

9. Update on Comprehensive Planning Process

The Town of Falmouth has adopted the general CWMP approach of working west to east to develop TWMPs to address nitrogen mitigation needs along its southern coastline. This approach allows for traditional wastewater collection infrastructure to be extended from existing infrastructure, which is primarily located within the Town’s downtown areas and the Little Pond Sewer Service Area, a portion of which is currently within the Great Pond watershed.

9.1 Update of Town’s Progress on Achieving TMDL Compliance in Little Pond, Green Pond, Bourne Pond, Waquoit Bay, West Falmouth Harbor

The 2019 Notice of Project Change outlined the Town’s compliance strategy for each watershed. These compliance approaches (as summarized in the following tables) present the proposed nitrogen load reduction by strategy and watershed. Each strategy includes ranges for pilot technologies based on anticipated performance values for each technology. These ranges will be refined as pilot project data is collected and analyzed. Proposed sewer areas are presented as ranges based on average per parcel water use rates across the Planning Area. The water use estimates and wastewater generation estimates will be refined as conceptual layouts are developed for each area as part of a future TWMP.

Each strategy will continue to be refined as a TWMP for each subsequent watershed is developed and as pilot project/water quality data is collected and analyzed. The Town will continue to monitor Little Pond and West Falmouth Harbor to evaluate whether the significant improvements and management strategies implemented in those watersheds achieve the anticipated results. Refer to Section 5 for the Great Pond compliance approach associated with the Recommended Plan for that watershed.

Table 9.1 Little Pond TMDL Compliance Approach

Nitrogen Removal Strategy	Estimated Nitrogen Load Reduction (kg-N/yr)
Sewering	4,141 – 5,252
I/A Systems	340
Fertilizer (25% of fertilizer load)	158
Stormwater (25% of impervious load)	116
Aquaculture (uptake)	33 – 53
Shellfish (denitrification)	17 – 27
Total Estimated Nitrogen Load Removal	4,805 – 5,946
Nitrogen Removal TMDL Goal	5,006

Table 9.2 West Falmouth Harbor TMDL Compliance Approach

Nitrogen Removal Strategy	Estimated Nitrogen Load Reduction (kg-N/yr)
Wastewater Treatment Improvement	8,792
I/A Systems	92
Fertilizer (25% of fertilizer load)	91
Stormwater (25% of impervious load)	285
Aquaculture	0
Total Estimated Nitrogen Load Removal	9,260
Nitrogen Removal TMDL Goal	8,472

Table 9.3 Green Pond TMDL Compliance Approach

Nitrogen Removal Strategy	Estimated Nitrogen Load Reduction (kg-N/yr)
Fertilizer Bylaw (25% of fertilizer load)	227
Stormwater BMPs (25% of impervious load)	172
Stormwater – Captain’s Lane Catchment Area	120
Aquaculture (uptake)	390 – 630
Shellfish (denitrification)	195 – 315
Mill Pond	491 – 961
Sewer Extensions (total)	2,058 – 2,610
Total Estimated Reduction	3,653 – 5,035
Nitrogen Removal TMDL Goal	4,453

Table 9.4 Bournes Pond TMDL Compliance Approach

Nitrogen Removal Strategy	Estimated Nitrogen Load Reduction (kg-N/yr)
Fertilizer Bylaw (25% of fertilizer load)	121
Stormwater BMPs (25% of impervious load)	126
Aquaculture (uptake)	1,352 – 1,680
Shellfish (denitrification)	676 – 840
Inlet Widening (50% of controllable load)	1,995
Total Estimated Reduction	4,270 – 4,762
Nitrogen Removal TMDL Goal	4,162

Table 9.5 Waquoit Bay TMDL Compliance Approach

Subwatershed	Nitrogen Removal Strategy	Estimated Nitrogen Load Reduction (kg-N/yr)
Eel Pond	Fertilizer Bylaw (25% of fertilizer load)	195
	Stormwater BMPs (25% of impervious load)	97
	Aquaculture (uptake)	1,170 – 1,890
	Shellfish (denitrification)	585 – 945
	Sewer Extension – Antler Shores	923 – 1,170
	Sewer Extension – Seacoast Shores	2,440 – 3,094
	Total Eel Pond Estimated Reduction	5,409 – 7,391
	Eel Pond Nitrogen Removal Goal	3,241
Childs River	Fertilizer Bylaws (25% of fertilizer load)	207
	Stormwater BMPs (25% of impervious load)	130 – 195 ¹
	Aquaculture (uptake)	390 – 630
	Shellfish (denitrification)	195 – 315
	Sewer Extension – Seacoast Shores	1,615 – 2,049
	Sewer Extension – Seapit	414 – 5255
	Mashpee Sewering	1,173 – 1,487
	Total Childs River Estimated Reduction	4,124 – 5,408
Hamblin Pond / Little River	Nitrogen Removal Goal	5,274
	Mashpee Sewering	2,394 – 3,037
	Mashpee Shellfish	1,850
	Fertilizer Bylaw (25% of fertilizer load)	87
	Stormwater BMPs (25% of impervious load)	93
	Total Hamblin Pond Estimated Reduction	4,424 – 5,067
Quashnet / Moonakis River	Hamblin Pond Nitrogen Removal Goal	3,734
	Mashpee Sewering	1,349 – 1,711
	Fertilizer Bylaw (25% of fertilizer load)	377
	Stormwater BMPs (25% of impervious load)	677
	Total Quashnet / Moonakis River Estimated Reduction	2,403 – 2,765
Total Waquoit Bay (without Jehu Pond / Great River)	Quashnet / Moonakis River Nitrogen Removal Goal	3,035
	Total Waquoit Bay Estimated Reduction (without Jehu Pond / Great River)²	16,360 – 20,631
	Total Waquoit Bay Nitrogen Removal Goal (without Jehu Pond / Great River)	15,284

Notes:

1. Stormwater reduction range based on reduction of the entire system or only Child's River North.
2. Due to the complex flow dynamics of the Waquoit Bay system, overages in the estimated nitrogen reduction in Eel Pond may compensate for the deficit in the Child's River.

9.2 Medium- and Long-Term Future Flows

The TWMP Compliance Plans outlined in Section 9.1 outlines areas that the Town is evaluating for centralized sewer infrastructure as part of future TWMP planning. The Town of Falmouth will continue to evaluate options to upgrade the Falmouth WWTF to treat identified medium- and long-term flows (Planning Flows 2 and 3) and will continue evaluating land-based and ocean outfall effluent recharge options for future planning flows.

9.3 Future TWMP Development Schedule

The proposed schedule for the development of the South Coast Estuary TWMPs is outlined in Table 9.6.

Table 9.6 Future TWMP Development Schedule

Action Item	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Ocean Outfall Evaluations	■	■	■										
Notice of Project Change - Green & Bourne Pond TWMP				■	■	■							
Notice of Project Change - Waquoit Bay TWMP							■	■	■				