Executive Summary

ES.1 Background

The Town of Falmouth (Town) is completing this Comprehensive Wastewater Management Plan and Final Environmental Impact Report and Targeted Watershed Management Plan (CWMP/FEIR/TWMP) to provide a Wastewater Management Plan for Little Pond, Great Pond, Green Pond, Bournes Pond, Eel Pond, and Waquoit Bay Watersheds, as well as recommendations for the West Falmouth Harbor Watershed. This Planning Area is illustrated in Figure ES-1. The main components of this Plan include:

1. Sewer extension to the lower watershed area of Little Pond to begin mitigation of that water body.
2. Upgrade of the existing Blacksmith Shop Road Wastewater Treatment Facility (WWTF) to address the current effluent discharge permit requirements and needed facility upgrades.
3. Treated water recharge of up to 0.26 million gallons per day (mgd) outside of the West Falmouth Harbor Watershed at a new treated-water recharge site.
4. Development of an Adaptive Management Plan.
5. Implementation of Demonstration Projects to investigate the feasibility of the following non-traditional nitrogen management processes:
    a. Shellfish Aquaculture Demonstration Project to harvest/mitigate excessive nitrogen in the estuaries
    b. Inlet Widening of Bournes Pond
    c. Eco-Toilet Demonstration Project: composting and urine-diverting toilets
    d. Permeable Reactive Barriers (PRBs)
    e. Stormwater management initially to be evaluated for the Little Pond Watershed

    Two other initiatives (not demonstration projects) that are expected to provide additional nutrient management include:

    f. Development and recent Town passage of a comprehensive Nitrogen Control Bylaw (for fertilizer)
    g. Information-gathering on the feasibility and performance of individual property and clustered nitrogen removal (denitrifying) septic systems

These demonstration projects and other initiatives have been funded by Town Meeting and are underway. Their progress to date is summarized in this document. They will become evaluations independent of this CWMP/FEIR/TWMP and will enter the Massachusetts Environmental Policy Act (MEPA) review process at a later time if they trigger MEPA review thresholds. If these evaluations (and possible MEPA reviews) demonstrate feasibility, the Town plans to add them to this Plan through the Adaptive Management Plan component of this CWMP/FEIR/TWMP.

The Targeted Watershed Management Plan (TWMP) terminology has recently emerged to describe watersheds that are located completely within one town. The TWMP is a required component to meet new regional (Cape Cod Commission) planning guidance. The TWMP component (and added title) of this document refers specifically to the planned sewer extension to the lower watershed area of Little Pond that has been targeted for nitrogen mitigation.

This CWMP/FEIR/TWMP summarizes the many evaluations that were completed for this project. It plans for sewering the lower watershed area of Little Pond, which is the recommended plan for the wastewater management components, as well as documents the demonstration projects listed above, and the recently passed Town-wide Nitrogen Control Bylaw (for fertilizer) which are the recommendations for the non-wastewater management components. This CWMP/FEIR/TWMP provides an environmental impact analysis that shows the significant environmental benefits of the Little Pond sewer extension, and demonstrates that there will be no significant impact of the treated-water recharge.

This Plan will need to be implemented through Adaptive Management to provide the most effective nitrogen mitigation and the most cost-effective implementation. The implications of this approach are as follows:

- The Plan is in a flexible format, allowing for changes in implementation as new technologies prove their feasibility.
- Performance testing will evaluate the actual effectiveness of the installed facilities.
- Environmental monitoring will quantify improvements in the marine water quality.
- New regulations/laws/building codes may need to be passed to allow new approaches.

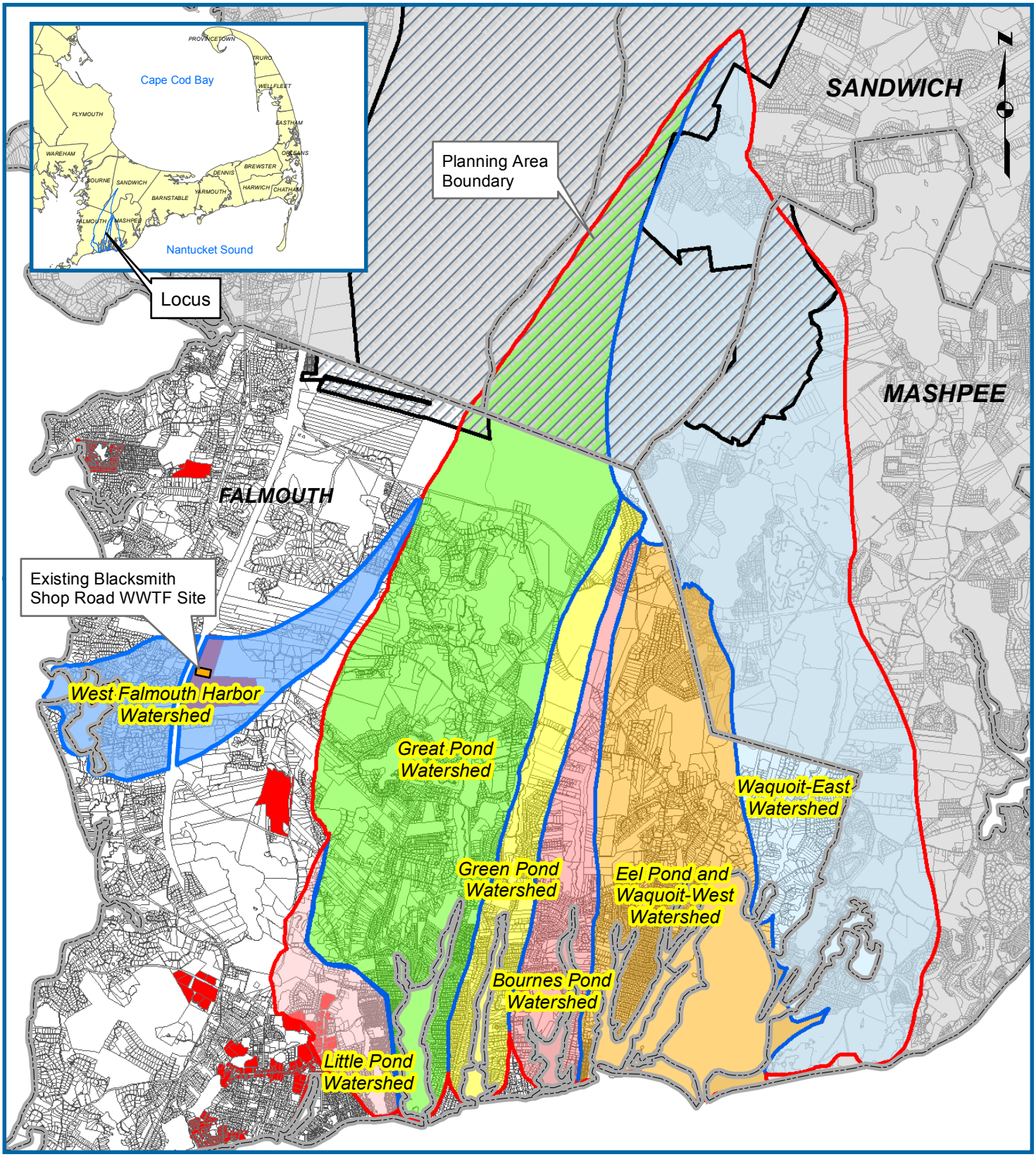
It is well understood that watershed and wastewater management encompass many aspects of science, public policy, regulatory compliance, and public acceptability. The development of a CWMP must include flexibility regarding the timing of project implementation to deal with scientific and regulatory compliance unknowns, and issues related to public acceptance and municipal financial capacity. The concept of Adaptive Management is embraced by the Town of Falmouth as an approach to minimize the costs associated with wastewater treatment and nitrogen management to restore surface water quality. Successful implementation of both traditional and non-traditional wastewater management solutions includes retrofitting all buildings with low-flow devices to significantly increase water conservation.

This document is prepared for review by MassDEP, and as part of the MEPA and Cape Cod Commission (CCC) Development of Regional Impact (DRI) joint review process.

ES.2 Summary of Past Studies: 1981 to Present

A history of two previous wastewater studies conducted between 1981 and 2007 relating to portions of the Planning Area can be found in Appendix 2-1. This CWMP Project was initiated in 2007 and included many detailed evaluations which are summarized in Appendices 2-3 through 4-34. Previous project reports are available at the Town Wastewater Department web page at www.falmouthmass.us, in the Town's libraries, and as appendices to this report.

UMass School of Marine Science and Technology (SMAST) has now finished its studies for all of the estuaries in the Planning Area. The Total Maximum Daily Load (TMDL) limits have been set for each estuary except Waquoit Bay. This TMDL limit is expected in 2014. Figure ES-2 shows the estimated wastewater removal percentages at build-out to meet the TMDLs for the watersheds in the nitrogen management planning areas.



Legend

- Planning Area
- MEP Watershed Boundary
- Waquoit-East Watershed
- Bourne Pond Watershed
- Eel Pond & Waquoit-West Watershed
- Great Pond Watershed
- Green Pond Watershed
- Little Pond Watershed
- Parcel Boundary
- West Falmouth Harbor
- Sewered Parcel
- Town Boundary
- Parcel Boundary

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1927
Grid: NAD 1927 StatePlane Massachusetts Mainland FIPS 2001

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TOWN OF FALMOUTH, MASSACHUSETTS
CWMP

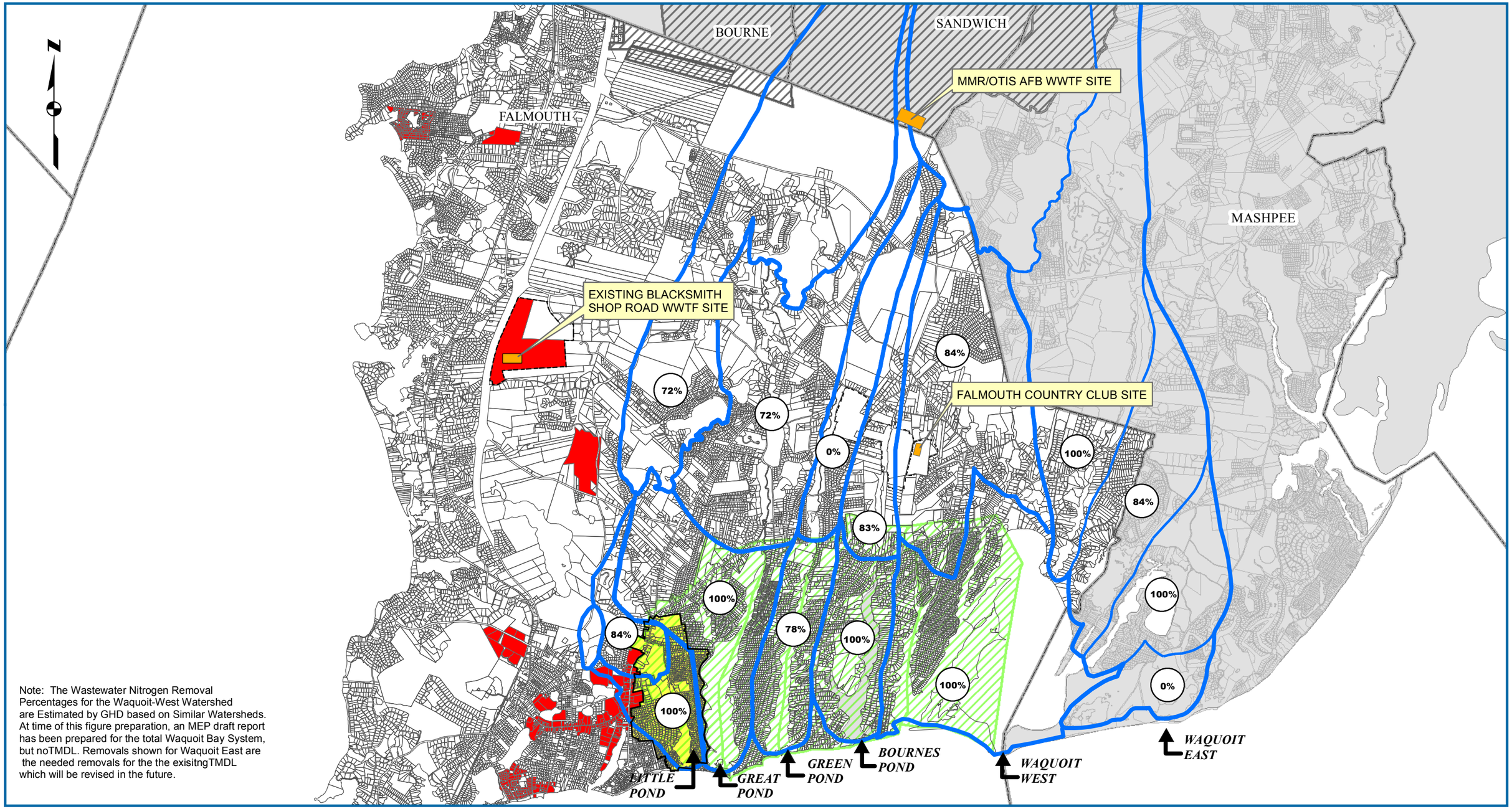
LOCATION MAP

Job Number 86-12163
Revision A
Date 17 May 2013

FIGURE ES-1

1545 Iyannough Road, Hyannis Massachusetts 02601 USA T 1 508 362 5680 F 1 508 362 5684 E hyamail@ghd.com W www.ghd.com

G:\86\12163\GIS\71045 Falmouth\Figures\June 2012 Final Report Figures\Figure ES-1.mxd



Note: The Wastewater Nitrogen Removal Percentages for the Waquoit-West Watershed are Estimated by GHD based on Similar Watersheds. At time of this figure preparation, an MEP draft report has been prepared for the total Waquoit Bay System, but noTMDL. Removals shown for Waquoit East are the needed removals for the the exisitngTMDL which will be revised in the future.

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Miles

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1927
Grid: NAD 1927 StatePlane Massachusetts Mainland FIPS 2001

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LEGEND

- Sub-Watershed Boundary
- Parcel Boundary
- Town Boundary
- MMR
- High Priority Nitrogen Mitigation Area
- Sewered Parcel
- Little Pond Sewer Service Area
- 75% Estimated Future Wastewater Nitrogen Removal Percentage

TOWN OF FALMOUTH, MASSACHUSETTS
CWMP

Job Number	86-12163
Revision	A
Date	24 Jun 2013

ESTIMATED FUTURE WASTEWATER REMOVAL PERCENTAGES TO MEET TMDLs

Figure ES-2

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1545 Iyannough Road, Hyannis Massachusetts 02601 USA T 1 508 362 5680 F 1 508 362 5684 E hyamail@ghd.com W www.ghd.com

These TMDLs and related Massachusetts Estuaries Project (MEP) technical reports document the following problems in the salt ponds of the Planning Area:

- High concentration of nitrogen in the marine water that has led to excessive algae production and eutrophic conditions.
- Loss of water clarity from the suspended algae which has led to loss of rooted eel grass on the floor of the estuaries.
- Deposition of algae in the estuaries which has further damaged eel grass beds, smothered shellfish resources, and depleted dissolved oxygen concentrations in the estuary and severely impacted the benthic communities on the estuarine floor.

These reports and TMDLs identified threshold nitrogen concentrations for these salt ponds and calculated the amount of wastewater nitrogen at build-out that would need to be removed to meet the threshold concentrations as illustrated in Figure ES-2. This figure also illustrates the existing areas of Town served by sewers, the three potential wastewater treatment plant sites evaluated, the proposed new treated-water recharge facility at Site 7, the Little Pond Lower Watershed Area recommended for sewer extension (Little Pond Sewer Service Area), and the portion of the Planning Area (High-Priority Nitrogen Mitigation Area) proposed for nitrogen reduction either through sewering or non-traditional means in the first 20-year period.

The large nitrogen management effort required to meet these TMDLs presents a significant challenge to the Town and will be a large expense to the Town and its residents. The Wastewater and Nutrient Management Vision articulated by the Selectmen states:

> "By comprehensively and effectively managing its wastewater and other nutrient sources, Falmouth will improve water quality, protect public health and enhance the Town's economic vitality. Falmouth will offer its residents, visitors and future generations healthy waters in order to sustain the Town's property values and vibrant economy."

In carrying out this Vision, it is the intent of the Selectmen, the advisory Water Quality Management Committee (WQMC), Town Meeting, and the voters to extend sewers to the Little Pond Sewer Service Area, to fully explore the usefulness of non-traditional alternatives and apply that knowledge through Adaptive Management, to work cooperatively with neighboring Towns and the regional planning agency where watersheds are shared, in particular Waquoit Bay and Megansett Harbor, and to minimize the financial impact of large projects by funding them only when new debt can be issued to replace retiring debt.

ES.3 Summary of Recommended Plan

The Recommended Plan is the Town's strategy: (1) to implement cost-effective wastewater and nutrient management for a 20-year period, with a 40-year perspective on the build-out of the Town; and (2) to meet the nitrogen TMDLs in cooperation with the neighboring Towns of Bourne, Mashpee, and Sandwich that share some of these watersheds.

The 20-year period is from 2015 to 2035, which is the estimated time-period for the Little Pond sewer extension, WWTF upgrades, new treated-water recharge facility implementation, completion of the demonstration projects, and implementation of the feasible non-traditional technologies in the High-Priority Nitrogen Mitigation Areas.

The primary Recommended Plan components are summarized below:

ES.3.1 Sewer Extension to the Lower Watershed of Little Pond

The proposed Little Pond Sewer Service Area is illustrated on Figure ES-3, and the system would collect wastewater from approximately 1,500 existing parcels. It would be a combination of gravity and low-pressure sewers and would include two new wastewater lift (pump) stations to convey the wastewater to the existing collection system and ultimately to the Blacksmith Shop Road WWTF.

This sewer extension would significantly reduce the nitrogen loading to Little Pond. Water quality modeling indicates that this reduction would reduce the nitrogen concentration at the sentinel station of Little Pond from 0.837 mg/L to 0.495 mg/L. Although this reduction is not enough to meet the TMDL threshold concentration of 0.450 mg/L, it is a major reduction. It will be augmented by additional removals provided by the non-traditional nitrogen methods to be proven by the demonstration projects such as the aquaculture project scheduled to start in 2013.

ES.3.2 Upgrade of the Blacksmith Shop Road WWTF

The Blacksmith Shop Road WWTF has recently received a new effluent discharge permit which requires several improvements to its flow-metering system and nitrogen removal optimization. The WWTF has a capacity of 1-million gallons per day (mgd) which is sufficient for the additional flow that would be collected from the Little Pond Sewer Service Area. The WWTF Site is illustrated on Figure ES-4.

This upgrade will provide the improvements needed for current and future operations for the new discharge permit.

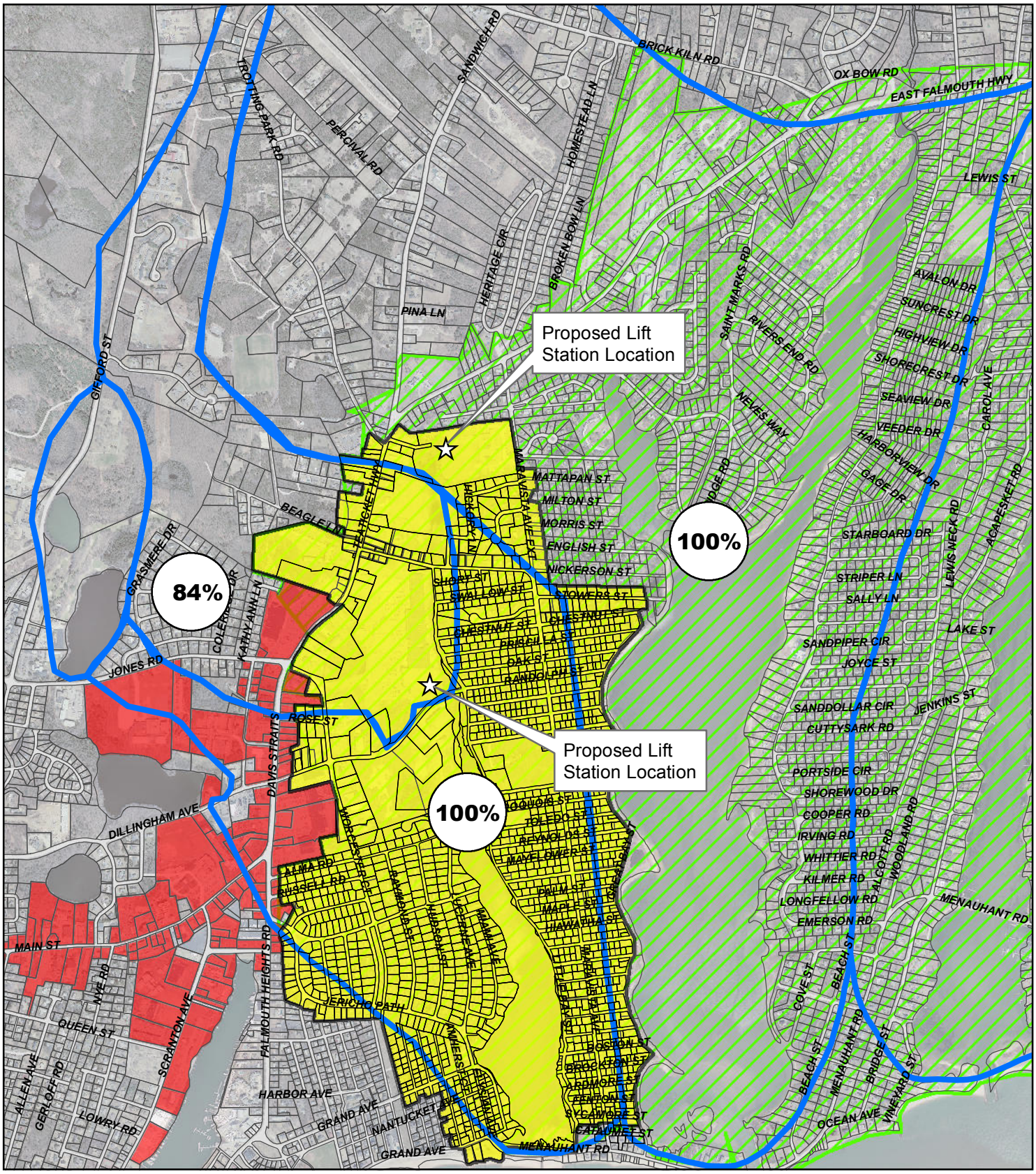
ES.3.3 Construction of the New Treated-Water Recharge Site

A new treated-water recharge site is recommended at Site 7, which is north of the West Falmouth Harbor Watershed, as illustrated on Figure ES-2. The eastern portion of the site is planned specifically for development to provide up to 0.26 mgd of capacity for the flow that would come from the Little Pond Sewer Service Area. The proposed facility at the east end of the site is illustrated in Figure ES-5.

ES.3.4 Implementation of Nitrogen Control Bylaw for Fertilizer

Fall 2012 Town Meeting adopted a Town-wide Nitrogen Control Bylaw that codified a focused approach to minimize nitrogen and phosphorus loading to marine and fresh water bodies (respectively).

This bylaw prohibits the application of nitrogen within 100-feet of Resource Areas as defined in Falmouth's Wetlands Regulations, FWR 10.02 (1)(a - d), as well as on impervious surfaces. The bylaw also prohibits the application of fertilizer anywhere in Town from October 16th to April 14th. During the growing season of April 15th to October 15th, fertilizer application is banned during heavy rain. There are exceptions for agriculture and horticulture. Regarding golf courses, on greens and fairways only, no more than one pound of nitrogen per 1000 square feet may be applied over the entire growing season. Furthermore, 85-percent or more of this fertilizer must be in an organic, slow-release, water-insoluble form, and can be applied on greens and fairways only. There are also allowances for the application of organic constituents applied to improve the physical condition of the soil, and the establishment of turf. Enforcement is through the Department of Marine and Environmental Services (a merging of the Harbormaster's Office and the Department of Natural Resources). A copy of this Nitrogen Control Bylaw can be found in Appendix 3-8.



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Horizontal Datum: North American 1927
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TOWN OF FALMOUTH, MASSACUSETTS CWMP

PROPOSED LITTLE POND SEWER SERVICE AREA

Job Number	86-12163
Revision	A
Date	24 Jun 2013

Figure ES-3

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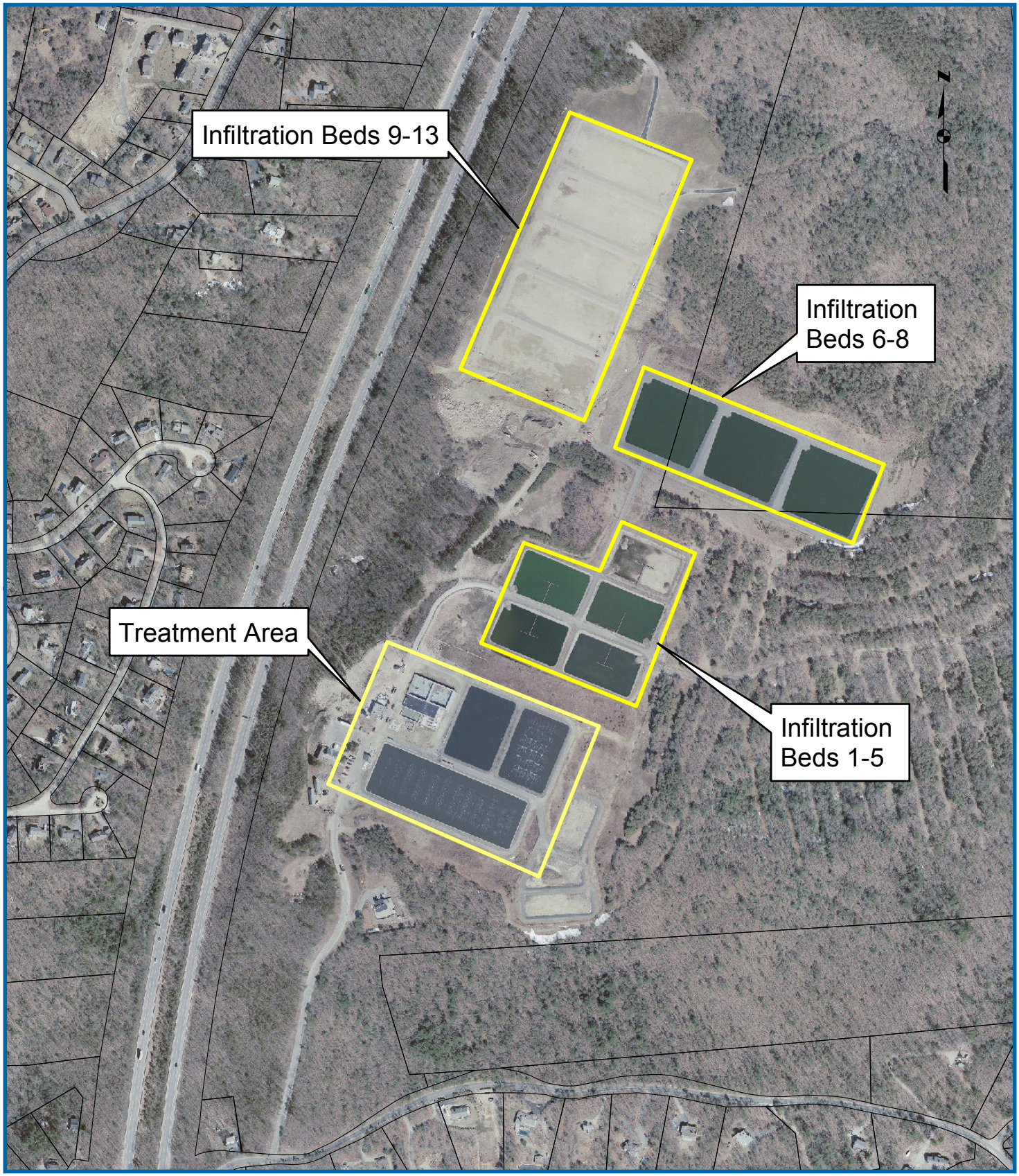

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TOWN OF FALMOUTH, MASSACHUSETTS
CWMP

BLACKSMITH SHOP
ROAD WWTF SITE

Job Number 86-12163
Revision A
Date 20 May 2013

FIGURE ES-4

1545 Iyannough Road, Hyannis Massachusetts 02601 USA T 1 508 362 5680 F 1 508 362 5684 E hyamail@ghd.com W www.ghd.com

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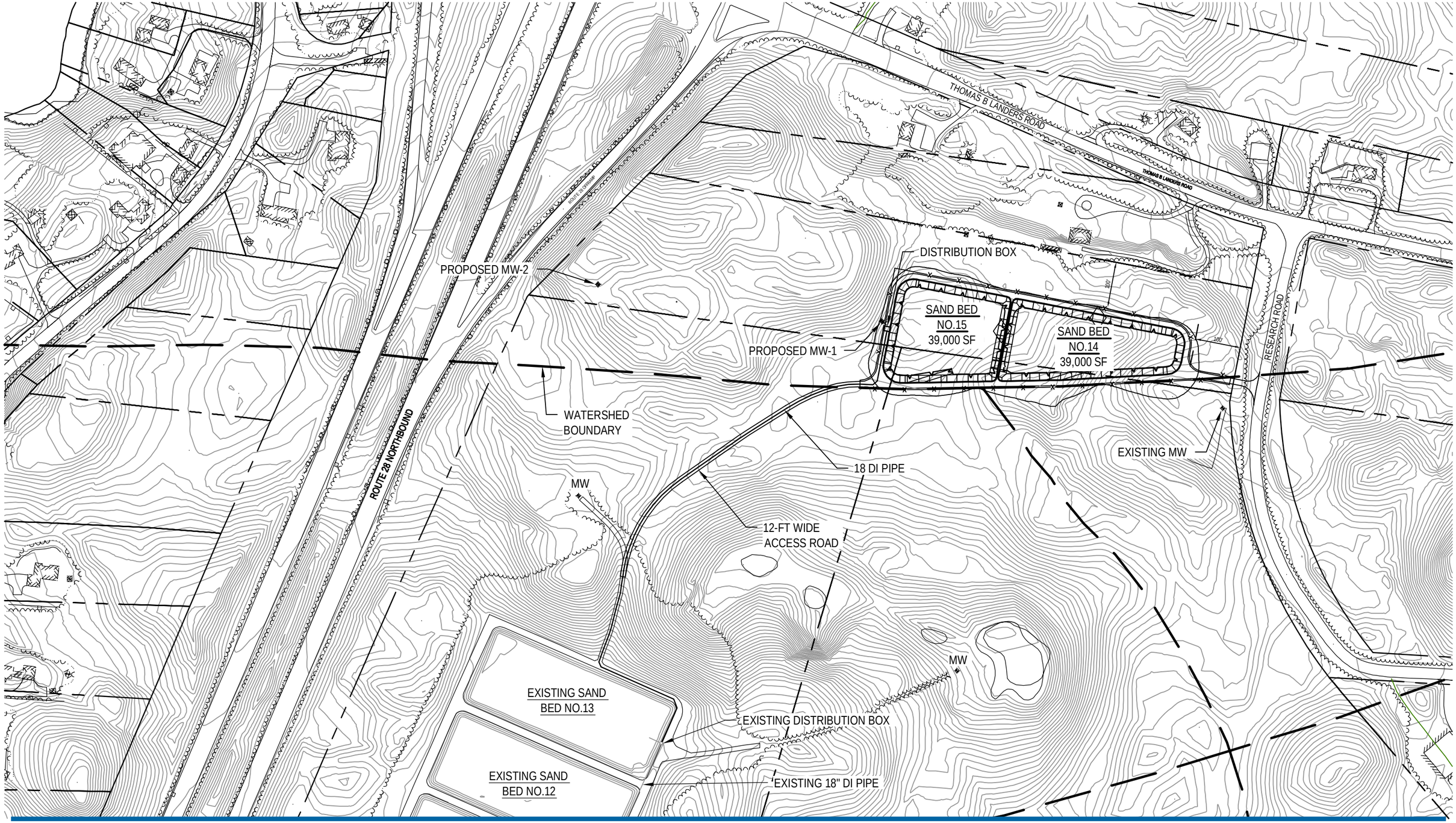

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SCALE 1"=200' AT ORIGINAL SIZE

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GHD

FALMOUTH CWMP IMPLEMENTATION
SITE 7 DEVELOPMENT

INFILTRATION BEDS @ SITE 7

Job Number	86-14629
Revision	A
Date	3/11

Figure ES-5

1545 Iyannough Road, Hyannis Massachusetts 02601 USA **T** 1 774 470 1630 **F** 1 774 470 1631 **E** hyamail@ghd.com **W** www.ghd.com

Plot Date: 26 June 2013 - 12:40 PM Cad File No: G:\86\12163\CAD-LDD Support\Xref\8612163-XP.DWG

On May 15, 2013, the Attorney General disapproved the new bylaw stating that the Legislature has vested the regulatory authority over fertilizers with the Department of Agricultural Resources. The Town's legislative delegation has filed corrective legislation which recently passed allowing the Town's Nitrogen Control Bylaw to remain in effect.

ES.3.5 Evaluation of Non-Traditional Wastewater and Nutrient Management Alternatives through Demonstration Projects

A group of five demonstration projects has been funded by Town Meeting. These projects have been initiated and are ongoing. Their progress as of June 30, 2013, is summarized below. These demonstration projects are evaluations independent of this CWMP/FEIR/TWMP and will enter the MEPA review process at a later time if they trigger MEPA thresholds. If proven feasible, these technologies and management processes will be added to this plan through the Adaptive Management component.

ES.3.5.1 Shellfish Aquaculture Demonstration Project to Harvest/Mitigate Excessive Nitrogen in the Estuaries

This technology and nitrogen management concept would promote nitrogen uptake in the estuaries by shellfish that could be harvested to remove nitrogen from the system. The first phase of the project has been scoped, and Woods Hole Group (WHG) has been engaged as the project consultant. The following initial tasks have been completed:

- Viability Test (summer 2012).
- Conservation Commission Notice of Intent (NOI) hearing and Order of Conditions issued on May 10, 2013.
- Staffing, equipment and shellfish purchased, and seed installed in Town upweller.
- Installation of oysters into Little Pond for first year of demonstration project expected by June 30, 2013.
- Monitoring Plan formalized with MassDEP and Falmouth Conservation Commission.

A full description of this project is provided in Chapter 3.

ES.3.5.2 Inlet Widening of Bournes Pond and Little Pond

These two estuaries are the only ones that were identified by the Massachusetts Estuaries Project as being able to benefit from inlet opening. This technology would increase tidal exchange with Vineyard Sound to reduce the amount of nitrogen that would need to be removed from the watersheds through sewering or other wastewater or nitrogen management approaches. A focused demonstration project has been developed for Bournes Pond, and the first phase of the project has been scoped. GHD (supported by Applied Coastal Research & Engineering and BETA Group) has been engaged as the project consultant, and has completed a Technical Memorandum which presents preliminary design evaluations for an enlarged inlet and new bridge over Bournes Pond, as well as an analysis of the nitrogen-removal benefits of a larger inlet as determined by water-quality modeling.

A full description of this project is provided in Chapter 3.

ES.3.5.3 Eco-Toilet Project: Composting and Urine-Diverting Toilets

This wastewater management approach will segregate the fecal and urine components from the wastewater at individual properties for transport outside the watershed and/or reuse of these materials in an environmentally beneficial way. The first phase has been scoped, and Science Wares, Inc. has been engaged as the project consultant. The first phase of the Eco-Toilet Demonstration Program is underway, with approximately 15 property owners committed to replacing all of their standard fixtures with either composting or urine-diverting toilets. The Barnstable County Department of Health and Environment has been contracted to provide baseline and ongoing monitoring of these installations.

A full description of this project is provided in Chapter 3.

ES.3.5.4 Permeable Reactive Barriers (PRBs)

This technology provides nitrogen treatment in the groundwater system by having it flow through a reactive barrier that converts soluble nitrogen to nitrogen gas, which is released into the atmosphere. The first phase of the project has been scoped, and CDM Smith has been engaged as the project consultant. The following initial tasks have been completed:

- Delivery of Technical Memorandum (TM) #1 detailing the evaluation criteria and TM #2 outlining preliminary site selection (18 sites).
- From 18 sites, four promising locations have been short-listed.

A full description of this project is provided in Chapter 3.

ES.3.5.5 Improved Stormwater Management

This stormwater and nitrogen management approach would provide hydraulic retention, bioretention, infiltration, and other best management practices (BMPs) to mitigate the nutrients, sediments, and biological vectors (pathogens, fecal coliform, etc.) discharged by stormwater to the waterbodies and to their watersheds. The Town Engineering Department and Conservation Commission are in the process of developing a Town-wide approach to stormwater management. Within the next year, the WQMC will work with appropriate Town departments and boards to determine the most appropriate location within the Little Pond watershed for a stormwater demonstration project.

A full description of this process is provided in Chapter 3.

ES.3.5.6 Adaptive Management throughout the 20-Year Planning Period

The Town of Falmouth is taking an innovative approach to incorporating non-traditional nitrogen and wastewater management technologies and approaches with the incorporation of demonstration projects into the Recommended Plan. If these technologies and/or approaches prove to be feasible and cost-effective, the Town's Water Quality Management Committee will oversee the Adaptive Management process to incorporate them into the planned remediation of the High-Priority Nitrogen Mitigation Area. Each would be added to the Plan through a Notice of Project Change in accordance with MEPA review and approval.

ES.3.5.7 Coordination with County Regional Planning and Neighboring Towns on Shared Watersheds

The Waquoit Bay estuary system has a watershed that is shared with Mashpee and Sandwich, and this shared watershed is a focus of the County's regional waste management planning project (208 Plan) which was initiated in May 2013. Falmouth will continue to work with these Towns and the County to explore the most cost-effective ways to meet the nitrogen limits in this water body, and incorporate cost-effective solutions into this plan through the Adaptive Management component.

ES.3.6 Ocean Outfall

The Water Quality Management Committee will continue to investigate the long-term option of discharge of treated effluent through an ocean outfall. As described more fully in Chapter 3, Section 3.9, tertiary treatment of wastewater produces an effluent with very low nitrogen, and the flow volume is quite small in proportion to the natural discharge of millions of gallons of groundwater to marine waters on a daily basis. An outfall discharge has the advantage of bypassing already-impacted watersheds, estuaries, and coastal ponds where the addition of more nitrogen from a land discharge site has a greater environmental impact.

ES.4 Estimated Costs and Financing Plan

ES.4.1 Background

The Town of Falmouth is committed to the lengthy process of achieving TMDL limits in the coastal ponds within the High-Priority Nitrogen Mitigation Area and in West Falmouth Harbor, using a variety of approaches to manage nitrogen inputs. All management alternatives have engineering, permitting, and construction costs. Financing the capital costs of these projects poses a major hurdle to any municipality in the current economic times. The ensuing operation and maintenance costs will add further expense to already strained annual budgets.

The Town of Falmouth has comprehensive and varied capital needs involving both critical infrastructure and equipment replacement. These needs underscore the importance of viewing long-term capital financing in a broad, responsible context, and maintaining a healthy financial balance on behalf of the Town's taxpayers. In order to fund the capital costs of the various nitrogen management projects identified in this CWMP as well as responsibly addressing the Town's other primary capital responsibilities; Falmouth proposes to use two strategies. The first and fundamental strategy is to consider issuing "new" debt when an "old" debt is paid off. In past decades, Falmouth voters have approved various "debt exclusions" under the provisions of Proposition 2 1/2, so called. As that excluded debt is paid off, "new" excluded debt can be issued after a two-thirds vote of Town Meeting and a majority vote by ballot, this without raising the tax rate. The capital projects funded by the "new" debt would be carefully selected given Falmouth's comprehensive capital needs.

The illustration of "Estimated Costs and Financing Plans" shown in Table ES-1 simply illustrates a financial opportunity. Projects within the CWMP including sewer extension to the Little Pond Sewer Service Area, shellfish aquaculture, permeable reactive barriers, eco-toilets, denitrifying septic systems, stormwater remediation, and other capital investment in nutrient removal will be sequenced as the regulatory, design, construction, voter authority, and fiscal opportunities allow.

The second funding strategy is to use the State Revolving Fund (SRF) loan program for the construction costs of the nitrogen management projects. The SRF loan process has specific eligibility requirements, a

fixed annual timetable for deciding awards, a competitive selection procedure to receive an award, and a limit as to how much can be awarded to a given community in any one year. All of these constraints need to be taken into account in planning projects to improve water quality.

The SRF loans are of two types: a zero-percent loan that has significant additional eligibility requirements, or the standard 2-percent loan, an interest rate that is less than most municipalities would have to pay if borrowing on their own. Falmouth will explore the benefits and drawbacks of applying for the zero-percent loan versus the 2-percent loan. It should be stressed that without those loans, it is certain that Falmouth will not be able to finance the necessary construction costs to meet TMDLs in the coastal ponds within the Planning Area of this CWMP. The timing of issuing-new-debt-to-replace-old-debt and the receipt of an SRF loan are key to Falmouth's capacity to fund the various projects needed to meet the TMDLs.

ES.4.2 Financial Planning and Key Milestones: 2011 to 2020

Table ES-1 Estimated Costs and Financing Plans lays out the big picture on financing, ballot votes and the State Revolving Fund process. Although the Table focuses on the events that must take place between 2011 and 2020, Table ES-1 also provides the necessary information for financing improvements for all the coastal ponds within the Planning Area out to the year 2040. Within all of these timeframes, the Town intends to act as quickly as possible, using Adaptive Management, to implement alternatives that have proven capable of reducing nitrogen loads in a consistent and cost-effective manner.

Items 1 through 16 on Table ES-1 list all of the presently-identified critical milestones that must be met in order to design, permit, and construct the first stage of projects to meet the TMDLs in the Planning Area. Item 1 was already voted in 2011: $2.77 million dollars of excluded debt in Article 17 to fund planning and design of demonstration projects for permeable reactive barriers, inlet widening, eco-toilets, aquaculture, baseline monitoring of water quality, preliminary sewer design, de-nitrifying septic systems, some additional MEP studies, and a Draft CWMP for Oyster Pond watershed.

Item 2 has already been accomplished: submittal of a Draft CWMP/DEIR to MEPA and the Cape Cod Commission in September 2012. The Secretary issued his Certificate on November 14, 2012 and determined that the Draft was "adequate".

Item 3: The Town issued Requests for Proposals for an engineering firm to complete the CWMP process; and provide preliminary design services and evaluations for the sewer system for Little Pond Lower Watershed, the widening of Bourne's Pond, and the preparation of the SRF application. The contract was awarded to GHD in November 2012.

Item 4: On April 10, 2013 Town Meeting approved Article 24, $5.6 million of excluded debt to fund design of a wastewater collection system for Little Pond Sewer Service Area, widen Bourne's Pond inlet from 50-feet to 90-feet, make improvements to the Wastewater Treatment Plant, some of which were required by the DEP Settlement, and develop a discharge site for the treated effluent. On May 21, 2013, the voters passed the ballot question.

Item 5 is the subject of this CWMP/FEIR/TWMP, a process that will unfold over the next twelve months: completion of this document, submittal to MEPA/CCC, issuance of the Secretary's Final Certificate, and a hearing before the Cape Cod Commission as part of the joint review process. As part of the funding strategy for nutrient management, Falmouth will file a SRF Project Evaluation Form (PEF) by August 31, 2013, seeking a low-interest loan from the State.

Item 6 is the submittal of the SRF PEF discussed above.

TABLE ES-1

Estimated Costs and Financing Plans

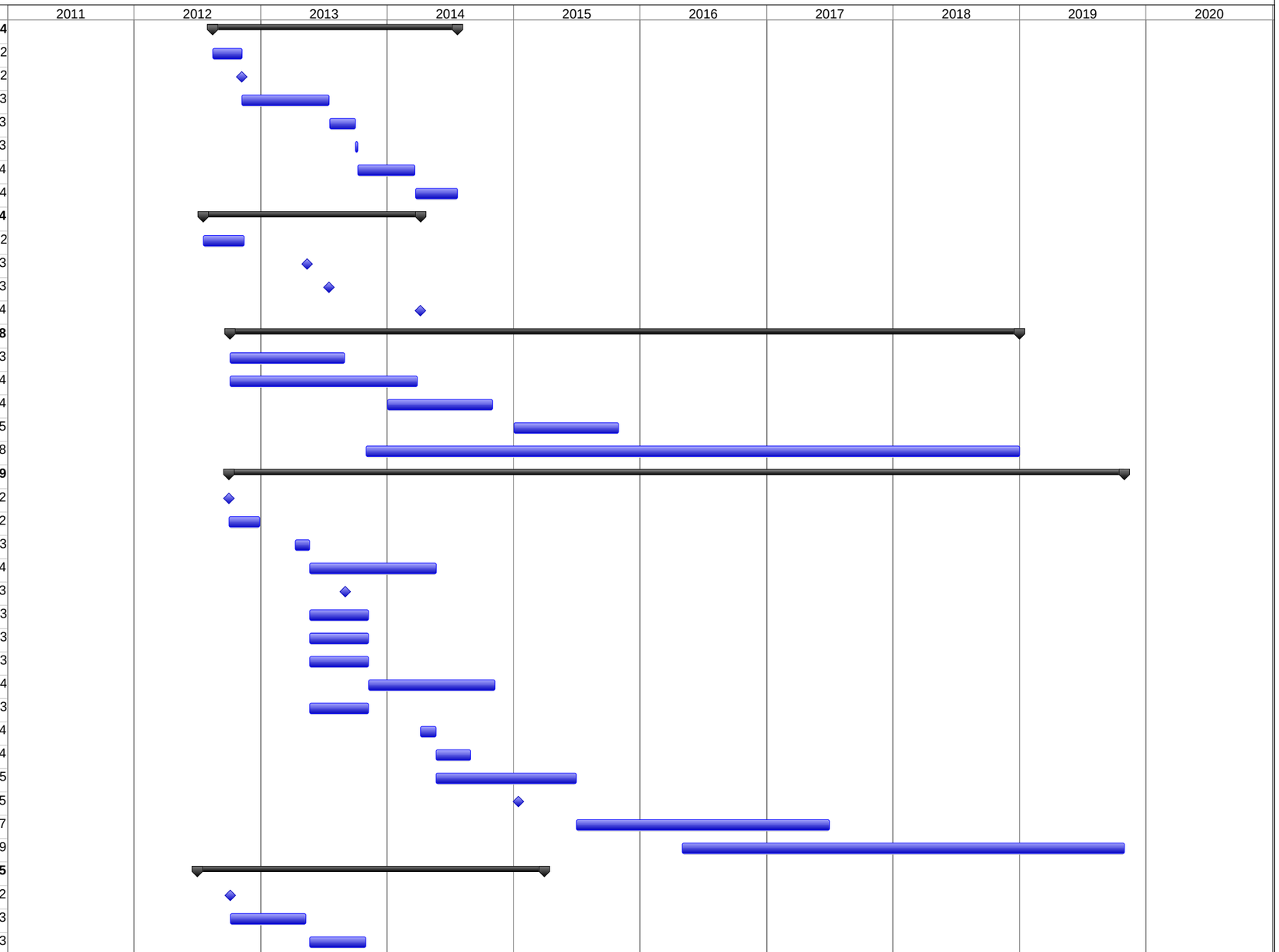
Item	Action Item	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	$2.77M for Design and Demonstration Projects; Ballot Vote	X									
2	Draft CWMP/DEIR Submittal		X								
3	Execute Contract, selected engineering firm		X								
4	$5.6M Construction Design, Ballot Vote			X							
5	Final CWMP/FEIR/TWMP; Sec Certif; CCC Hearing										
6	SRF PEF Application Submittal			X							
7	Comparative Cost Evaluations										
8	Flow Neutral Bylaw; Checkerboarding Article				X						
9	Twn Mtg Sets Betterment %; Special Legislation				X						
10	Obtain Listing on the SRF Intend Use Plan				X						
11	$90M Town Vote 30 year Bond for Construction Contingent on 0% or 2% SRF loan; Ballot Vote				X						
12	Town Meeting vote to accept CH 312, Acts of 2008, Sec. 10				X						
13	SRF Full Application Submitted - all required items must be in place					X					
14	Detailed Design for Bid Documents										
15	State SRF Commitment; Bid Approval Little Pond					X					
16	SRF-Funded Construct'n Projects; Adaptive Mgmt										

Program Funding and Timetable 2020 - 2040	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Evaluate Results of Remediation to Date: Plan Next Construction Projects																						
$60M Town Vote - Spring 2025																						
Town Construction of $60M (2025-2030)																						
$40M Town Vote - Spring 2030																						
Town Contruction of $40M (2030-2035)																						
$100M SRF Town Vote - Spring 2035																						
Town Construction of SRF $100M (2035-2040)																						

Notes CWMP = Comprehensive Wastewater Management Plan
DEIR = Draft Environmental Impact Review
TWMP = Targetted Watershed Management Plan
SRF = State Revolving Fund
PEF = Project Evaluation Form

TABLE ES-2
PROJECT COMPLETION AND IMPLEMENTATION TIMETABLE

ID	Task Name	Start	Finish
1	**Process of Approving the CWMP/EIR/TWMP**	**Wed 8/15/12**	**Tue 7/22/14**
2	Town Submits DCWMP/DEIR/TWMP to EOEEA	Wed 8/15/12	Wed 11/7/12
3	EOEEA Issues Certificate and Comments	Wed 11/7/12	Wed 11/7/12
4	WQMC sends Final CWMP to Selectmen	Wed 11/7/12	Tue 7/16/13
5	Selectmen Approve Final CWMP	Fri 7/19/13	Mon 9/30/13
6	Submit Final CWMP to EOEEA	Tue 10/1/13	Mon 10/7/13
7	Secretary Issues Certificate	Tue 10/8/13	Fri 3/21/14
8	Cape Cod Commission Hearing Process	Mon 3/24/14	Tue 7/22/14
9	**Nitrogen Control Bylaw for Fertilizer**	**Thu 7/19/12**	**Mon 4/7/14**
10	Develop and Vote Fertilizer Bylaw	Thu 7/19/12	Tue 11/13/12
11	Attorney General Rejects Bylaw	Wed 5/15/13	Wed 5/15/13
12	Corrective Legislation Implemented	Wed 7/17/13	Wed 7/17/13
13	Town Votes Revised Bylaw - NOT USED	Mon 4/7/14	Mon 4/7/14
14	**Baseline Monitoring Plan for Water Quality**	**Thu 10/4/12**	**Mon 12/31/18**
15	Contract SMAST for Baseline Data/Analysis (up to 2011)	Thu 10/4/12	Fri 8/30/13
16	Scope of Work/Implement Little Pond Monitoring	Thu 10/4/12	Fri 3/28/14
17	Scope of Work/Implement Bournes Pond Monitoring	Thu 1/2/14	Fri 10/31/14
18	Scope of Work/Implement Great and Green Pond Monitoring	Fri 1/2/15	Fri 10/30/15
19	Ongoing Evaluation of Monitoring Results	Fri 11/1/13	Mon 12/31/18
20	**Sewer Extension to the Lower Watershed of Little Pond**	**Mon 10/1/12**	**Wed 10/30/19**
21	Engineering Services Contract Finalized	Mon 10/1/12	Mon 10/1/12
22	Preliminary Design Report for LLP Sewer Delivered	Mon 10/1/12	Fri 12/28/12
23	Little Pond Sewer: Vote Design Funds	Wed 4/10/13	Tue 5/21/13
24	Little Pond Sewer System Design	Wed 5/22/13	Thu 5/22/14
25	File SRF Project Evaluation Form	Mon 9/2/13	Mon 9/2/13
26	Develop and Vote Flow Neutral Bylaw	Wed 5/22/13	Thu 11/7/13
27	Develop and Vote Betterment	Wed 5/22/13	Thu 11/7/13
28	Develop and Vote Special Legislation for Betterment	Wed 5/22/13	Thu 11/7/13
29	File Special Legislation for Betterment	Fri 11/8/13	Fri 11/7/14
30	Develop and Vote "Checkerboarding"	Wed 5/22/13	Thu 11/7/13
31	Vote Construction of Little Pond Sewer	Mon 4/7/14	Wed 5/21/14
32	SRF Full Application Submitted	Thu 5/22/14	Fri 8/29/14
33	Detailed Design for Bid Documents	Thu 5/22/14	Tue 6/30/15
34	State SRF Commitment: Bid Approval for Little Pond	Thu 1/15/15	Thu 1/15/15
35	SRF Construction Project of Little Pond Sewer	Wed 7/1/15	Fri 6/30/17
36	Ongoing Monitoring and Analysis	Mon 5/2/16	Wed 10/30/19
37	**Shellfish Aquaculture Demonstration Project**	**Mon 7/2/12**	**Mon 3/30/15**
38	Shellfish Consulting Contract Finalized	Fri 10/5/12	Fri 10/5/12
39	Design/Permitting of Shellfish Demo Project	Fri 10/5/12	Fri 5/10/13
40	Implementation of Shellfish Demo Project - Year 1	Wed 5/22/13	Wed 10/30/13

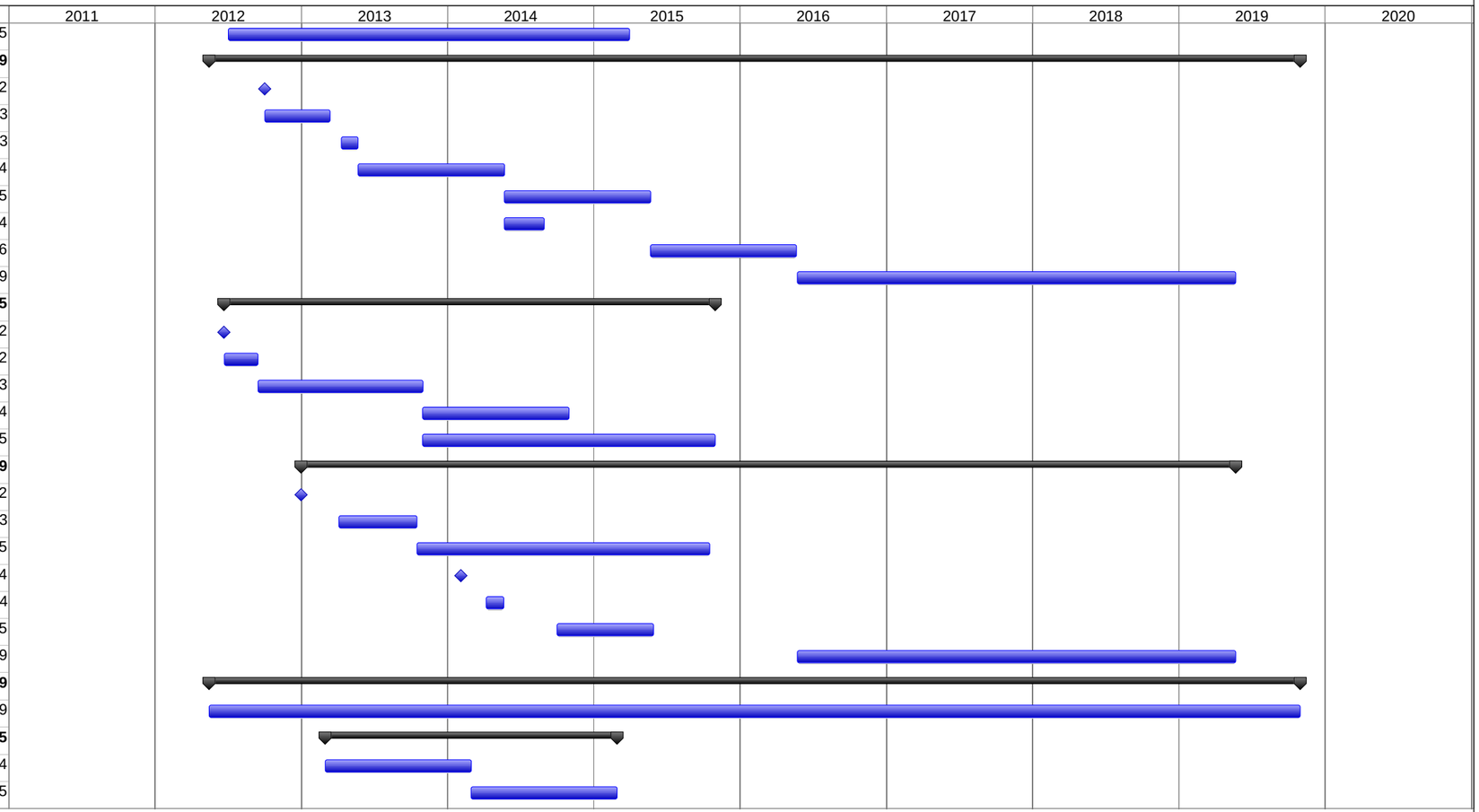


Project: Draft Schedule 6-4-2012 with u
Date: Wed 7/24/13

Task
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
Group By Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Progress
Deadline

TABLE ES-2
PROJECT COMPLETION AND IMPLEMENTATION TIMETABLE

ID	Task Name	Start	Finish
41	Ongoing Monitoring and Analysis	Mon 7/2/12	Mon 3/30/15
42	**Inlet Widening Project**	**Tue 5/15/12**	**Wed 10/30/19**
43	Engineering Services/Inlet Widening Contract Finalized	Mon 10/1/12	Mon 10/1/12
44	Preliminary Design Report for Inlet Widening Delivered	Mon 10/1/12	Tue 3/12/13
45	Bournes Pond: Vote Design Funds	Wed 4/10/13	Tue 5/21/13
46	File Enhanced Environmental Notification Form (ENF)	Wed 5/22/13	Thu 5/22/14
47	Inlet Widening Permitting and Design	Thu 5/22/14	Fri 5/22/15
48	SRF Full Application Submitted	Thu 5/22/14	Fri 8/29/14
49	Inlet Widening Construction	Fri 5/22/15	Fri 5/20/16
50	Ongoing Monitoring and Analysis	Mon 5/23/16	Wed 5/22/19
51	**Eco-Toilet Project**	**Thu 6/21/12**	**Fri 10/30/15**
52	Eco-Toilet Technical Consultant Contract Finalized	Thu 6/21/12	Thu 6/21/12
53	Design/Permitting of Eco-Toilet Demonstration Project	Fri 6/22/12	Thu 9/13/12
54	Implement Eco-Toilet Demonstration Project - Group 1	Fri 9/14/12	Wed 10/30/13
55	Implement Eco-Toilet Demonstration Project - Group 2	Wed 10/30/13	Thu 10/30/14
56	Ongoing Monitoring and Analysis	Wed 10/30/13	Fri 10/30/15
57	**Permeable Reactive Barrier Project**	**Mon 12/31/12**	**Wed 5/22/19**
58	PRB Engineering Contract Finalized	Mon 12/31/12	Mon 12/31/12
59	Delivery of Technical Memoranda	Thu 4/4/13	Tue 10/15/13
60	Design and Permitting of two Demonstration Sites	Wed 10/16/13	Fri 10/16/15
61	Construction Cost Estimates Provided	Mon 2/3/14	Mon 2/3/14
62	Town Meeting Approval of Construction Funds	Mon 4/7/14	Tue 5/20/14
63	Construction	Wed 10/1/14	Fri 5/29/15
64	Ongoing Monitoring and Analysis	Mon 5/23/16	Wed 5/22/19
65	**Little Pond Stormwater Control Project**	**Tue 5/15/12**	**Wed 10/30/19**
66	Coordinate with other Town Efforts	Tue 5/15/12	Wed 10/30/19
67	**Denitrifying Septic System Project**	**Fri 3/1/13**	**Fri 2/27/15**
68	Technical Evaluation of Alternative Systems	Fri 3/1/13	Fri 2/28/14
69	Implement Alternative Systems (if appropriate)	Fri 2/28/14	Fri 2/27/15



Project: Draft Schedule 6-4-2012 with u
Date: Wed 7/24/13

Task	Rolled Up Progress	Inactive Task	Manual Summary Rollup	Deadline
Milestone	Split	Inactive Milestone	Manual Summary	
Summary	External Tasks	Inactive Summary	Start-only	
Rolled Up Task	Project Summary	Manual Task	Finish-only	
Rolled Up Milestone	Group By Summary	Duration-only	Progress	

Item 7 is an important part of the current and long-range thinking of how the Town addresses its nitrogen issues, both inside and outside of the Planning Area. There will be an on-going program of Comparative Cost Evaluations of all the nutrient management strategies that the Town can employ. These evaluations will specifically look at the cost per pound of nitrogen removed by various technologies: eco-toilets, permeable reactive barriers, inlet widening, aquaculture, sewers, and any other technologies that may be developed. This evaluation will be an iterative process, folding in new data and information as it becomes available. Conclusions will be based on solid data, gathered as part of the monitoring program.

Items 8 and 9 are planned as four Articles for the 2013 Fall Town Meeting Warrant. They are part of the overall nutrient management project and will be the subject of public meetings during the summer and fall of 2013. In order to qualify for a zero-percent State Revolving Fund loan, Town Meeting must pass a "flow neutral" bylaw. Town Meeting will also consider whether homes within the sewered area can be exempted from connecting to the sewer if they install eco-toilets, the so-called 'checkerboarding' concept. Town Meeting must vote a "betterment" percent for capital costs associated with installation of the sewer collection system. This vote will determine what percent of the capital costs will be paid by the property owner directly 'bettered' by the sewer, and what percent will be paid by the taxpayers of the Town. The last Article will ask for authorization to file Special Legislation so that the homeowner's portion of a betterment can be tailored to the specific needs of Falmouth's Plan. This legislation would lower the yearly payments of the homeowner. The last Article will also ask for authorization to file Special Legislation so that costs borne by the homeowner can be lessened by paying a reduced interest rate, over a longer period of time, at an equal amount per year like a mortgage. The Town's goal is to make the wastewater costs as affordable as possible.

Item 10: In January 2014, the State will publish the SRF list of projects that it intends to fund in the next funding cycle. The Falmouth projects will be ranked along with all other projects in the State seeking funding assistance. Falmouth will be asking for funding for a 'multi-year' project.

Item 11 focuses on the next 'window of opportunity' for issuing new debt to replace old debt. The 'window' may be used for a variety of needed Town projects. Town Meeting will vote the construction dollars for a 30-year bond for Little Pond Lower Watershed and widening of Bourne's Pond Inlet, *contingent on receiving a SRF loan*. Depending on whether the 'flow-neutral bylaw' passes or not, the SRF loan request will be at zero-percent or 2-percent. A ballot vote is also necessary to approve the bonding as debt exclusion. The tax rate will remain stable.

Item 12 focuses on the Town's need to pass a 'flow neutral' bylaw and Chapter 312, Acts of 2008, Section 10 as part of the plan to receive SRF loans. This vote will be on the April 2014 Warrant along with the construction bonding request.

Item 13 - 15: By October 15, 2014 a full SRF application [Item 13] will be submitted with all required items in place. Detailed design and bid documents will be in progress [Item 14] with submittals to the State as progress reports. In January 2015, [Item 15] the State will decide to commit funds and issue an Approval to Bid for construction of the Little Pond Lower Watershed sewer system and associated upgrades at the WWTF.

Item 16: Construction will begin July 2015, first on the Little Pond Sewer Service Area for an estimated two years, and subsequently on the Bourne's Pond Inlet Widening when the permitting for that project is complete.

ES.4.3 Financial Planning and Key Milestones: 2020 to 2040

By 2020, construction of the projects chosen to manage nitrogen in some of the coastal ponds of the Planning Area should be completed. Falmouth will then evaluate the results of the various projects constructed so far, decide on priorities for the next project, and prepare design and seek SRF funding if it exists. Construction would start in 2025. The same process would continue with funding opportunities in 2030 and 2035. The success of the projects constructed during the decade from 2011 to 2020 will help to determine the best course of action to take in subsequent years until the nitrogen management issues of all of Falmouth's coastal ponds have been addressed.

ES.5 CWMP Project Completion and Implementation Timing

ES.5.1 Background

The information provided in Table ES-2 is a more detailed accounting of the many projects that will take place during the decade from 2011 to 2020. The 'start' and 'finish' dates are best estimates,--not exact dates—of the mini-steps needed to complete each task or project. The WQMC and the Falmouth Board of Selectmen will make their best efforts to meet this timetable, but there is always the potential for unforeseen delays or missing information. The timetable for some projects is also dependent on timely feedback from agencies and regulators. This timetable will be used as a tool to track progress on the various water quality management initiatives underway in Falmouth.

ES.5.2 Process of Approving the CWMP/EIR/TWMP (Items 1 through 8)

The Town submitted a Draft Comprehensive Wastewater Management Plan/Draft Environmental Notification Form (DCWMP/DEIR) to the Executive Office of Energy and Environmental Affairs (EOEEA) in September of 2012. A Certificate from the Secretary of Environmental Affairs was issued on November 14, 2012. The Town responded to comments and has revised the document accordingly.

The process will continue as outlined in Table ES-2, items 4 though 8.

ES.5.3 Nitrogen Control Bylaw for Fertilizer (Items 9 through 13)

In July 2012, the WQMC began working with their technical consultant from Science Wares, Inc. to draft a Fertilizer Bylaw. This bylaw was developed through a process that included multiple meetings with stakeholder groups (landscapers, environmentalists, golf course superintendents) as well as coordination with the State's Department of Agricultural Resources. This bylaw was adopted at Fall 2012 Town Meeting.

Subsequent to the adoption of this bylaw, the lawn care lobby launched a campaign to defeat its acceptance by the State Attorney General's Office (AGO). The AGO rejected Falmouth's bylaw on May 15, 2013. The Town's legislative delegates have filed corrective legislation that will enable the AGO to approve the Nitrogen Control Bylaw.

ES.5.4 Baseline Monitoring Plan for Water Quality (Items 14 through 19)

Article 17 of the spring 2011 Annual Town Meeting (Article 17) provided funding to review existing data and conduct additional baseline monitoring as needed. Data on the environmental health of Falmouth's south coast estuaries has been collected subsequent to the dataset used for the MEP Reports for West Falmouth Harbor (2004), Little Pond (2004), as well as Great, Green, and Bournes Pond (2003) up to 2011.

Falmouth has contracted with SMAST to provide this historic baseline data and provide a Technical Report. This report will evaluate the data, present and discuss data analysis, identify data gaps, assess trends, discuss implications of the different water quality parameters, and gauge the present state of each estuary relative to the MEP nitrogen thresholds analysis. Where relevant, the baseline and trends related to TMDL compliance will be discussed.

In addition, Falmouth has developed a Scope of Work in conjunction with SMAST and the Falmouth Conservation Commission for Little Pond as part of the Shellfish Demonstration Project. This monitoring includes both bi-weekly sampling analysis of: temperature, total nitrogen (nitrate + nitrite, ammonia, dissolved organic nitrogen, particulate organic nitrogen), chlorophyll-a, pheophytin-a, orthophosphate, salinity, dissolved oxygen, transparency (secchi depth), and other parameters as specified in the in the Quality Assurance Project Plan (QAPP) developed for the MEP reports, as well as hourly monitoring of dissolved oxygen (DO), turbidity, chlorophyll-a (via fluorescence), temperature, and pH, for a two-month period using in-situ data collection instrumentation.

SMAST has been continuing baseline monitoring of Bournes Pond, Great Pond, and Green Pond in 2012 and beyond through PondWatch. In addition, a Scope of Work and Implementation Plan for monitoring at Bournes, Great, and Green Pond that is tailored to the implementation of demonstration projects will be developed.

MassDEP has indicated that three years of monitoring will be required to assist in the determination of a nitrogen-reduction credit for each demonstration project. In addition, Adaptive Management decisions will be made based on monitoring results. For each of the demonstration projects, the Town will be tracking the data carefully, and evaluating the monitoring results as soon as they become available. For example, the Town will begin looking at Little Pond in November 2013, when the data from the monitoring for the Shellfish Demonstration Project has been collected. It is expected that after the three years of monitoring, MassDEP will be able to formalize nitrogen-removal credits for each alternative.

ES.5.5 Sewer Extension to the Lower Watershed of Little Pond (Items 20 through 36)

Article 17 provided funding for preliminary sewer design and engineering. The contract with GHD Inc. for Engineering Services and Inlet Widening was finalized on October 1, 2012. Preliminary Design for the sewer extension to the lower watershed of Little Pond was completed on December 30, 2012.

At Spring 2013 Town Meeting, funds for design of the Little Pond sewer extension were unanimously approved. The May 21, 2013 ballot vote also passed. Design of that sewer extension will proceed to allow the design documents to be submitted for SRF review by the October 2014 timeframe.

ES.5.6 Shellfish Aquaculture Demonstration Project (Items 37 through 41)

Article 17 provided funding to develop a Shellfish Demonstration Project. The purpose of this project is to determine the effectiveness of oyster aquaculture to attenuate the excessive nitrogen load in Little Pond, one of the Town's most heavily impacted estuaries. Through a water-quality monitoring program, combined with assessments of nitrogen uptake into oyster growth, an estimate will be made of the nitrogen-reduction attributable to oyster aquaculture. MassDEP has indicated that three years of monitoring will be required to assist in the determination of a nitrogen-reduction credit for oyster aquaculture. Once established, these credits could be used to implement oyster aquaculture projects to meet nitrogen TMDL thresholds for both Little Pond and other degraded estuaries.

Woods Hole Group was hired as a consultant to the Shellfish Demonstration Project. WHG has prepared Technical Memoranda including presenting the results of the shellfish viability test that was conducted in the summer of 2012, presenting the results of a Standing Stock Assessment of Little Pond, and providing planning estimates of the nitrogen uptake of various shellfish species. WHG also provided a TM outlining project specifications and cost estimates.

All permits were obtained prior to implementation of the three-year Shellfish Demonstration Project. A total of 2.5 million oysters will be grown in two batches (early and late) during the summer of 2013. This project is currently underway, with the first batch of seed oyster installed in the Town upweller on June 3, 2013. These seed were grown, tested, and relayed to Little Pond beginning on July 3, 2013. The second batch of seed was installed in the upweller on July 22, 2013 and will be grown, tested, and relayed to Little Pond in mid-August, 2013.

A Monitoring Plan for the first year has been developed that has been reviewed by MassDEP, which has no objections. In addition, the Falmouth Conservation Commission reviewed this plan as part of the Notice of Intent hearing, and formalized its approval within their Order of Conditions (MassDEP Permit #25-3915). See Appendix 3-1.

ES.5.7 Inlet Widening Project (Items 42 through 50)

Article 17 provided funding to investigate inlet widening at Bournes and/or Little Pond. A Contract with GHD Inc. for Engineering Services and Inlet Widening was finalized on October 1, 2012.

GHD has completed a Technical Memorandum (BP-TM-1) which presents preliminary design evaluations for an enlarged inlet and new bridge over Bournes Pond, as well as an analysis of the nitrogen removal benefits of a larger inlet as determined by water-quality modeling. GHD is assisted by Applied Coastal Research and Engineering (ACRE) who is providing hydrodynamic and water-quality modeling to determine the optimized size of the proposed new inlet and identify the nitrogen removal benefits of a larger opening; and BETA Group Inc. who provided preliminary design information on the proposed new bridge and roadway changes.

Design and permitting costs of a widening of Bournes Pond inlet is estimated to be $700,000, of which $400,000 will be paid from Article 17. Spring 2013 Annual Town Meeting unanimously approved funding the balance ($300,000). Ballot approval was on May 21, 2013.

The following tasks have been completed:

- Evaluation of alternative designs for a new Bournes Pond inlet opening and bridge.
- Cost development for the preferred alternative, which is an opening with a new bridge with a 90-foot opening as opposed to the current 50-foot opening.
- Hydrodynamic and water quality modeling to estimate the effective nitrogen removal of the new inlet.
- Cost comparison with traditional wastewater management to remove the same amount of nitrogen.
- Conclusion that this non-traditional nitrogen management method is very cost-effective. Inlet opening is less than half of the cost of sewer extension and wastewater treatment to remove the same amount of nitrogen.

The next steps of this project include:

- Coordination with a broader group of stakeholders.
- Development and review of the needed documents to gain MEPA and local approvals.
- Development and review of additional needed local, State, and Federal permits.
- Project implementation.
- Monitoring of water quality changes attributable to the new opening.

ES.5.8 Eco-Toilet Project (Items 51 through 56)

Article 17 provided funding to investigate the use of composting and urine-diverting toilets (eco-toilets) and denitrifying septic systems in order to determine the cost and feasibility of their installation and operation, their public acceptability, and the achievable level of nitrogen removal. The Falmouth Board of Selectmen have authorized $80,000 to provide incentives for an initial set of up to 15 eco-toilet installations (Demonstration Group I), and the Town has signed a Memorandum of Agreement with the Barnstable Department of Health and Environment (BCDHE) to establish the pre-installation nitrogen concentration of the septic tank effluent, and perform monthly monitoring of the septic tank effluent that results after an eco-toilet has been installed. Falmouth has also contracted with Science Wares, Inc. as a technical consultant to assist in the design and implementation of an eco-toilet demonstration program.

A significant barrier to implementation was identified. Urine-diverting fixtures, source separators, and other pilot-stage urine-diverting toilet technologies do not currently have a Product Acceptance number from the State Board of Plumbers and Gas Fitters, and are therefore illegal to install in the State. Science Wares worked with the local plumbing inspector, State plumbing board, and BCDHE to obtain a variance for Test Site Status for up to 40 test sites to enable urine-diverting fixtures to be installed. This has paved the way for significantly more installations than would have been feasible with composting toilets alone.

The first phase of this program (Demonstration Group I) is well underway. Approximately 15 property owners have committed to replace all of the standard toilets in their home with eco-toilets and allow two years of monitoring. Board of Health and building permits have been granted for three standard composting-toilet installations, with more to be approved by the end of June. In addition, approximately six urine-diverting installations are in the design and permitting stage. All installations are expected to be complete by August 2013, with monthly monitoring by BCDHE to commence concurrently. MassDEP has suggested that data from a total of 62 installations will be necessary to establish regulatory credit for the nitrogen-removal capacity of eco-toilets. The Town is actively identifying additional participants to meet this regulatory requirement.

ES.5.9 Permeable Reactive Barrier Project (Items 57 through 64)

Article 17 provided funding to develop a demonstration project for Permeable Reactive Barriers. On December 31, 2012, CDM Smith was hired to design and permit PRBs in up to two locations, one in the West Falmouth Harbor watershed.

CDM Smith has completed two Technical Memoranda (TMs) and has presented their findings to the WQMC working group, State and local regulatory agencies, and at a public meeting of the WQMC. These TMs include the evaluation criteria and preliminary site selection for the PRB pilot project. Subsequent

TMs will address details of permitting, and surface and groundwater monitoring. A site has been selected for West Falmouth, and two sites are under consideration in East Falmouth.

ES.5.10 Little Pond Stormwater Control Project (Items 65 through 66)

Falmouth's Engineering Department is responsible for implementing the Phase II requirements for the Town's National Pollutant Discharge Evaluation System (NPDES) permit and has been moving forward with compliance. Efforts within the Little Pond watershed include updating outfall maps for the Little Pond watershed to identify all of the stormwater run-off into Little Pond, a public education campaign, and street cleaning.

Preliminary evaluations have begun to determine appropriate Best Management Practices for this watershed, such as bio-retention. This evaluation process is being informed by the Environmental Protection Agency's (EPA) Green Infrastructure objectives and other current research results such as University of New Hampshire Stormwater Center (UNHSC) project to optimize nitrogen removal from stormwater treatment systems. The Town, through its Engineering Department, other appropriate departments and boards, as well as technical consultants, will pursue feasible BMP solutions as part of the sewer construction for this watershed.

In addition, the Falmouth Conservation Commission is revising their Stormwater Regulations. Nitrogen-reduction BMP requirements will be part of this update. Data on the nitrogen loading from the outfall at Narragansett Street within the Little Pond watershed will be collected as part of the Shellfish Demonstration Project.

ES.5.11 Denitrifying Septic System Project (Items 67 through 69)

Article 17 provided funding to investigate the use of composting and urine-diverting toilets (eco-toilets), and denitrifying septic systems. The WQMC is working closely with Barnstable County Department of Health and Environment to the evaluate technologies that are promising based on published studies, and results from the BCDHE database of Innovative/Alternative (I/A) septic systems. In addition, BCDHE is planning to implement a pilot project for a passive, non-proprietary denitrification system. The findings of this project as well as the technical evaluations will guide future efforts to implement I/A systems.

ES.6 Summary

This CWMP/FEIR/TWMP is the result of many years of work by the Town of Falmouth and its Water Quality Management Committee, CWMP Review Committee, Nutrient Management Committee, Board of Selectmen, and Town Departments led by the Department of Public Works. It has been greatly assisted by the efforts of the Massachusetts Estuaries Project (comprised of MassDEP, SMAST, the Cape Cod Commission, and others) to develop the nitrogen limits and TMDLs for the estuaries in the Planning Area.

This plan is developed to remediate the current nitrogen loading problems of the estuaries in the Planning Area and in West Falmouth Harbor. It represents a strong commitment by the Town to maintain a healthy environment in Falmouth for regulatory compliance and for the Town's people to enjoy for generations to come.