



October 24, 2012

Richard Sullivan, Jr., Secretary
Massachusetts Executive Office of Energy and Environmental Affairs
100 Cambridge St., Suite 900 (9th Floor)
Boston MA, 02114

RE: Draft Comprehensive Wastewater Management Plan and Draft Environmental Impact Report, and Notice of Project Change: Little Pond, Great Pond, Green Pond, Bourne Pond, Eel Pond, and Waquoit Bay Watersheds and Recommendations for West Falmouth Harbor Watershed

Dear Secretary Sullivan,

The Buzzards Bay Coalition (Coalition) has received the Draft Comprehensive Wastewater Management Plan (DCWMP) and Draft Environmental Impact Report (DEIR), and Notice of Project Change (NPC) for the watersheds of Little Pond, Great Pond, Green Pond, Bourne Pond, Eel Pond, and Waquoit Bay, which includes recommendations for the West Falmouth Harbor Watershed. The DCWMP/DEIR outlines a strategy for wastewater management for the watersheds of Falmouth's South Coast Ponds over a 20-year period (2015 – 2035). In nitrogen pollution, the Town faces a serious issue that will threaten Falmouth's economy as well as its environment if left alone. The DCWMP/DEIR is an important tool for the Town of Falmouth to determine how it will meet current and future Total Maximum Daily Loads (TMDLs), which will require significant nutrient reductions in order to restore Falmouth's coastal waters.

The Coalition would like to offer the following comments on the DCWMP/DEIR. In brief, the Coalition encourages the Town to move forward with devising wastewater solutions; however, the Town must do so in a way that is responsible for all of its estuaries. **Trading the health of the South Coast Ponds for that of water bodies in the western portion of Town, including West Falmouth Harbor, is not acceptable.**

Who We Are

The Buzzards Bay Coalition is a nonprofit, membership organization dedicated to the restoration, protection and sustainable use and enjoyment of Buzzards Bay and its watershed. The Coalition works to improve the health of the Bay ecosystem for all through education, conservation, research and advocacy and is supported by more than 8,400 individuals, families and businesses throughout the region, including over 700 members who live in Falmouth.

Water Quality in Other Water Bodies Cannot be Sacrificed

The degradation of water quality in the South Coast Ponds is a serious and urgent problem as evidenced by the fish kill in Little Pond this summer ("Poor Water Quality Suspected in Death of Fish at Little Pond" *Falmouth Enterprise* July 24, 2012). The Town of Falmouth must act to restore water quality in the South Coast Ponds; however, this action cannot be at the detriment of other water bodies.

www.savebuzzardsbay.org

The Preferred Scenario 1E described in the DCWMP/DEIR involves wastewater collection from a reduced area of the South Coast Pond watersheds (Phase 1 and 2 area) that will be treated at the existing Blacksmith Shop Road Wastewater Treatment Facility and recharged at Sites 7 and 10 which are located just north of the Blacksmith Shop Road Wastewater Treatment Facility. As a part of this scenario, the treatment capacity of the Wastewater Treatment Facility would be increased from 1.2 million gallons per day to 2.1 million gallons per day.

In a letter dated December 19, 2011, the Coalition provided comments to the Town of Falmouth on the GHD Technical Memorandum No. 9 (Tech Memo 9), which considers the feasibility of Sites 7 and 10 as wastewater recharge sites. The Coalition would like to re-affirm the concerns stated in that letter – that the water quality impacts on receiving waters of discharged effluent from Sites 7 and 10 have not been adequately characterized.

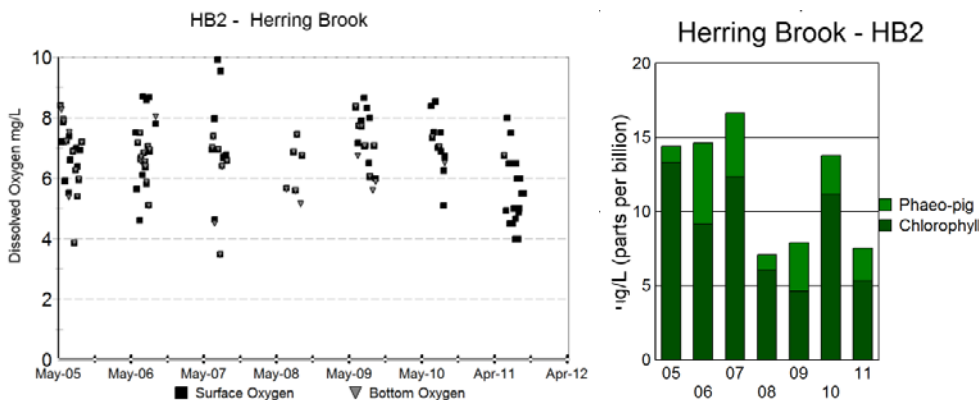
Tech Memo 9 asserts that effluent recharged at Site 7 will discharge into Herring Brook and Buzzards Bay at Herring Brook and between Herring Brook and West Falmouth Harbor. Effluent recharged at Site 10 will discharge to Wing Pond, West Falmouth Harbor, and Buzzards Bay at Herring Brook and beyond West Falmouth Harbor (Tech Memo 9). Each of these water bodies is sensitive to nutrient inputs. **This DCWMP/DEIR will not be a victory for the Town of Falmouth or the environment if water quality improvements in South Coast Ponds are achieved at the cost of water quality degradation in other water bodies.**

A. Herring Brook

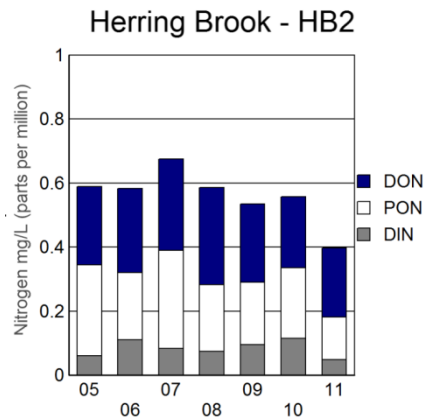
Tech Memo 9 concludes that the ultimate location of a discharge at Site 7 will include Herring Brook and Buzzards Bay. Water quality data collected by the Coalition indicate that Herring Brook is already suffering from nutrient related impairment. The Coalition has requested that the State classify Herring Brook as impaired on the Massachusetts Year 2012 Integrated List of Waters. Further discharge to this location is inappropriate.

Herring Brook is classified as a class SA water and is designated as an excellent habitat for fish, other aquatic life and wildlife and for primary and secondary contact recreation. Massachusetts Surface Water Quality Standards state that class SA waters shall not have a dissolved oxygen level below 6 mg/L, shall have excellent aesthetic value, and shall be free from color and turbidity in concentrations that are aesthetically objectionable or would impair the resource. 314 CMR 4.05(4)(a).

Coalition water quality data for Herring Brook illustrates dissolved oxygen levels in concentrations below 6 mg/L and high levels of chlorophyll, indicating an impaired resource.



In the absence of an MEP report for Herring Brook to determine what an appropriate concentration of total nitrogen is, we look to similarly situated estuarine habitats for guidance. The Massachusetts Estuaries Project calculated a threshold nitrogen concentration for Mashapaquit Creek in West Falmouth Harbor at 0.412 mg/L. *Massachusetts Estuaries Project Linked Watershed-Embayment Model to Determine Critical Nitrogen Loading Thresholds for West Falmouth Harbor, Falmouth, Massachusetts* page 136.



Coalition data illustrate nitrogen concentrations at the mouth of Herring Brook which exceed those concentrations found by the MEP to be protective of water quality in neighboring salt marsh environments indicating an impaired water body unable to assimilate any new source of nitrogen. Importing a new nitrogen load from outside the Herring Brook watershed is inappropriate and would contribute to a violation of state water quality standards.

B. Wing Pond

Tech Memo 9 determines that the ultimate receiving waters for discharges at Site 10 will include Wing Pond, Herring Brook, Buzzards Bay, and West Falmouth Harbor with the majority of the discharge first appearing in Wing Pond. The Coalition is unaware of monitoring data on Wing Pond. The nutrient status of Wing Pond must be evaluated to determine whether Wing Pond is able to assimilate the nutrient inputs associated with receiving the majority of the discharge from Site 10. The Coalition further notes that Wing Pond discharges to Herring Brook and renews its concerns described above. In addition to assessing nutrient impacts to Wing Pond, a proper assessment of load to Herring Brook must consider the ultimate fate of the discharge once it leaves Wing Pond.

Wing Pond is an important spawning and rearing habitat for an active river herring run. River herring have experienced significant decline in Massachusetts and along the entire eastern seaboard in recent decades. For this reason, the fishery in Massachusetts has been under a harvest moratorium since 2005 and river herring are currently being evaluated by the federal government for protection under the United States Endangered Species Act. The Herring Brook/Wing Pond river herring run is already stressed by impacts from adjacent development, infrastructure, water management and cranberry agriculture. Increased nutrient loads to the estuary, stream, and freshwater pond could result in accelerated eutrophication that could impact habitat suitability in this system for multiple life stages of these fish by affecting aquatic vegetation and algal growth, depressing dissolved oxygen concentrations and altering substrate composition.

C. Crocker Pond

Tech Memo 9 fails to identify any percentage of flow from either proposed discharge site to Crocker Pond. Crocker Pond is approximately 1200 feet from Site 7 and is thus clearly a receiving water of the wastewater plume. The nutrient load and impact to Crocker Pond must be assessed. Crocker Pond is identified in the *Cape Cod Pond and Lake Atlas* (Final Report May 2003) as having the GIS ID FA-893. In the Atlas, 2001 water quality monitoring results were reported for seven ponds in Falmouth including Crocker Pond. Of those seven ponds, Crocker Pond had some of the best water quality with the lowest levels of any pond for chlorophyll a (1.65 ug L^{-1}) and nitrogen (0.36 mg L^{-1}), and the second lowest levels of any pond for total phosphorus (14.87 ug L^{-1}). Additional PALS sampling from 2004 to 2007 shows higher chlorophyll a values more recently (Table 1 below). The Town needs to evaluate how discharges from Sites 7 and 10 will impact the health of Crocker Pond and protect the relatively high water quality of Crocker Pond. The Town should also consider how the discharge of a significant new volume will affect groundwater flow and may impact pond height and bank stability.

Table 1. PALS Water Quality Results

Year	Chlorophyll a (ug L^{-1})	Nitrogen (mg L^{-1})	Total Phosphorus (ug L^{-1})
2001	1.65	0.36	14.87
2004	2.07	0.53	12.70
2005	2.41	0.30	7.74
2006	3.22	0.31	16.41
2007	2.37	0.32	7.43

The Coalition is also concerned that Crocker Pond may be hydrologically linked to Mashapaquit Creek, which discharges to West Falmouth Harbor. If this is the case, some of the nitrogen deposited to Crocker Pond will travel to West Falmouth Harbor contributing to West Falmouth Harbor's nitrogen load. As discussed below, additional nitrogen load to West Falmouth Harbor is not acceptable.

Having water quality information over time on ponds that are potential receiving waters is extremely valuable to understand what impact new nutrient loads will have. It is the Coalition's understanding that no sampling associated with the Pond and Lake Atlas (PALS) program has occurred over the last five years. The Coalition encourages the Town to designate a Pond and Lake Atlas (PALS) coordinator in order to take advantage of the free sampling that the Cape Cod Commission provides.

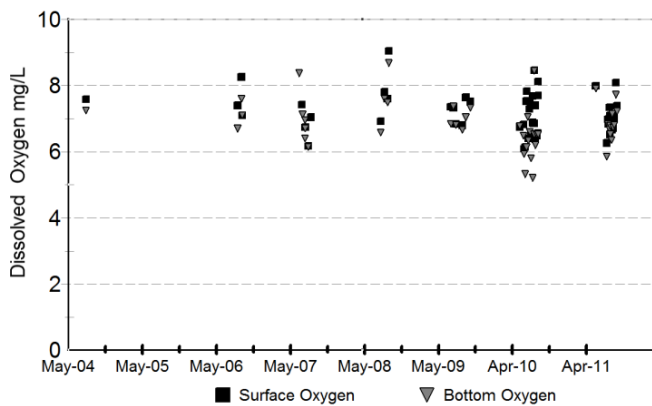
D. Buzzards Bay

While central Buzzards Bay remains relatively healthy as compared to its harbors and coves, it is nevertheless vulnerable to nutrient impacts and is beginning to show symptoms of nutrient overenrichment. Coalition data collected from sites in the center of Buzzards Bay are evidence that the Bay is impacted by nitrogen.

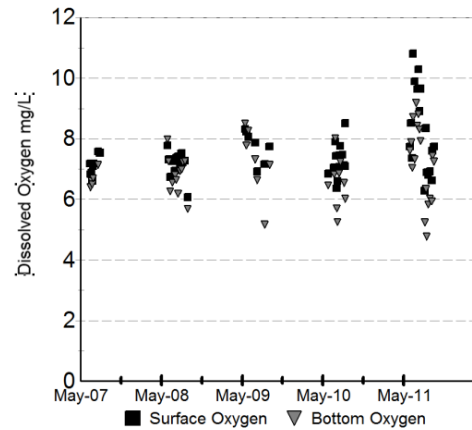
As stated above, class SA waters shall not have a dissolved oxygen level below 6 mg/L, shall have excellent aesthetic value and shall be free from color and turbidity in concentrations that are aesthetically objectionable or would impair the resource. *314 CMR 4.05(4)(a)*. However, dissolved oxygen in central Buzzards Bay is beginning to reach levels below 6mg/L.



CBB1 - Buoy



MB1 - Manomet Bay



Buzzards Bay was named as an Estuary of National Significance by Congress in 1985. Together with its more than 30 harbors and coves, Buzzards Bay represents one of the most ecologically productive habitats in the Commonwealth. In order to protect Buzzards Bay from the chronic decline of nitrogen pollution, future loads to the Bay must be limited.

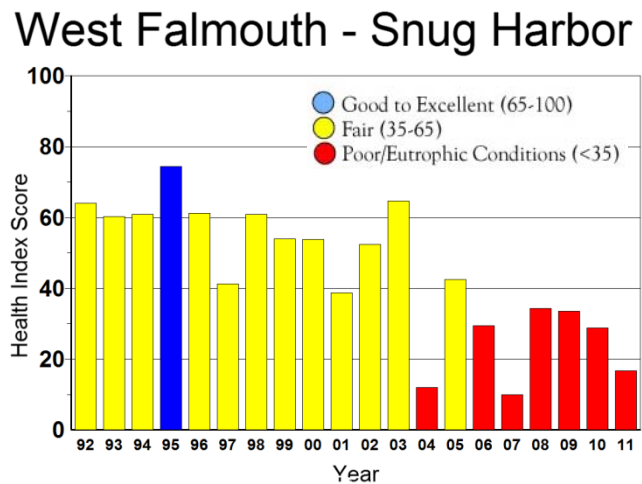
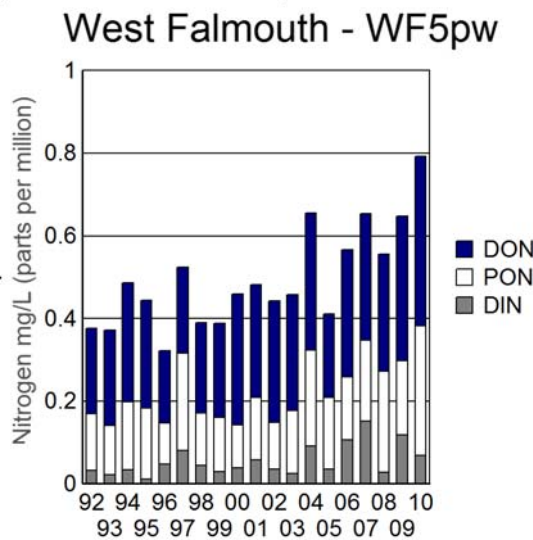
The DCWMP/DEIR proposes that the Blacksmith Shop Road Wastewater Treatment Facility be expanded to a total capacity of 2.1 million gallons per day (mgd). Tech Memo 9 notes that 2.1 mgd is the *additional* amount of wastewater that would be generated from Phase 1 and 2 Areas, which would bring the total flow to approximately 2.6 mgd if all areas in Phase 1 and 2 were sewered. Tech Memo 9 further states that because of Falmouth’s seasonal population shifts, “the wastewater flow in summer (maximum month flow) will increase by a factor of 1.8 to approximately 3.8 mgd” and that “the capacity of recharge areas will need to be based on maximum month flow considerations.” While the current DCWMP/DEIR seeks to limit the amount of sewerage required with the demonstration of non-traditional wastewater and nitrogen management technologies, sewerage will still be a significant part of Falmouth’s wastewater

solution. It is unclear how much the figure of 3.8 mgd may be reduced with the success of non-traditional management technologies. Given that uncertainty, we must plan assuming the maximum 3.8 mgd estimated figure.

With the central Bay beginning to show decline in oxygen levels, it does not make sense to increase the nitrogen load to Buzzards Bay by these large volumes. An additional 3.8 mgd of wastewater at 3mg/L total nitrogen has the effect of dumping an additional 35,000lbs of new nitrogen into Buzzards Bay. It is inappropriate to import this amount of nitrogen generated from *outside* the Buzzards Bay basin to Buzzards Bay.

E. West Falmouth Harbor

The Total Maximum Daily Load (TMDL) for West Falmouth Harbor was established in 2007 and follows a precipitous decline in water quality exhibited by eelgrass die-offs and annual algae blooms. Long-term monitoring of West Falmouth Harbor has shown the increasing nitrogen concentrations and concomitant decreases in the Coalition's Bay Health Index that combines indicators of ecological health including nitrogen concentrations, water clarity, dissolved oxygen, and chlorophyll concentration.



The water quality decline is due to West Falmouth Harbor receiving vast amounts of nitrogen from the Wastewater Treatment Facility. A 2005 upgrade to the Wastewater Treatment Facility significantly reduced the concentration of nitrogen in the effluent, yet with current flow volumes, the discharge is close to the amount of nitrogen allowed in the TMDL. Any new discharges to West Falmouth Harbor are likely to exceed the TMDL and must be avoided in order to comply with the site specific water quality criteria established by the state.

The DCWMP/DEIR recommends deferral of sewer construction in West Falmouth. The recommendation not to extend sewer in the West Falmouth Harbor watershed restricts the amount of wastewater effluent which can be discharged within the West Falmouth Harbor watershed due to the Harbor's inability to assimilate existing septic load and any additional wastewater discharge. Removing the existing septic load of the West Falmouth watershed and sending it to the Wastewater Treatment Facility for treatment to 3 mg/L would significantly decrease the amount of nitrogen loading to the harbor and allow for increased flow from the

Wastewater Treatment Facility. However, validated Massachusetts Estuaries Project (MEP) modeling scenarios have clearly shown that, if West Falmouth is not sewered, no more than 0.5 mgd at 3mg/L may be discharged within the West Falmouth Harbor watershed without exceeding the TMDL.

The Coalition questions whether the DCWMP/DEIR fully considers the amount of nitrogen that will reach West Falmouth Harbor from the new and existing discharge sites. Tech Memo 9 finds that only 86% of the 0.5 mgd effluent discharge from the Wastewater Treatment Facility within the West Falmouth Harbor watershed actually surfaces in West Falmouth Harbor. This assumes that 14% of the flow dives under the harbor and surfaces in Buzzards Bay beyond West Falmouth Harbor. Tech Memo 9 points to an inconsistency between the modeling techniques used by USGS and the water balance techniques used by the MEP to delineate watersheds. However, the EPA approved TMDL for West Falmouth Harbor adopts the MEP technique as the basis for the nitrogen limit, and it is inappropriate to assume an alternative technique. The Coalition does not believe there is adequate evidence that 14% of the flow dives under the harbor and therefore disputes the conclusion of those scenarios which allow discharges from Site 10 to flow to West Falmouth Harbor.

In addition, the Coalition is concerned that effluent discharged to Site 7 will flow to Crocker Pond and eventually surface in West Falmouth Harbor. Thus modeling of flow to Crocker Pond must also entail determining what fraction of nutrients that are discharged to Crocker Pond will flow to West Falmouth Harbor. It is the Coalition's position that any additional flow above 0.5 mgd to West Falmouth Harbor violates state water quality standards and the federal TMDL, unless West Falmouth is sewered.

Tech Memo 9 states that the 30-foot buffer between Site 7 and the West Falmouth Harbor watershed is sufficient separation. However, the GHD technical memo provides no basis for such assertion. Furthermore, the groundwater modeling simulations employed utilized a sub-regional version of the Sagamore Lens Regional Model which was further refined by tightening the grid spacings from 400 by 400 feet to 200 by 200 feet. A model scenario run at a grid size of 200 by 200 feet does not support the conclusion that a 30 foot separation between Site 7 and the West Falmouth Harbor watershed is sufficient. A more technical review of these assertions is warranted in order to ensure that federal and state law is not violated. The Tech Memo 9 states that the "application of treated water to these sites could reconfigure watershed boundaries." It is essential that this potential reconfiguration is considered when determining appropriate separation between Site 7 and the West Falmouth Harbor watershed.

Clear Plan for Meeting West Falmouth TMDL Required

In accordance with the Modified Groundwater Discharge Permit for the Wastewater Treatment Facility (issued June 28, 2012 and included as Appendix 1-5 in the DCWMP/DEIR), the Town is required to include a plan and schedule in this DCWMP to bring West Falmouth Harbor into compliance with the West Falmouth Harbor TMDL and Surface Water Quality Standards by December 2, 2016 or as soon thereafter as possible. The Modified Groundwater Discharge Permit requires that the plan and schedule incorporate the results of a Flow Measurement Plan and Nitrogen Removal Optimization Plan, and identify additional actions needed to reduce the nitrogen loadings to West Falmouth Harbor to be consistent with the West Falmouth Harbor TMDL. This DCWMP fails to present a plan and schedule for bringing West Falmouth Harbor into compliance with the West Falmouth Harbor TMDL by 2016, and is ultimately a violation of the Modified Groundwater Discharge Permit unless it is amended to include such plan and schedule by December 2012.

Current flows from the discharge of the Wastewater Treatment Facility may be violating the TMDL, and this DCWMP must include a plan and schedule to offset current nitrogen loads which violate the TMDL and Surface Water Quality Standards. The DCWMP/DEIR notes that neither of the two modeled scenarios for West Falmouth Harbor (WFH-1 and WFH-2) meets the TMDL and recommends additional modeling to determine an optimized scenario that would meet the TMDL. Additional modeling is only a first step in determining how the West Falmouth Harbor TMDL will be met. A plan and schedule must outline how the Town will limit wastewater discharges to West Falmouth Harbor and when specific steps will be taken (e.g., additional scenario modeling will be performed by December 2013, limitations in flow to the necessary levels determined by additional modeling will be achieved by 2015 through repairs that will decrease inflow and infiltration, etc.).

Clearly, any new discharges to West Falmouth Harbor will also exceed the TMDL and must be avoided in order to comply with the site specific water quality criteria established by the state. In its plan and schedule, the Town must outline how it will meet the West Falmouth Harbor TMDL with current flows in addition to the fact that discharges to Sites 7 and 10 will increase nitrogen loading to West Falmouth Harbor. Additional steps must be taken such as limiting flow from the Wastewater Treatment Facility, sewerage parts of West Falmouth, or identifying an alternate discharge location(s). The removal of wastewater from the South Coast Ponds cannot come at the price of continued degradation of West Falmouth Harbor.

Ocean Outfall Needs to be Considered

The Town of Falmouth has been aware of its wastewater problem for 30 years and can no longer put off addressing it. As early as the 1981 Wastewater Facilities Plan, expansion of sewers to Falmouth Heights and Maravista was recommended. With removal of the vast majority of nitrogen loading to South Coast Ponds required, sewer expansion will undoubtedly be a significant component of the wastewater solution, even with the potential use of alternative technologies. Sewer expansion poses challenges and the Town needs to move forward aggressively with determining how it will overcome them.

The existing Wastewater Treatment Facility has additional capacity for treatment, but as outlined above, it is inappropriate to discharge additional effluent at either Site 7 or Site 10. Because virtually all of Falmouth's harbors, coves, and coastal ponds are overloaded with nutrients and are now or will be subject to a TMDL that limits allowable nitrogen loads, the Town must consider an alternate discharge strategy. This is recognized in the DCWMP/DEIR with the statement that extensive evaluations of potential groundwater disposal sites have "repeatedly lead to the conclusion that the receiving capacity of any individual watershed is insufficient to receive all the treated water."

The current DCWMP/DEIR revives consideration of Scenario 1D where wastewater would be treated at the existing Wastewater Treatment Facility and discharged at an ocean outfall at Nobska Point in Woods Hole. The Coalition supports the Town's evaluation of this option. Discharging the treated effluent directly at the confluence of Buzzards Bay, Vineyard Sound, and Nantucket Sound would remove nitrogen loading from the sensitive coastal ponds and harbors that are exhibiting serious problems due to nutrient overloading. The greater depth and strong flushing of the waters off Nobska Point make it a water body that can tolerate higher inputs of nutrients than the shallow, restricted coastal harbors and ponds. The Coalition also notes that Scenario 1D was evaluated to be the least expensive option in a 2009 Preliminary Draft Plan, so an ocean outfall may have economic as well as environmental advantages.

Stormwater Remediation Program Valuable

While the vast majority of the nitrogen pollution problem is due to wastewater, stormwater is estimated to be the second largest source of nitrogen to Falmouth's coastal waters. The DCWMP/DEIR notes that funding for implementing stormwater best management practices by the Town's roads maintenance group and engineering division has been cut in recent years. Funding for this program should be restored and maintained. Implementing stormwater best management practices as a part of ongoing road maintenance and upgrades is far more cost effective and less disruptive than construction specifically to retrofit roads with stormwater treatment technologies.

Monitoring is a Critical Part of Adaptive Management

The DCWMP/DEIR suggests that an embayment monitoring program is likely to include five sample events per summer season and benthic infauna surveys approximately every five years. The Town has already appropriated money for embayment monitoring. Consistent, long-term monitoring is important to get an accurate picture of the health of coastal embayments and to understand the natural variability in the system from year to year. In Mashapaquit Creek, the Coalition has been collecting dissolved oxygen data since 1997 and nutrient data since 2004. The Coalition is committed to continuing its monitoring program and is always willing to share its data with interested parties, including towns.

Groundwater monitoring currently occurs at the Blacksmith Shop Road Site. The DCWMP/DEIR states that additional groundwater monitoring will be placed at new facilities at Site 7, but makes no mention of monitoring at Site 10.

Monitoring is a critical component of adaptive management. Proper evaluation of demonstration projects requires a well thought out monitoring plan in order to capture effects of the demonstration projects without interference from confounding factors. Careful consideration must be given to the design of the monitoring program including what time period of monitoring is required to effectively assess what effect a specific demonstration project is having.

Demonstration Projects are Valuable for the Region

The DCWMP/DEIR recommends that a number of non-traditional wastewater and nitrogen management technologies and approaches be tested and evaluated as pilot projects. Traditional sewers and advanced treatment at wastewater treatment facilities have proven very effective at treating wastewater to high standards for both bacterial and nutrient pollutants. However, this traditional approach requires significant infrastructure, which takes considerable time and money to build, and is most appropriate for densely populated areas. A number of other wastewater management approaches have been developed, but in most cases, the effectiveness of these approaches has not been rigorously tested or quantified. The inclusion in the DCWMP/DEIR of demonstration projects on a variety of alternative management approaches is a valuable opportunity, not only for Falmouth, but for other Towns in the region who are facing similar wastewater challenges. Testing the effectiveness of these projects, both with respect to nitrogen removal capability and community uptake, will provide valuable information on which of these alternatives will be useful in addition to or perhaps in lieu of sewerage. The value of the demonstration projects **relies** on effective monitoring, but if it is done successfully, it will be extremely useful information for the whole area.

Regional Coordination and Collaboration

The DCWMP/DEIR notes the difficulty in dealing with eutrophified coastal waters where watershed boundaries do not align with those of municipalities. The Coalition encourages the Town of Falmouth to work with neighboring municipalities and the Massachusetts Military

Reservation to optimize available solutions for wastewater issues. All Cape towns are facing similar issues of wastewater degrading coastal waters by overloading them with nutrients. It is a complex issue that requires significant investment to fix. Regional coordination has environmental, economic, and political benefits.

Conclusion

In summary, the Town is facing serious nitrogen pollution problems due to the inadequacy of how wastewater is currently being treated. The DCWMP/DEIR is an important step in the process of solving the Town's wastewater problems, and the Coalition believes that the planning process should continue to move forward. However, the wastewater solution for the South Coast Ponds, while critically important, must not sacrifice the water quality of other estuaries. The Town must meet the West Falmouth Harbor TMDL by December 2016 or as soon thereafter as possible as required by the Modified Groundwater Discharge Permit for the Blacksmith Shop Road Wastewater Treatment Facility. To accomplish this, the Town should pursue serious consideration of an ocean outfall at Nobska Point. Sites 7 and 10 are not appropriate discharge locations since they will result in increased nutrient inputs to sensitive coastal waters that cannot handle the increased nutrients and because they represent the transfer of large amounts of nitrogen from outside the Buzzards Bay watershed into Buzzards Bay.

Sincerely,



Rachel Wisniewski Jakuba, Ph.D.
Vice President, Advocacy

- Cc: Town of Falmouth
Board of Selectmen
Board of Health
Conservation Commission
Planning Board
Department of Public Works
Wastewater Department
US Environmental Protection Agency
MA Department of Environmental Protection
Cape Cod Commission
Falmouth Association Concerned with Estuaries and Saltponds
Salt Pond Bird Area Sanctuaries