effect of this approach is to reduce the Easterly's discharge to net-zero for nitrogen while also removing background nitrogen from groundwater, thereby improving (reducing) the overall TMDL in the watershed." (1/16/25 Ltr. from Fuss & O'Neill) In the permit application, Applicant conceded that the proposed discharge would be located in a "nitrogen-sensitive area as designated by the Department" and into an "area where the Department has determined based on a Total Maximum Daily Load . . . that more stringent effluent limits . . . are required". (8/27/25 Application, p. 4) Applicant's engineers from Fuss & O'Neill also acknowledged "this site is located in the Coonamessett/ Great Pond Watershed, which has been designated as a Nitrogen Sensitive Area (NSA)". (1/16/25 Ltr. from Fuss & O'Neill)

In accordance with MassDEP's own regulations and longstanding practice, the Easterly permit should, but does not, require the new nitrogen discharge into a nitrogen sensitive area to be fully offset. The Department issued a technical deficiency letter to the Applicant dated December 13, 2024 before approving the hydrogeological report because Applicant had not addressed "how the additional nitrogen load generated from the facility would . . . maintain the [TMDL] for total nitrogen". (5/15/2025 Ltr. A. Osei, p. 2) But the Final Permit failed to include contemporaneous enforceable offsets like those included in several other similar groundwater discharge permits issued by the Department on Cape Cod. (Gottlieb PFT ¶¶ 22-23)

The Final Permit allows a maximum of 346 kg/yr cumulative annual nitrogen load, and requires Applicant to use best efforts to achieve 207 kg/yr. (2/19/26 Individual GWDP, Special Conditions A.1. & a., p. 2) It does not exempt compliance with other permits, including local approvals required by the Town under local regulations: "The issuance of this permit does not exempt the Permittee from complying with all other applicable laws, regulations, approvals, and

permit requirements from various local, state, and federal agencies that may have jurisdiction. (Id. p. 1) Similarly, the plan approval remains subject to further approvals by other permitting authorities: "This plan approval is subject to the approval of any other local, State, or Federal authority that may have jurisdiction." (Id. Plan Approval, p. 5)

In the Final Permit, "MassDEP acknowledge[d] the importance of reducing nitrogen load to the Great Pond system [and] strongly encourage[d] the Easterly to . . . reduce nitrogen impacts on Great Pond consistent with the findings presented in the Great Pond System Total Maximum Daily Loads for Total Nitrogen." (Id., response to comment 4, p. 5) But the Department's "encouragement" for the Applicant to reduce nitrogen did not go far enough. Nor does its permit satisfy the regulatory standard. The regulations require mandatory offsets in order to meet the hard limits of the TMDL without further compromising an already impaired waterbody. "Strongly encourag[ing]" an Applicant is simply not the same as requiring offsets as a condition of the permit. In this case, the law requires nothing less.

Standards

The Department's own regulations prohibit the permit that it issued in this case. That prohibition is mandatory and unequivocal: "The Department will not issue a permit pursuant to 314 CMR 5.00 if the discharge will cause or contribute to a violation of 314 CMR 4.00: Massachusetts Surface Water Quality Standards or impair the use of ground water as an actual or potential source of potable water." 314 CMR 5.06(1) Restrictions on the Issuance of a Permit. Having a TMDL and listing on the § 303(d) list is proof positive that SWQS are not being met.

Not only do the regulations prohibit discharges that would violate SWQS, they also affirmatively require offsets to ensure those limitations are attained and maintained:

> [A]ll permits shall contain limitations which are adequate to assure that no pollutants shall be discharged in an amount or concentration that would impair the

> use of the ground water as an actual or potential source of potable water. All permits shall also contain limits which are adequate to protect surface waters for their existing and designated uses and to assure the attainment and maintenance of 314 CMR 4.00: Massachusetts Surface Water Quality Standards. The Department shall consider natural background conditions and any Total Maximum Daily Loads established by the Department. 314 CMR 5.10(3).

The Massachusetts Surface Water Quality Standards regulation itself reinforces the edicts in the Ground Water Discharge Permit regulation:

> The Department will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. . . .Discharges shall be limited or prohibited to protect existing uses and not interfere with the attainment of designated uses in downstream and adjacent segments. The Department will provide a reasonable margin of safety to account for any lack of knowledge concerning the relationship between the pollutants being discharged and their impact on water quality. 314 CMR 4.03(1)(a) Establishment of Effluent Limitations.

The SWQS regulations specifically prohibit nutrient concentrations that would violate a TMDL: "Unless naturally occurring, all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site-specific criteria developed in a TMDL". 314 CMR 4.05(5)(c).

Special regulations have also been adopted specifically to protect the unique waters of Cape Cod. Three years ago, the Department enacted new Watershed Permit regulations just for Cape Cod. 314 CMR 21. Under those new regulations, Cape communities like Falmouth with "Natural Resource Nitrogen Sensitive Areas" must have targeted wastewater management plans approved by the Department or adhere to stricter limits on nitrogen discharges. (Neill PFT ¶ 12) To date, Falmouth has not yet adopted such a plan. (Id. ¶ 41)

Together, the SWQS, Groundwater Discharge Permit and Watershed Permit regulations require that any discharge permitted by the Department must not allow nitrogen to exceed the nutrient load limit of a TMDL. They also prohibit the Department from issuing a permit that

allows the discharge of nitrogen that would impair water quality standards, MSQWS. But that is precisely what would happen if this permit were affirmed. The permitted discharge would exceed the TMDL for nitrogen in Great Pond and the Coonamessett River, further degrading water quality in that already impaired estuary. Under these standards, this permit cannot be sustained.

Argument

Under its own regulations, the Department has certain legal obligations when issuing groundwater discharge permits, including:

- prohibit discharges that "will cause or contribute to a violation of [SWQS]" 314 CMR 5.06(1);
- require "limits which are adequate to protect surface waters for their existing and designated uses and to assure the attainment and maintenance of [SWQS]" 314 CMR 5.10(3);
- must "limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained" 314 CMR 4.03(1)(a); and
- ensure "all surface waters shall be free from nutrients in concentrations that would cause or contribute to impairment of existing or designated uses and shall not exceed the site-specific criteria developed in a TMDL." 314 CMR 4.05(5)(c).

These clear mandates forbid the Department from issuing a permit that impairs SQWS, violates a TMDL, or allows the discharge of regulated nutrients like nitrogen in amounts that impair water quality or exceed load limits in a TMDL. None of these regulations is optional; all employ unequivocal commands like "shall" and "will". The Department's precatory permit language -- "strongly encourage" -- is no substitute for mandatory regulatory requirements.

Based on this straightforward reading of the regulations, groundwater discharges permitted by the Department must be limited or conditioned to ensure surface water quality standards are maintained and site-specific criteria in a TMDL are attained. There are no exceptions, no caveats, no wiggle room. Because the permit allows the discharge of nitrogen to

an impaired waterbody in an amount that exceeds the limit of the TMDL, violates SWQS, and nitrogen mitigation by the Town cannot be enforced against the Permittee, it must be annulled.

A. **The Permit violates the regulations by allowing nitrogen to be discharged in an amount that, without offsets to achieve net-zero, exceeds the Great Pond TMDL.**

It is undisputed that the cumulative average 247-346 kg/yr nitrogen discharged by the Easterly under the permit would flow toward the Coonamessett River and Great Pond watershed, which are impaired waterbodies subject to a TMDL. It is also undisputed that the TMDL requires nitrogen loads in Great Pond to be reduced by over 81% or 12,154 kg/yr. Instead of reducing the unsustainable nitrogen load on that impaired waterbody, the permit allows a net increase of nitrogen discharged into that watershed because it has not been conditioned on offsets to achieve a net-zero nitrogen discharge. Given these undisputed facts, a permit that allows the discharge of more nitrogen into impaired waters manifestly fails to contain limits "adequate to protect surface waters for their existing and designated uses and to assure the attainment and maintenance of the [SWQS] including the site specific criteria developed in a TMDL" 314 CMR 4.05(5)(c).

Dr. Neill explains how nitrate, the inorganic form of nitrogen, flows readily through groundwater due to its negative charge that prevents it from binding to soil particles. (Neill PFT ¶¶ 15-17, 24) That phenomenon occurs on the Cape, whose sandy, oxygenated soils do not lend themselves to denitrification. (Id. ¶ 18) When nitrogen reaches estuarine waters, it stimulates the growth of algae. (Id. ¶ 17) Rampant algae growth from excess nitrogen reduces sunlight below the surface, lowers oxygen levels in the water, and results in loss of eelgrass and other species needed for a healthy estuary. (Id. ¶¶ 19-22) The nitrogen discharged under the permit, which would flow from the Easterly toward the Coonamessett River and Great Pond, thus "cause[s] or contribute[s] to a violation of" surface water quality standards in violation of SWQS regulations. 314 CMR 5.06(1) & 5.10(3); 314 CMR 4.03(1)(a) & 4.05(5)(c).

Groundwater Discharge Permit regulations prohibit the Department from authorizing discharges that would compromise water quality standards: [MassDEP] "shall not issue a permit pursuant to [GDP] when the discharge will cause or contribute to a violation of [SWQS]." 314 CMR 5.06(1). SWQS regulations, in turn, prohibit discharges into surface waters that "exceed the site specific criteria developed in a TMDL". 314 CMR 4.05(5)(c). Because the TMDL establishes site specific criteria to meet water quality standards, the permit must include conditions or offsets to attain the TMDL limitation and to maintain surface water quality standards. Since the permit did not, it is contrary to those regulations and cannot be sustained.

Applicant claimed (and the Department accepted) that a promised $750,000 payment to the Town of Falmouth – which has yet to be paid – somehow satisfies these regulatory requirements. It does not even come close. Based on actual costs from another similar project on the Cape by the same engineer (Mr. Formato of Onsite Engineering), that amount would only cover a small fraction of the necessary offsets. (Horsley PFT ¶¶ 12-14) In order to achieve net-zero nitrogen load, at least 57 single family houses with septic systems would need to be connected to the permitted wastewater treatment facility, with an average cost ranging between $50,000-$75,000 per house connection. (Id.) So, the actual cost to fully offset the nitrogen load would be four to six times the amount promised to the Town: $2,850,000 to $4,275,000. (Id.) The current permit provides just 18-26% of the cost for offsets, enough for 10-15 houses, not the 57 needed to offset the nitrogen load authorized by the permit.

Moreover, even if Applicant quadrupled the payment to the Town, noting in the permit requires those funds to be used for direct offsets, or requires the permit holder to complete any offsets. The Town of Falmouth cannot assume the permitee's obligations, which makes the promise to pay money for nitrogen reductions unenforceable. The permit cannot be enforced

against the Town, only the Applicant. (Gottlieb PFT ¶¶ 17-19, 22-23) The promise to pay for offsets is not even referenced in the permit Special Conditions or General Conditions. (2/19/26 Final Permit, pp. 2-10; 12-19) Because the promise to pay funds in lieu of offsets is not a condition of the permit, not enforceable against the Applicant, and would offset at most a quarter of the new nitrogen load, the permit violates MassDEP regulations and must be annulled.

B. Several similar groundwater discharge permits issued elsewhere on Cape Cod contain complete contemporaneous offsets as conditions of the permits.

In other permits issued on Cape Cod, the Department has required nitrogen offsets as a permit condition to achieve a net-zero nitrogen discharge. Two were in Bourne, one each in Cotuit, Wellfleet and Plymouth. All three of Petitioners' experts have direct experience with these cases from other permit proceedings. There are undoubtedly more examples, but from just this sampling the Falmouth permit is a stark outlier.

For example, the permit for Canal Bluffs in Bourne included a section on "Nitrogen Offset" including nitrogen offset calculations by which "the permittee has demonstrated that with the current elimination of a portion of wastewater load . . . the project will not result in any increase in nitrogen load to the [impaired] watershed." (Gottlieb PFT ¶¶ 20-22, quoting Permit #852-0M1, p. 8) Similarly, the permit for Cotuit Meadows required the new treatment facility to accept wastewater from a Title 5 system that was abandoned in order "to achieve a no net nitrogen load impact as a result of the discharge." (Id., quoting Permit # SE 0-850, p. 5) By abandoning the septic system and connecting to the new wastewater treatment facility, the reduction in nitrogen load from the Title 5 septic system "will offset the [new] load from the proposed subdivision." (Id.) Both of these permits impose offset conditions in the permit on the permittee. The permit under appeal in Falmouth has no provision like the offsets provided for in

the Bourne and Cotuit permits. The Falmouth permit does not impose any specific obligation on permittee to create offsets that would reduce the new nitrogen load to net-zero.

As in Bourne and Cotuit, the groundwater discharge permit for River Run contains both an express condition to reserve excess capacity for offsets AND a substantial fund to reduce nitrogen in the impaired watershed:

- "Reserve approximately 52,000 gallons per day excess treatment capacity . . . in order to connect existing properties within proximity of the development and . . . Watershed."
- "Create a fund in the amount of $500k000 to be used to reduce other sources of nitrogen within the Agawam/Wareham River Estuarine Watershed."
  (Neill PFT ¶ 37, quoting Permit # SE 0-890, p. 9, condition 20)

The Falmouth permit has neither of these commonsense conditions.

Two other groundwater discharge permits on the Cape, in Bourne and Wellfleet, included numerical offsets for a no net nitrogen load to comply with a TMDL. (Horsley PFT ¶¶ 5-8) In Bourne, the Red Brook Harbor Club associated with Kingman Marine was required by the Department – in a writing from the Cape's Wastewater Section Chief – to achieve a net-zero nitrogen load in accordance with that TMDL. (Id. ¶¶ 5-7) And just two years ago, the Lawrence Hill permit in Wellfleet required a net-zero nitrogen load by connecting Title 5 systems and reserving excess capacity. (Id. ¶ 8, citing permit #1013-0) These examples underscore the Department's longstanding practice, based on their regulations, to require offsets and additional funds or other mitigation to meet water quality standards in groundwater discharge permits.

Because a TMDL establishes site specific criteria to meet water quality standards for discharges into Great Pond watershed, the Easterly permit – just like other permits issued elsewhere on Cape Cod – must contain offsets to ensure that the hard limits of the TMDL will not be exceeded. Since the permit does not include any such offsets to ensure the new nitrogen

load would be discharged in accordance with the TMDL, the permit issued in violation of applicable regulations cannot be sustained.

Conclusion

For the foregoing reasons, and for the reasons stated in Petitioners' Motion to Stay dated April 21, 2026, which are incorporated by reference, and as further evidenced by the pre-filed testimony of the Petitioner's expert witnesses (Gottlieb, Horsley, and Neill), the permit should be annulled because it violates the Department's own regulations. In the alternative, the permit must be modified to require permittee and not some other entity to offset the nitrogen load discharged to the Coonamessett River and Great Pond that exceeds the limits imposed by the TMDL.

Respectfully submitted,
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