

Minutes of the Water Quality Management Committee, March 20, 2023

Members present: Ken Foreman, Steve Rafferty, Eric Turkington, Steve Leighton, Matt Charette, Tom Duncan, Jordan Mora. Also present: Mike McGrath; Amy Lowell, Falmouth Wastewater Superintendent; John Waterbury, Board of Health; Hilda Maingay and Earle Barnhart, The Green Center; Selectman Doug Brown; Paul Dreyer, Planning Board; Kurt Achin, Falmouth Enterprise; numerous members of the public

1. A The demise of the residential RUCK system – Mike McGrath

Chairman Turkington introduced Mike McGrath and a brief history of his engineering accomplishment of inventing the RUCK system. He reviewed that RUCK is one of the few I/A systems with General Use approval specifically for nitrogen removal. Turkington briefly showed the average performance of the three most frequently installed I/A systems in Falmouth, RUCK was by far the best performing.

McGrath recounted building the first denitrifying system in the state and stated he carries several patents on the system. He reviewed the denitrification process and explained the biological challenges in getting low and complete nitrate removals. In addition to reducing nitrogen, the RUCK system also reduces household chemicals and personal care products. The RUCK system is more expensive than some other systems on the market. It does work best and is most economical as a cluster system with a minimum of 6 – 8 homes per system.

A question was asked about maintenance. McGrath indicated that the system operators must replenish the carbon source monthly and also test the performance level at the same time. He estimated annual maintenance cost for the system at \$1,500 - \$2,000/year for a residential system. McGrath indicated that he is not planning to work towards general approval at 6 mg/L.

2. Outfall evaluation working group update – Steve Rafferty

Chairman Turkington summarized the objectives of the outfall working group to evaluate all the options for discharge and emphasized that it is still a work in progress. He felt it was an appropriate time to give the committee a formal update on the progress to date and remaining tasks.

Steve Rafferty indicated the working group has been looking into the feasibility of an ocean outfall due to limitations on land applications for disposal. He reviewed concerns with additional nitrogen removal requirements and costs from using either of the land-based options. He indicated there has been significant efforts to refine costs estimates for an ocean outfall comparing potential outfall costs to the land-based options in 2028\$.

Rafferty indicated the major challenges with proceeding with an outfall would be permitting, as there has not been an outfall permitted in the state since the amendment to the Ocean Sanctuaries Act [2014]. He indicated that the working group is following guidance put forth in a white paper prepared by a group formed by the Buzzards Bay Coalition. He detailed the evaluation process to date for outfall options in Buzzards Bay and Vineyard Sound. The evaluations have included geologic condition assessments,

hydrodynamic modelling, mapping of marine and eelgrass resources and a review of potential impacts to the Sagamore Lens aquifer.

Rafferty indicated that the preferred location is Vineyard Sound and discussed the reasons why. Morainal deposits (west side of Falmouth) are littered with large boulders, which impede directional drilling, while eastern deposits are overwhelmingly sandy with easier drilling. Directionally drilling to Vineyard Sound would be a shorter distance to drill to meet the dispersion criteria (2,000 feet versus a minimum of 4,380 feet in Buzzards Bay), has better site access (town owned land that can be utilized for staging) and overall less costs. He commented on the recent eelgrass survey conducted by WHOI and indicated that in Vineyard Sound, eelgrass is only present at depths less than 20' so the outfall would extend to at least a 20' depth and a certain distance beyond (to be determined by regulators) the eelgrass beds. He reported the group is working with the USGS and MA Water Resource Commission to determine whether there would be impacts to recharge on the Sagamore Lens and that early conclusions are there would be no adverse impacts. Rafferty also discussed construction logistics including an estimate of 4 months for installation, diameter/capacity of the pipe, cost contingencies included for time of year risks, among others.

Rafferty concluded the next steps would include producing a formal evaluation document, a vote of the Water Quality Management Committee to proceed with implementation of an outfall, presentation of the findings to the Select Board and neighborhood associations, planning for the real estate needs for the infrastructure, submit an article for Fall Town Meeting to proceed with further geotechnical evaluation.

Ken Foreman asked what types of infrastructure would be on shore. Rafferty indicated it would be just a pipe connection with a manhole cover. The planned capacity is 2 mgd which would not require a pump to move the discharge out, it would be gravity fed. Tom Duncan asked about the size of the diffuser array. Rafferty responded that the exact specs haven't been determined, but it would likely be a 'T' diffuser at the end of the pipe. Jordan Mora asked who was responsible for the permitting. Rafferty indicated it would be a multi-disciplinary team which would likely be led by a consulting firm (which was included in the cost estimate). There were several public comments about location considerations, cost estimates, carbon footprints and impacts to the ocean, and general benefits to the community. Chairman Turkington indicated this discussion is the beginning of the conversation with the community. Selectman Brown agreed the timing is right to begin the discussions.

3. Water Quality Management Committee endorsement of Articles 24 and 25 of April Town Meeting – discussion and vote

Amy Lowell indicated that Article 24 is the supplemental funding for the wastewater treatment facility upgrades that are in excess of the original estimate and that Article 25 is to fund the design and permitting for the first phase of the next collection system and discharge. Tom Duncan made a motion to support Article 24. Steve Rafferty seconded. Unanimous in favor. Tom Duncan moved to support Article 25. Steve Rafferty seconded. Jordan Mora asked about the status of the results of the Herring Brook study and the implications that study could have on the plans for the recharge beds. Chairman Turkington indicated that if the results of the study came back unfavorable to Herring Brook, the work

would not move forward without submitting a revision of the plan to the State. Steve Rafferty concurred that the current plan has the contingency language for Herring Brook included in it. He stated that the plan would need to be amended and resubmitted for approval. He also noted that Article 25 as written and going to Town Meeting does not require the town to upgrade the beds if the report comes back unfavorable. Amy Lowell agreed. Unanimous in favor.

4. Water Quality Management Committee endorsement for submittal of a Sea Grant full proposal for recovery monitoring in Little Pond – discussion and vote

Ken Foreman gave a brief synopsis of the pre-proposal letter. He indicated one of the critiques was to develop the public engagement plan and requested the assistance to the committee technical consultant. Steve Leighton moved to endorse the full proposal submittal to Sea Grant. Tom Duncan seconded. Matt Charette abstained from voting. All other members voted in favor.

5. Pursuit of a town-wide fertilizer ban (Nantucket and Orleans home rule bills) – discussion

This item was tabled for a future meeting.

6. Request of Hilda Maingay and Earle Barnhart for the Select Board to have the Massachusetts Estuaries Project (MEP) conduct 3 model runs to predict the efficacy of urine diversion from all residents, from male residents only, and for incinerating/composting/urine diverting toilets in every residence – discussion and vote

Due to popular interest, this item was taken as Item #3.

Chairman Turkington reviewed the request made by Hilda and Earle and stated that the committee had received numerous comments in support of the proposal. Earle Barnhart gave a synopsis of some of the efforts the town of Falmouth made with the eco-toilet demonstration project. Chairman Turkington added to the synopsis and summarized the final report that was put together by George Heufelder (Massachusetts Alternative Septic System Test Center (MassTC)). Chairman Turkington stated the largest challenge during the eco-toilet program was public unwillingness to install these toilets in their homes. He acknowledged that technologies may have changed since then and was willing to review the concept.

Doug Brown commented that, at the time urine diversion was not strongly considered, but now the technology may be ready for a larger implementation. He stated that he is in favor of the modelling request. Chairman Turkington noted some flaws and missing information in the request. He noted differences in the nitrogen removal potential compared to what was reported by George Heufelder at MassTC. He also remarked that the requested

calculations could be done by the WQMC's technical consultant. Discussions continued about the groundwork that would need to be laid to make the urine collection feasible in Falmouth including a hauling service and additional facilities if the urine were to be recycled into fertilizer. One public commenter agreed that it would be unlikely for them personally to sign on to the idea unless there was a hauling system in place.

Steve Rafferty redirected the comments back to the initial request and agreed that under any scenario the technology has the potential to remove a significant amount of nitrogen. Tom Duncan made a motion to support the request, Rafferty proposed to amend the request to have SMAST complete the analysis as the MEP stated in the original request was not accurate. Duncan revised his motion with the proposed amendment. Steve Leighton seconded. Duncan commented that it would be a waste of money to contract SMAST and stated that the loading inputs have already been determined in the MEP and by the Cape Cod Commission. Ken Foreman asked whether the DEP would accept urine diversion as part of the N reduction plan. He agreed that it will reduce nitrogen but also emphasized that public acceptance is the issue. Chairman Turkington called for a vote to support the request as amended to SMAST instead of MEP. Unanimously opposed. Chairman Turkington noted that Science Wares staff will do the calculations.

7. Reports of members and staff

Steve Rafferty reported that all committee members should have received conflict of interest training by the town. He emphasized that it is annual training that is required of all members of the committee.

8. Vote minutes of prior meeting (02.13.23)

Tom Duncan suggested two grammatical corrections to the minutes. Matt Charette moved to accept the minutes as edited. Tom Duncan seconded. Unanimous in favor.

9. Motion to Adjourn -6:58 pm. Unanimous

Minutes submitted by Kristen Rathjen

List of Documents

- Articles 24 and 25 from the spring 2023 Town Meeting Warrant
- Excerpt on the discharge evaluation conclusion from the Great Pond TWMP
- Copy of Orleans fertilizer bill
- MBL Sea Grant pre-proposal for recovery monitoring in Little Pond
- Request from the Green Center
- Excerpt on eco-toilets from the Great Pond TWMP
- Draft minutes of the 02-13-2023 WQMC meeting