Pocasset Water Quality Coalition

P.O. Box 852

Pocasset, MA 02559

February 8, 2022

BY EMAIL

George Papadopoulos
Environmental Engineer
USEPA- 5 P.O. Square, Suite 100
Boston, MA 02109-3912

Dear Mr. Papadopoulos:

The Pocasset Water Quality Coalition Inc. (PWQC) is pleased for the opportunity to provide the following Comments on the draft renewal permit for the NPDES discharge for the Massachusetts Military Academy (MMA) – NPDES permit number MA002-4368.

The Pocasset Water Quality Coalition Inc. was established in December 2019 and granted nonprofit status (501(c)3) in January 2020. Our Motto is: "Healthy Harbors for Families and Nature." Our mission is "to restore the water quality of the Red Brook Harbor/Pocasset Harbor watershed, including Hen Cove, Barlow's Landing harbor, and the inlet of Wings Neck to healthy environmental levels. We are working toward the day when we have clean, pure saltwater for our families and community to enjoy, as well as healthy natural marshes and wetlands for our birds and marine wildlife."

The PWQC has over 250 dues-paying members and a mailing list that encompasses a wider audience across Bourne and Cape Cod. Our immediate areas of concern are Red Brook Harbor, Hen Cove and Pocasset Harbor. All of these are connected to Buzzards Bay. As such it is our responsibility to comment on water quality issues affecting Bourne waters including the Cape Cod Canal, Buzzards Bay and adjacent waters of Cape Cod Bay. This NPDES permit renewal falls within this purview.

We, the Board of Directors of the PWQC, on behalf of our members and the broader Pocasset community of the Town of Bourne, hereby present our General Comments, covering the Draft Permit, the Fact Sheet and relevant portions of the Massachusetts State Water Quality Standards (314 CMR 4.00, December 10, 2021), in this letter, below. We present our Specific Comments on individual items as Appendix A.

General Comments

1) Based on our knowledge and experience, the Draft Permit and Fact Sheet appear to be in compliance, in a very strict sense, with the requirements of the Clean Water Act, applicable Massachusetts law, and federal and state regulations.

2) However, the water quality in the waters in Buzzards Bay near this discharge is extremely degraded, to the point where the waters do not meet the Designated Use of fishable and swimmable quality. We will elaborate on this later in Specific Comments. The limitations on the Applicant specified in this draft permit do nothing to improve or even maintain the water quality of nearby waters. Much of the responsibility for this egregious omission lies with the EPA Region 1 and with the Commonwealth of Massachusetts. This needs to be remedied, starting with the improvements we identify below.

3) The major cause for this ongoing degradation of water quality, and failure to achieve Designated Uses, is the discharge of excess nitrogen that fertilizes noxious algal growth, coming from permitted point-source discharges, septic system loading to groundwater, and surface nonpoint-source discharges from the watersheds of streams and sub-estuaries feeding the Canal and Buzzards Bay.

4) The MMA wastewater discharge, with its nitrogen loading, is a contributor, albeit a minor one, to this ongoing watershed-wide loading and continued degradation. The Draft Permit appears to minimize the intensity of monitoring of nitrogen, and presents only perfunctory requirements for current or future management of nitrogen, or even requirements for updated compliance studies for evaluating options for future reductions of nitrogen loading, e.g., during the 5-year term of this permit.

4a) We did note that this draft estimated initial dilution of the discharge based on slack tide as the critical condition – an improvement over estimates in previous studies. However, this initial physical dilution of nitrogen species is largely irrelevant to protecting and improving the water quality of nearby Buzzards Bay. Within a day or two of discharge of nitrogen-laden effluent, biogeochemical (not physical) processes dominate, so that inorganic nitrogen species are taken up by growing algae. Crucially, these processes that are causing the ongoing Bay-wide degradation of water quality must be quantified (see 7 below).

5) The inference that the PWQC draws from this avoidance of considering nitrogen in the Draft Permit is that the Applicant and the Permit Writer optimistically expect that the sole "viable" corrective option proposed to date – pumping the MMA waste flow to the Wareham WWTP, and return pumping of the treated effluent for discharge to MMA Outfall 001 – will be approved and meet any regulatory obligations of the Applicant (we infer that the 2012 study that looked at the option of on-site nitrogen removal appeared to have been dismissed out of hand). However, we note that the Citizens' Petition to prohibit the Bourne Select Board from approving an expanded discharge to the Canal was overwhelmingly approved by the Bourne Town Meeting in November 2021. Given that vote, we expect that continued development of this alternative, involving a Permit Modification to MMA's Permit, would be the subject of future litigation (though we have no knowledge of any specific plans for any litigation).

6) The major reason for EPA's and Mass. DEP's failure to vigilantly monitor nitrogen and plan for its removal from this waste stream is their narrow focus on the Cape Cod Canal (aside from perfunctory reference to impairment in "certain coves") as the receiving water, and failure to recognize, monitor, and document the decades-long nitrogen-caused decline in the water quality of Buzzards Bay and the associated widespread declines of its ecological and recreational resources, both near the outfall and down the main body of the Bay. Had these water quality regulatory authorities properly monitored the decline, this would have triggered a listing of Buzzards Bay proper on the biennial Massachusetts (303(d)) Impaired Waters List and would have resulted in implementation of a full TMDL process for nitrogen, and perhaps suspended solids. We note that TMDLs have been and are being conducted by the Mass. Estuaries Program for some of the tributary estuaries where water quality degradation conditions are particularly egregious due to residential septic loading, NPS discharges, combined with increased siltation and reduced water exchange with the main stem of the Bay. (We note that the PWQC was formed to advocate for funding for an urgent study of options for increasing flushing for the Red Brook Harbors complex in Pocasset).

7) The PWQC believes it is EPA's and the State's legal obligation to document and recognize the decline in Buzzards Bay water quality, implement a Bay-wide TMDL that documents the loadings from each of its

tributaries and establish, e.g., through water quality modeling, the Assimilative Capacity for nitrogen for the main stem of Buzzards Bay. It will then be the responsibility of these agencies to establish loading limits for each sub-watershed, which the individual municipalities must then incorporate into their Comprehensive Wastewater Management Plans (CWMPs) as enforceable limits. EPA has an established track record for funding, undertaking and managing such nitrogen TMDLs for estuaries around the country; the most prominent example is the TMDL for nitrogen, phosphorus and suspended solids for the Chesapeake Bay and its 36 tributaries, and the ongoing multi-state restoration program.

8) We note that there are several other aspects of the Draft Permit and Fact Sheet that need correction and improvement, including State Standards and monitoring requirements for metals that are outdated relative to current scientific knowledge, and will soon be updated in EPA's Recommended Water Quality Criteria. We are pleased that the Draft Permit includes monitoring requirements for PFAS substances, but note that this large residential facility likely generates wastewater with many other unregulated and incompletely treated Chemicals of Emerging Concern (CECs), such as from pharmaceuticals, personal care products and other home product additives. These chemicals may need to be added to future renewals of this permit. These will be addressed in our Specific Comments, below.

In conclusion, the PWQC makes the following requests for modifications for the draft Permit:

a) Restoration of monthly monitoring of all forms of nitrogen, instead of the proposed reduction to quarterly monitoring.
b) Establishment of a five-year compliance period that includes a study of other options for nitrogen reduction, instead of the apparent reliance on the contentious option of treatment and return from the Wareham WWTP.
c) Update the metals monitoring to focus on the metals species (dissolved metals) and ambient water quality constituents (dissolved organic carbon, hardness, pH) that EPA is recommending for estimating metals bioavailability to aquatic organisms, and possible toxicity (as estimated by EPA's Biotic Ligand Model, or similar multiple regression estimator).
d) The Permittee should be required to also notify the Bourne Board of Health about any permit violations, system upsets, SSOs, or other incidents that may endanger human health or the environment.

Please feel free to contact me if you need further information.

Kind regards,

Keith Barber

Keith Barber

President

cc (BY EMAIL):

MMA Superintendent

Bourne Select Board/Board of Sewer Commissioners

Chairman, Bourne Board of Health

Director, Bourne Department of Natural Resources

Hon. William Keating, US Congress

Sen. Susan Moran, Massachusetts Senate

Rep. Steven Xiarhos, Mass. House of Representatives

Rep. David Vieira, Mass. House of Representatives

Rep. Dylan Fernandes, Mass. House of Representatives

Korrin Petersen, Esq., Buzzards Bay Coalition

Andrew Gottlieb, Association for the Preservation of Cape Cod

Appendix A

Detailed Comments

Draft Permit

Page	Item	Comment
2	Ammonia Nitrogen	Quarterly sampling is grossly insufficient; the previous Permit required monthly sampling. Sampling should be at least monthly. There is no required effluent limitation. The permit should require the Applicant to update their 2012 study of options for reducing nitrogen (Fact Sheet 5.1.10.1). This study is different from the Nitrogen Optimization Special Condition (I.F.1).
3	Total Kjeldahl Nitrogen	Quarterly sampling is grossly insufficient; the previous Permit required monthly sampling. Sampling should be at least monthly. There is no required effluent limitation. The permit should require the Applicant to update their 2012 study of options for reducing nitrogen (Fact Sheet 5.1.10.1). This study is different from the Nitrogen Optimization Special Condition (I.F.1).
3	Nitrate + Nitrite	Quarterly sampling is grossly insufficient; the previous Permit required monthly sampling. Sampling should be at least monthly. There is no required effluent limitation. The permit should require the Applicant to update their 2012 study of options for reducing nitrogen (Fact Sheet 5.1.10.1). This study is different from the Nitrogen Optimization Special Condition (I.F.1).
3	Metals as Effluent Characteristic	Total Recoverable and Dissolved Metals in the Outfall 001 Effluent should be monitored and reported quarterly. EPA's own studies have shown that the 1996 Metals Translator is inadequate for predicting toxicity from metals. EPA's most recent guidance is to estimate the Bioavailable fraction of metals based on a model like the Biotic Ligand Model, applied to measured dissolved metal, with Dissolved Organic Carbon, hardness and pH as additional required inputs. Simultaneous measurement of Total recoverable would fulfill the requirement to report Total metal.
3-4	Metals for Whole Effluent Toxicity	Total concentrations are not relevant for aquatic toxicity, so dissolved metal should be measured and used. For this freshwater effluent, Dissolved Organic Carbon, hardness and pH should be measured and reported. In marine ambient water or dilution water, DOC should be measured and reported. These constituents will then allow the use of new metal Bioavailability estimators (the Biotic Ligand Model, or EPA's new multiple regression estimators of the metal species potentially contributing to toxicity. EPA will propose new metals bioavailability estimators for fresh waters within a few months, and will develop and promulgate similar bioavailability estimators for marine waters within the 5-year term of this permit. We note that EPA Office of Water proposed new marine (saltwater) copper criteria based on a marine BLM in 2016, which could result in CM Criteria as low as 0.5 micrograms/L. However, this proposal was withdrawn early in the Trump Administration; OW is likely to propose new Bioavailability-based criteria for copper and other metals during the term of this Permit, so the "Reasonable Potential to Exceed…" analysis (Fact Sheet 5.1.11.2)

		will need to be redone using recent effluent data.
3-4	6 PFAS chemicals	We are glad to see this new monitoring, in compliance with EPA's national requirement, and look forward to initiation of monitoring once EPA approves its new methods for wastewater and sludge. We note that these persistent chemicals may bioaccumulate in tissues of aquatic organisms, particularly the nearby oysters in aquaculture grants across from the Academy along Mashnee Dike, in the recreational shellfish beds adjacent to the Academy at Taylors Point, and for shellfish in aquaculture grants and beds in nearby Buttermilk Bay, so monitoring data are urgently needed for a human health risk assessment of risks to humans ingesting these shellfish.
10	I.A.4	"The discharge shall be free from pollutants…" We maintain that this Condition has been too narrowly interpreted, such that the enormous far-field and secondary effects of nitrogen, which is the root cause that induces virtually ALL of the adverse effects listed in this Condition.
10	I.A.5	" … adversely affect the physical, chemical, or biological nature of the bottom of the water course." Again, this Condition has been interpreted too narrowly. Excess nitrogen is generating organic matter that is settling all over the main stem and side estuaries of the Bay. Large areas of the bay benthos have been converted from oxygenated sandy habitat with eel grass and other abundant biota, to fine muck with anoxic black sediment a few centimeters below the surface, smothering local benthic diversity.
10	I.B.2	"…except SSOs that do not impact a surface water or the public,…" What is the threshold for determination of no impact? Who makes this determination, and with what authority?
18	I.G.7	Any verbal reports should also be made to the Town of Bourne Board of Health.

Fact Sheet

Page	Item	Comment
6	2.2.3	Impaired Waters List reporting: We maintain that the State has failed to identify the worsening impairments of the main body of Buzzards Bay due to excess nitrogen, in violation of the requirements of the Clean Water Act. Water transparency continues to degrade due to algal densities. Benthic habitat in main stem areas (e.g., Mashnee Flats) continue to lose eel grass beds. PWQC members can point out many more areas where water quality impairment is growing.
14	4.1	Receiving Water: The 2016 Listing of the Cape Cod Canal/Buzzards Bay as Category 4A ("TMDL Completed") is misleading and incorrect. The 2009 TMDL was only for pathogens, while Designated Uses of Aquatic Life, Aesthetics, and Fish Consumption were "Not Assessed". This omission needs to be corrected in the next biennial Impaired Waters List, based on a systematic survey of the condition of the Designated Uses in the main body of Buzzards Bay.
31	5.7	Essential Fish habitat: EFH extends throughout the Bay, not just within the Cape Cod Canal proper. This artificial restriction of the limits of the "Receiving Waters" of the Permit ignores the degradation of "all aquatic life', including Essential Fish Habitat. This needs to be remedied with a proper survey, likely resulting in listing the whole of Buzzards Bay as Impaired: Category 5 on the 303(d) List.