Appendix – Chapter 1.1

Secretary's Certificates and Article 17 April 2011 Annual Town Meeting

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January 10, 2014

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
FINAL ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Comprehensive Wastewater Management Plan (CWMP) Project and Targeted Watershed Management Plan (TWMP)
PROJECT MUNICIPALITY	: Falmouth
PROJECT WATERSHED	: Cape Cod
EEA NUMBER	: 14154
PROJECT PROPONENT	: Town of Falmouth
DATE NOTICED IN MONITOR	: December 4, 2013

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62I) and Section 11.08 of the MEPA regulations (301 CMR 11.00), I have reviewed the Final Environmental Impact Report (FEIR) for the above-referenced project and hereby determine that this project ***adequately and properly complies*** with MEPA and its implementing regulations.

The Town of Falmouth has engaged in a proactive effort to improve water quality within its watersheds. The FEIR represents a commitment to evaluate, design and construct both traditional and innovative technologies to reduce nitrogen loading to the watersheds. The Town proposes to employ an adaptive management approach to assess and target attainment of water quality goals and standards. Adaptive management acknowledges the uncertainties in design and implementation of projects, carefully monitors outcomes, assesses progress in a transparent fashion and requires recalibration of plans and projects as necessary. Comments on the FEIR from the Massachusetts Department of Environmental Protection (MassDEP), CCC, and the Buzzards Bay Coalition and others express strong support for the Town's commitment, in terms of planning and financing, to advance high priority projects and recommend that the FEIR be found adequate. Information regarding the effectiveness of proposed pilot projects will support wastewater planning throughout Cape Cod and provide information that may be useful to MassDEP, the CCC and other coastal communities that face similar wastewater challenges.

Degradation of Cape Cod's water resources stemming from excessive nutrient contamination is not only one of the most significant environmental challenges facing the Cape, but also presents serious potential economic impacts, including a decline in fishing, shell fishing, tourism and property values. Increased population and development in those areas surrounding Cape Cod's estuaries have resulted in excessive amounts of nutrients being discharged into these sensitive resources, causing serious impacts to water quality. Based on studies from the Massachusetts Estuaries Project (MEP), MassDEP estimates that more than 90 percent of the Cape's estuaries do not meet water quality standards. The FEIR, MassDEP and CCC identify the importance of regional wastewater planning to tackle these issues. They note the ongoing effort, through the Section 208 Wastewater Management Plan Update, to evaluate the cost and effectiveness of regional wastewater management efforts and to build capacity and support for inter-municipal cooperation. This effort has the potential to improve water quality on Cape Cod more efficiently, with lower costs and less physical infrastructure, than the typical CWMP process implemented by an individual municipality. The Updated 208 Plan should be completed within two years and will provide information that can be employed by the Town of Falmouth and other municipalities.

As noted above, comments are supportive of finding the FEIR adequate; however, these comments and the FEIR acknowledge that the suite of projects proposed within the CWMP will not achieve nitrogen reductions required to meet water quality standards and, in particular, the Total Maximum Daily Loads (TMDLs) for nitrogen. However, the FEIR represents an evolution towards the development and implementation of a Targeted Wastewater Management Plan (TWMP) for each of the Town's coastal watersheds and includes concrete commitments to projects, including sewering of the lower watershed of Little Pond and increasing tidal flushing in Bourne's Pond, that will provide significant reductions in nitrogen loading.

Additional analysis of the cost and effectiveness of alternatives, targeted analysis of alternatives for each watershed, and evaluation of regional solutions will ensure that plans to meet short-term and long-term water quality goals and standards will be developed. To support the Town's adaptive management approach to developing long-term solutions and in acknowledgement of the Town and its residents concrete support for projects that will reduce nitrogen levels in the short-term, I have determined that the FEIR adequately and properly complies with MEPA and its implementing regulations. This determination is conditioned upon the Town's agreement to file a Notice of Project Change (NPC) for the purpose of evaluating progress, presenting the results of data and employing this information to re-examine alternatives for each sub-watershed and, as necessary, revise the CWMP. The NPC will include: an update on construction of the Little Pond sewering and on design, construction and implementation of pilot projects; documentation of progress towards achieving TMDL's for each sub-watershed; and, based on the information developed over this time period, reanalysis of the CWMP.

In addition, as proposed in the FEIR, the Town will file individual NPCs for Pilot Projects that, individually, meet or exceed MEPA thresholds. The purpose of the individual NPCs is twofold: 1) identify the project's potential contribution towards attaining water quality standards; and, 2) identify potential environmental impacts, summarize alternatives considered to avoid, minimize and mitigate impacts, and identify measures that will be incorporated to avoid, minimize and mitigate impacts.

Permits and Jurisdiction

The project is undergoing MEPA review and requires a mandatory EIR pursuant to: Section 11.03(5)(a) because it involves construction of a new wastewater treatment and disposal facility with a capacity of 2,500,000 gallons per day (gpd), and Section 11.03(5)(a)(3) because it will result in construction of one or more new sewer mains ten or more miles in length. The project may also meet or exceed mandatory EIR thresholds for land and wetlands. The project is subject to review pursuant to Section 11.03(1)(b)(1) because it will result in alteration of 25 or more acres of land; Section 11.03(1)(b)(3) because it may involve conversion of land held for natural resource purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97; Section 11.03(2)(b)(2) because it may involve a 'take' of an endangered or threatened species; Section 11.03(3)(b)(1)(d) because it may involve alteration of 5,000 or more square feet (sf) of bordering vegetated wetlands; Section 11.03(b)(1)(f) because it may involve alteration of 1/2 or more acres of other wetlands; Section 11.03(b)(10)(b)(2) because it may involve destruction of an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth; and Section 11.03(11)(b) because the project is located within a designated Area of Critical Environmental Concern (ACEC).

The project requires a Groundwater Discharge and Sewer Extension/Connection Permits, from the Massachusetts Department of Environmental Protection (MassDEP). The project also requires a 401 Water Quality Certification and Chapter 91 License and may require dredging permits from MassDEP. The project requires an Order of Conditions from the Falmouth Conservation Commission (and, on appeal only, a Superseding Order from MassDEP). The project is subject to review by the Cape Cod Commission as a Development of Regional Impact (DRI) and is undergoing a joint MEPA/Cape Cod Commission review process. The proposed project may require an Act of Legislation for disposition of Article 97 land and may require a Conservation and Management Permit from the Division of Fisheries and Wildlife (DFW), Natural Heritage and Endangered Species Program (NHESP) and other approvals from DFW. The project is subject to the MEPA Greenhouse Gas Emission Policy and Protocol (GHG Policy). The project will also require a National Pollutant Discharge Elimination System (NPDES) Construction Activities Permit from the U.S. Environmental Protection Agency (EPA).

The Town will receive Financial Assistance from the Commonwealth through the State Revolving Fund (SRF). Therefore, MEPA jurisdiction is broad and extends to all aspects of the project with the potential to cause Damage to the Environment as defined in the MEPA regulations.

Procedural History

The Town of Falmouth's comprehensive wastewater management planning process was developed to address nitrogen loading issues and water quality problems that have been documented by the MEP for Little Pond, Great Pond, Green Pond, Bournes Pond, and Waquoit Bay. The MEP technical reports provide information that identifies excessive nitrogen loads for each of these estuaries. The MEP reports developed nitrogen thresholds to restore these systems and developed potential nitrogen reduction scenarios that allow these systems to meet their respective thresholds. The MEP nitrogen thresholds were subsequently adopted by the

Massachusetts Department of Environmental Protection (MassDEP) as TMDLs pursuant to the Federal Clean Water Act.

An Environmental Notification Form (ENF) was filed in 2002 to initiate the Town's CWMP process to identify wastewater management approaches and potential sites for wastewater treatment and disposal. It identified the nutrient loading limits and nutrient TMDLs for each of Falmouth's coastal embayments. It included a Needs Assessment to quantify the nitrogen reductions necessary to meet TMDLs and an Alternatives Screening Analysis to evaluate alternative wastewater and nutrient management technologies and solutions. Three potential wastewater management plans for the 2030 design year were identified for further evaluation. The ENF included a proposed implementation schedule for the construction of new and expanded wastewater management treatment, conveyance and discharge facilities, management structures, local regulations and funding requirements.

The ENF described the water quality modeling that was conducted to determine the potential nitrogen reduction benefits for the South Coastal embayments from sewering and inlet widening. The results of these studies indicated that sewering the Town's CWMP Planning Area with discharge of treated wastewater flows at the Falmouth Country Club and widening of the Bourne's Pond inlet would support attainment of TMDLs. Water quality modeling results for the West Falmouth Harbor indicated that the TMDL for the West Falmouth Harbor watershed could be achieved with upgrades to the Blacksmith Shop Road Wastewater Treatment Facility (WWTF) and indicated that portions of the West Falmouth Harbor watershed would need to be sewered.

MassDEP issued a Groundwater Discharge Permit on November 2, 2011 authorizing the Town of Falmouth to discharge treated wastewater effluent from the WWTF. The Town and the Buzzards Bay Coalition appealed the Permit. In June 2012, the Town, MassDEP and the Buzzards Bay Coalition, entered into a Settlement Agreement and DEP issued a Modified Groundwater Discharge Permit. The Permit required the Town to implement upgrades and improvements to the WWTF flow metering system (Flow Measurement Plan) and nitrogen removal technology (Nitrogen Removal Optimization Plan) and required the Town to submit a Draft CWMP to MassDEP by December 3, 2012, including a plan and schedule to bring West Falmouth Harbor into compliance with the West Falmouth Harbor TMDL and Surface Water Quality Standards by December 2, 2016. The Permit also required that, within 45 days of the issuance of the Secretary's Certificate on the Draft CWMP (issued on November 14, 2012), the Town would submit to MassDEP a plan and schedule for the removal of 30,000 gpd of Infiltration and Inflow (I&I) from the Town's wastewater collection system.

In September 2012, the Town submitted a Draft Environmental Impact Report (DEIR) describing revisions to the project design and the Town's preferred project alternative. As described in the DEIR, the Town revisited the Alternatives Screening Analysis completed as part of the ENF submittal to include the evaluation of additional alternative wastewater and nutrient management technologies and solutions. The Town's revised analysis of wastewater treatment alternatives identified specific opportunities for innovative on-site technologies, tidal flushing, aquaculture and permeable reactive barrier (PRB) demonstration projects, and non-structural nitrogen reduction management strategies consisting of fertilizer controls and stormwater management that could support attainment of TMDLs for the coastal embayments in Falmouth

for a 20-year (2015-2035) period. The DEIR incorporated these Pilot Projects into the CWMP as a means of reducing nitrogen at a lower cost than traditional sewering.

The DEIR identified Scenario 1E as the Preferred Alternative. It included the phased construction of new sewers to serve Phase 1 and 2 Nitrogen Management Areas in the South Coast Watershed including Little Pond, Great Pond, Green Pond, Bournes Pond, Waquoit Bay East. It also proposed the phased expansion of the WWTF to accommodate the increases in wastewater flow generated by sewering Phase 1 and 2 Areas, including construction of recharge beds in two locations (Site 7 and 10). The DEIR indicated that nitrogen removal within the Phase 1 and 2 areas would be phased over a 20-year period ending in 2040. The Certificate on the DEIR was issued on November 14, 2012. It indicated that the DEIR was adequate and provided a Scope for the FEIR.

Review of the FEIR

The development and review of the ENF, DEIR and FEIR have provided a comprehensive evaluation of wastewater and nitrogen management planning evaluations, evaluations of traditional and non-traditional wastewater management technologies, a summary of environmental impacts associated with the Town's recommended CWMP, and discussion of the Town's CWMP planning process completed to date. The CWMP/TWMP presents the Town's strategy for achieving water quality standards, including nitrogen TMDLs, for its six South Coast watersheds over a 20-year period ending in 2035. The Town has identified and evaluated a variety of approaches to attaining water quality standards which range from extensive sewering to the strategic incorporation of non-traditional measures for removing nitrogen from the watersheds.

The FEIR identifies changes in the Town's approach to wastewater planning since the filing of the DEIR. The DEIR proposed the phased sewering in the lower portions of each of the South Coastal watersheds. The current CWMP/TWMP shifts the focus to development of a TWMP for Little Pond, Bourne's Pond and the West Falmouth Harbor watersheds and a plan for advancing Pilot Projects throughout the sub-watersheds.

Changes to the CWMP/TWMP since the filing of the DEIR include:

- Extension of 16.5 miles of new sewers to the lower Little Pond watershed area including a small area of the Great Pond watershed. Proposed sewering of remaining Phase 1 and Phase 2 Areas will be reevaluated if necessary to meet TMDLs;
- Design and construction of improvements and upgrades to the Blacksmith Shop Road WWTF to comply with the Modified Groundwater Discharge Permit requirements;
- Selection of recharge Site 7, located outside of the West Falmouth Harbor watershed area, to recharge increase in wastewater flow associated with the Little Pond sewering project.

The FEIR notes progress in advancing projects, and the strong support of Town residents for the CWMP/TWMP demonstrated by the authorization of $2.7 million for planning and design of demonstration projects and $5.6 million for project construction. The April 2014 Town meeting will include a vote to authorize a $90 million 30-year construction bond to implement

CWMP/TWMP projects, including the construction of the Little Pond Sewer Service Area, upgrades to the Blacksmith Shop Road WWTF and the Bourne's Pond inlet widening project. The Little Pond sewering project cost is estimated at $49 million and includes annual operation and maintenance costs of $200,000.

The FEIR acknowledges that these projects will not achieve the TMDLs for each watershed. The Town intends to assess the viability and effectiveness of the Pilot Projects and employ adaptive management in the ongoing development of wastewater management planning. As noted previously, the submission of an NPC will provide an opportunity to evaluate the effectiveness of the CWMP/TWMP, to assess progress towards meeting TMDLs and to use this information to inform long-term strategy to attaining water quality goals.

The CWMP includes the construction and monitoring of a number of non-traditional wastewater and nutrient management Pilot Projects designed to help reduce or attenuate nitrogen loading to coastal embayments and ponds in Falmouth. The intention is that, upon a demonstration of success, Pilot Project technologies will be formally incorporated into the Town's CWMP to help achieve TMDL compliance for each of the South Coast watersheds. The CWMP/TWMP includes implementation of five types of Pilot Projects: shellfish aquaculture (oysters); inlet widening; composting, packaging and urine diverting toilets (Eco-toilets); Permeable Reactive Barriers (PRBs) for groundwater treatment; and, stormwater management best management practices (BMPs). It describes progress and plans for implementation of each of these types of projects.

The CWMP/TWMP identifies specific Pilot Projects to be constructed in the Little Pond, Bourne's Pond and West Falmouth Harbor watersheds including a shellfish aquaculture project and improved stormwater management in the lower Little Pond watershed, Bourne's Pond Inlet Widening and a PRB project in the West Falmouth Harbor watershed. Preliminary design has been conducted for the Bourne's Pond inlet widening project and water quality modeling has been used to analyze benefits of alternative inlet sizes. The CWMP includes an Adaptive Management Plan (AMP) that provides a process for the investigation and evaluation of the Pilot Projects and their feasibility for inclusion in the Town's CWMP. The need for additional sewering to achieve TMDL compliance for each of the Town's six South Coastal watersheds will continue to be evaluated.

In addition, the FEIR notes the Town's efforts to adopt a Nitrogen Control Bylaw (for fertilizer) and assessment of the feasibility and performance of individual property and clustered nitrogen removal systems (denitrifying septic systems). It notes that these initiatives are not proposed specifically as demonstration projects but that they could result in nitrogen reductions.

The FEIR provides an implementation schedule (2015 – 2035), including estimated costs and financing plans. The schedule provided in the FEIR indicates that a SRF application will be submitted the last quarter of 2014, the Little Pond Sewering project will be put out to bid in 2015, and the sewer system and the Bourne's Pond Inlet widening will begin construction in 2015 with a targeted completion date of 2017. Monitoring and analysis of short-term projects is proposed from 2017 – 2020.

MassDEP comments indicate that it is supportive of Falmouth's approach to preparing the CWMP – focusing on watersheds only in Falmouth and relying on adaptive management – and that this approach is acceptable. However, additional work is required for remaining sub-watersheds because the CWMP/TWMP does not clearly demonstrate how the Town will meet TMDLs in each of its watersheds. Falmouth will need to provide additional information to MassDEP on a watershed-by-watershed basis as they advance Pilot Projects and seek SRF assistance for projects.

Little Pond TWMP

The Little Pond TWMP includes the construction of new sewers to serve 1,400 properties (1,700 properties at build-out) located in the lower Little Pond watershed (Little Pond Sewer Service Area) and a number of properties located within the Great Pond watershed. It includes upgrades to the Blacksmith Shop Road WWTF flow-metering and nitrogen removal systems and construction of an additional recharge site (Site 7) to accommodate increased flow (260,000 gpd) associated with the sewering of Little Pond. The sewer collection system will consist of gravity and low pressure sewers located in existing roadways and two lift (pump) stations to convey flows to the existing sewer collection system and the Blacksmith Shop Road WWTF. According to the FEIR, this project will provide approximately 88% of the nitrogen removal required to meet the TMDL for the Little Pond watershed.

A 2-acre oyster farm is proposed for Little Pond to increase nitrogen uptake. The FEIR indicates that a 4-5 acre farm could mitigate the seasonal nitrogen load in Little Pond. In addition, depending on results of the Bourne's Pond Pilot Project, the Town may consider inlet widening at Little Pond.

Comments from MassDEP indicate that, with the provision of additional information in permitting, the projects identified in the FEIR for the Little Pond watershed will constitute an approvable TWMP. The comments note MassDEP's full support for the projects proposed to address water quality impairment in the Little Pond watershed. MassDEP considers the two major capital projects proposed as part of the CWMP/TWMP (i.e. the sewering of the Lower Little Pond watershed and the Bourne's Pond inlet widening) as important components of an overall nutrient management plan and, subject to appropriate permitting review, should move forward. MassDEP will evaluate the improvements to each waterbody affected by these projects and work with the Town to develop a clear implementation plan and schedule, including appropriate contingencies, to ensure TMDL compliance. In addition, MassDEP comments indicate that an approvable TWMP will satisfy SRF requirements necessary to secure 0% financing for the proposed project.

Blacksmith Shop Road Wastewater Treatment Facility

The CWMP/TWMP includes proposed upgrades and improvements to the WWTF flow metering and nitrogen removal systems to comply with its Modified Groundwater Discharge Permit requirements and to accommodate increased flow associated with the Little Pond sewering project (260,000 gpd). Because the improvements and upgrades will be located within the existing WWTF site, land alteration associated with this project component is limited.

It also includes a plan to bring West Falmouth Harbor into compliance with the West Falmouth Harbor TMDL and Surface Water Quality Standards by December 2, 2016 as required by its Modified Groundwater Discharge Permit. It does not propose sewering within the West Falmouth Harbor watershed and limits the amount of treated wastewater flow that can be discharged within this watershed to 500,000 gpd. It includes a commitment to remove 30,000 gpd of infiltration and inflow (I&I) from the wastewater collection system, installation of a PRB in the West Falmouth Harbor watershed (Site 5), and adoption of a Comprehensive Nitrogen Control Bylaw for Fertilizer.

To address concerns that recharge of treated wastewater at Site 7 could affect water quality at Wing Pond and Crocker Pond, the FEIR provides historic monitoring data for Crocker Pond and the results of re-modeled groundwater flow from Site 7 to better simulate the hydrogeologic conditions, the groundwater surface water interfaces and the recharge areas for both waterbodies. The modeling results indicate that the recharge site will not affect water quality in Wing Pond or Crocker Pond. Comments provided by CCC indicate that the recharge site poses a low risk to the water quality of Crocker Pond. CCC recommends that the Town implement a robust water quality monitoring program for Crocker Pond to ensure that the pond's ecological integrity is protected and improved. The FEIR indicates that the water quality monitoring program will include baseline water quality monitoring for Crocker Pond and that the Town will participate in the Ponds and Lakes Stewardship's (PAL) freshwater pond sampling program to properly characterize the water quality conditions of ponds and develop a ponds action plan for freshwater ponds located in the CWMP project area.

MassDEP comments commend the Town for its efforts to address issues associated with the groundwater discharge at Site 7. Modeling demonstrates that, at a proposed recharge of 280,000 gpd (sufficient to accommodate the flow from the Little Pond sewer area of service), there is unlikely to be an impact on West Falmouth Harbor. MassDEP indicates that the monitoring program should also evaluate impacts on Herring Brook.

Pilot Projects

The CWMP/TWMP includes the construction and monitoring of Pilot Projects to reduce or attenuate nitrogen loading. These projects include:

- Inlet widening to increase tidal flushing and reduce concentrations of nutrients and other contaminants in a pond.
- Oyster aquaculture designed to promote nitrogen uptake by shellfish.
- Permeable Reactive Barriers (PRBs) for groundwater treatment in West Falmouth. PRBs consist of installation of a reactive material along the length of an estuary's shoreline. Groundwater flows through and reacts with the nitrate to convert it into nitrogen gas.
- Stormwater management through best management practices (BMPs) at Little Pond.
- Composting, packaging and urine diverting toilets (Eco-toilets).

The Town is optimistic that the proposed projects can significantly reduce nitrogen loading to groundwater and downgradient water bodies and coastal embayments. The final CWMP/TWMP identifies three Pilot Projects that are proposed for construction over a five-year time frame to 2020, concurrent with the Little Pond sewering, and identifies plans and processes

to advance design, development and evaluation of other projects. MassDEP comments include support for advancing these Pilot Projects and associated monitoring so that the findings can be employed in the Town's watershed planning efforts.

Comments from the Department of Fish and Game's (DFG) Division of Marine Fisheries (DMF), indicate that aquaculture projects will require annual shellfish permits. The Town should consult with the Division during final project design to identify the project's potential impacts to marine fisheries habitats (e.g. eelgrass, flounder spawning habitat) in addition to its potential impacts to diadromous fish species.

Water Quality Monitoring and Adaptive Management

The FEIR provides a brief description of the Town's proposed baseline water quality monitoring plan for groundwater and surface waters to establish a baseline understanding of existing water quality of Falmouth's South Coast watersheds that will be used to identify and evaluate the nitrogen reduction impacts of the CWMP/TWMP and inform the Town's long-term adaptive management planning process. The Town's baseline monitoring plan incorporates water quality data for the estuaries collected by the School of Marine Science and Technology (SMAST) for the Massachusetts Estuaries Project (MEP) during the 2000-2010 period and annual water quality data collected by the Pond Watchers since 2006. In addition, the Town has appropriated funds for additional baseline monitoring that includes five sample events per summer season and surveys for benthic infauna organisms approximately every five years. Groundwater monitoring is ongoing at the Blacksmith Shop Road site and will include the new recharge bed.

In March 2009, MassDEP revised its Groundwater Discharge Regulations (314 CMR 5.00) to limit the amount of carbon-based compounds and contaminants typically found in pharmaceuticals and personal care products (Contaminants of Emerging Concern (CEC)) in treated wastewater flows discharged in Zone II areas. MassDEP's groundwater discharge regulations establish a low limit (3 milligrams per liter (mg/L)) for Total Organic Carbon (TOC) in wastewater effluent discharged to Zone II areas. MassDEP's TOC regulations are intended to provide increased protection of groundwater resources by limiting naturally occurring and man-made forms of organic carbon present in treated wastewater.

The FEIR provides a discussion of potential impacts of carbon-based compounds and contaminants typically found in pharmaceuticals and personal care products (Contaminants of Emerging Concern (CEC)) from wastewater discharges from the Blacksmith Shop Road WWTF and the proposed new Site 7 wastewater effluent recharge site. The FEIR acknowledges a potential environmental health concern for CEC concentrations in treated wastewater recharge from the Blacksmith Shop Road WWTF, particularly to downgradient water resources areas including Crocker Pond, West Falmouth Harbor and Buzzards Bay. The water quality monitoring program will support development of a baseline and identification of trends in the presence of CECs in groundwater downgradient of the Blacksmith Shop Road WWTF and associated recharge sites.

The CWMP/TWMP includes an Adaptive Management Plan (AMP) that provides a process for determining the demonstrated feasibility of Pilot Project technologies and their incorporation

into the Town's CWMP to help achieve TMDL compliance for each watershed. The AMP will also be used to identify the need for any adjustments or mid-course corrections to the Town's CWMP/TWMP based on the results of the water quality monitoring program. Comments from MassDEP note that specific triggers and/or thresholds for additional actions should be specified in the AMP.

Regional Wastewater Management and Nutrient Reduction Planning

As described in the FEIR, the Town is continuing to explore opportunities for shared regional approaches to achieve reductions of wastewater nitrogen loading and meet nutrient TMDLs in sub-watersheds shared with the Towns of Bourne, Mashpee and Sandwich, including the West Falmouth Harbor watershed and the Waquoit East and Waquoit West-Eel Pond watersheds. Additional wastewater treatment and disposal or reuse options may be required to support these potential shared regional approaches to reduce wastewater nitrogen loading and meet nutrient TMDLs to shared coastal embayments.

As noted previously, CCC is working with MassDEP and Cape Cod communities on the development of an updated 208 plan to improve water quality on Cape Cod more efficiently, with lower costs and less physical infrastructure, than the typical CWMP process implemented by an individual municipality. Planning objectives include development of a watershed-based approach to address nitrogen impacts and other community goals; identification of opportunities to achieve the greatest economies of scale through intermunicipal cooperation; identification of methods to equitably share costs among all parties benefitting from the improvements; and, development of a robust public participation process to build consensus for identified solutions.

MassDEP comments note that the CWMP/TWMP is generally consistent with the approaches being considered in the development of the updated Section 208 Plan. It identifies specific nitrogen remediation or reduced input projects only in watersheds that exist solely within Falmouth and indicates its support for assessing the viability of regional approaches as they are developed for the Section 208 Plan update. The updated 208 Plan should be completed within two years and, therefore, additional information should be available to the Town to provide a more focused assessment of the potential feasibility and effectiveness of regional solutions for Falmouth.

The FEIR provides design and cost estimates for an ocean outfall located at Nobska Point in Woods Hole and extending approximately 2,000 feet into Vineyard Sound at the confluence of Vineyard Sound, Buzzards Bay and Nantucket Sound. It acknowledges that the construction of an ocean outfall for the discharge of treated wastewater flows from the WWTF would eliminate a significant amount of nitrogen loading. It also notes the potential regulatory constraints, including the prohibition of the Ocean Sanctuaries Act (MGL c. 132A §15) against dumping or discharge of commercial, municipal, domestic or industrial wastes in an ocean sanctuary. The Ocean Sanctuaries Act includes a variance provision that would allow municipal wastewater treatment discharges if such discharge into the ocean sanctuary is the only feasible alternative to existing water pollution problems. According to CZM, this variance is not allowed in the Cape and Islands Ocean Sanctuary, the Cape Cod Ocean Sanctuary, or the Cape Cod Bay Ocean Sanctuary, which includes those waters surrounding the Town of Falmouth.

The FEIR suggests that further evaluation of this alternative is more appropriate within the context of regional wastewater planning conducted by the CCC. Comments from CZM, CCC and others support this suggestion and note that assessment of this alternative will require significant technical feasibility studies including studies and modeling of potential impacts to groundwater aquifers and the Vineyard and/or Nantucket Sound waters.

Rare Species

The WWTF site and recharge Site 7 are mapped as *Priority* and *Estimated Habitat* for the Eastern Box Turtle (*Terrapene carolina*), which is a state-listed species of Special Concern. The proposed wastewater pump stations, which are located outside of the roadway right-of-ways behind the Teaticket Elementary School at the northern end of the sewer service area and at the Falmouth Mall located in the central portion of the service area, are not located within the *Priority* or *Estimated Habitat* of state-listed rare species and will not require review for compliance with the MESA or the WPA.

Comments from NHESP recognize that proposed upgrades to the WWTF require minimal expansion of the facility and will not result in a "take" of state-listed species. In addition, the comments note that the recharge bed at Site 7 may be conditioned to avoid a "take". Conditions could include shifting of the beds within the identified site and the development of a turtle protection plan to minimize risk during construction.

Historic and Archaeological Resources

The Town conducted an archeological survey of the Site 7 recharge bed that identified a Native American find. According to the comments received from the Massachusetts Historical Commission (MHC), the find spot does not meet the eligibility criteria for listing in the National Register of Historic Places and, as a result, MHC is not recommending any additional archeological investigations. MHC requests that the Town provide it with information pertaining to additional CWMP/TWMP project plans as they are designed and that it continue to consider additional opportunities to avoid, minimize and mitigate the project's potential impacts to historical and archaeological resources.

Greenhouse Gas Emissions (GHG)

The project is subject to the MEPA GHG Policy. The Policy requires projects to quantify carbon dioxide (CO_2) emissions and identify measures to avoid, minimize or mitigate such emissions. Wastewater treatment process energy loads and subsequent CO_2 emissions play a larger role in the overall project's GHG emissions compared to the buildings that contain the facilities themselves. This is particularly true of the CWMP/TWMP because it is not proposing additional facilities or structures.

The FEIR includes a brief description of the proposed modifications and upgrades for the existing Blacksmith Shop Road WWTF, new pump stations and Site 7 recharge site. These systems and facilities represent potential direct and indirect sources of GHG emissions due to related electrical and thermal loads. The Policy directs proponents to use applicable building codes to establish a project emissions baseline that is "code-compliant." However, there is no

building energy code equivalent that applies specifically to WWTFs. Furthermore, there is no readily available energy use model (such as eQUEST) to estimate the projected energy use of the WWTF processing energy loads. The Town has used the EPA's Energy Star Portfolio Manager (ESPM) computer modeling program to quantify the energy usage associated with wastewater treatment technologies included in its final CWMP. Using EPA's ESPM, the Town has obtained a benchmark score of 13 (325.2 tons per year (tpy) CO_2 equivalent) for the existing WWTF flows and 21 (325.2 tpy CO_2 equivalent) for the proposed flows. The proposed flows does not incorporate energy efficiency measures that are identified in the GHG analysis and indicates that these measures will be considered in detail during preliminary and/or final design. It indicates that the Town's goal is to achieve a score of 50 or higher. As described in the FEIR, the Blacksmith Shop Road WWTF includes two on-site 1.65-megawatt (MW) wind turbines that produce electricity that meets the needs of the facility and provides excess electricity to the grid through a net metering arrangement with the local utility.

The DOER commends the Town's use of ESPM. It notes that the ESPM rank of 21 for proposed flows is below the national mean for WWTFs with the same input characteristics and climate zone. DOER strongly recommends that the Town incorporate measures identified in the FEIR, including energy recovery, system monitoring, optimized lighting, reduced ventilation and heating requirements, use of variable frequency drives in motors, and process optimization in final design of the facility improvements. Implementation of these measures could result in significant reductions in both the site and will support the Town's goal of improving its ranking. To the extent that the WWTF electrical load can be reduced, the wind generated power will offset other sources.

Mitigation/Section 61 Findings

The FEIR included a separate chapter on mitigation measures and draft Section 61 Findings for each State Agency Action. The FEIR identified each mitigation measure and the responsible party for implementation. Draft Section 61 Findings should be revised in response to this Certificate and provided to State Agencies as part of permitting to support the issuance of Final Section 61 Findings.

The FEIR identifies the following measures to avoid, minimize and mitigate impacts:

- Construct new sewers to serve approximately 1,400 properties located in the Little Pond and Great Pond watersheds;
- Avoid wetlands impacts through installation of sewer in existing roadways;
- Design and construction of sewers and associated infrastructure (e.g. pumping stations, pipes, etc.) to withstand coastal flood hazards;
- Pumping stations will be located outside of flood zones wherever possible, will be designed to withstand a 100-year storm and will be protected with a system of check valves in critical areas;
- Upgrade and improve the Blacksmith Shop WWTF design to attain 3 mg/liter total nitrogen and removal of suspended solids and biochemical oxygen demand (BOD) in wastewater effluent;
- Install wastewater recharge system at Site 7 located outside of the West Falmouth Harbor watershed;

- Design and implement a comprehensive water quality management plan to monitor water quality of coastal embayments and to identify reductions in nitrogen loading from the construction of the CWMP/TWMP projects;
- Provide annual water quality reports to MassDEP, CCC, DMF and the Buzzards Bay Coalition;
- Design and implement an AMP to evaluate the performance of Pilot Projects;
- Adopt a Flow Neutral regulation/bylaw for the Little Pond Sewer Service Area;
- Continue consultation with NHESP regarding specific conditions to minimize potential rare species impacts associated with the installation of groundwater discharge at Site 7;
- Consult with DOER regarding feasibility and effectiveness of GHG reduction measures at the WWTF to achieve a ESPM high rating index of 50 or greater;
- Continue to evaluate for implementation recommendations developed by the Town's Coastal Resources Working Group (CRWG) to protect the Town's beaches and coastal wetlands from detrimental impacts associated with climate change.
- Continue consultation with MHC on historic and archaeological issues. Conduct an intensive (location) archaeological survey and submit results to MHC as may be required.
- Design and construct stormwater management systems consistent with the WPA Stormwater Management Standards, including operating and management plans.
- Prepare a Stormwater Pollution Prevention Plan (SWPPP).
- Conduct all dewatering in accordance with applicable regulatory discharge permits.
- Comply with MassDEP's Solid Waste and Air Quality Control regulations, pursuant to M.G.L. Chapter 40, Section 54;
- Measures to avoid, minimize and mitigate construction period impacts (FEIR, Section 8.3.1); and,
- Construction Management Plan for the Little Pond sewering project to manage construction-related traffic, erosion, dust, noise and wetlands impacts (FEIR, Section 8.3.2 of the FEIR).

In addition, the Town will submit a CWMP/TWMP NPC to MEPA by December 31, 2019 and it will submit a NPC for the Bourne's Pond inlet widening project to MEPA by December 31, 2014.

Conclusion

The MEPA regulations indicate that I may determine that a FEIR is adequate, even if certain aspects of the Project require additional analysis of technical details, provided that the aspects and issues have been clearly described and the nature and general elements analyzed in the EIR or during MEPA review, that the aspects and issues can be fully analyzed prior to any Agency issuing its Section 61 Findings and that there will be meaningful opportunities for public review of the additional analysis prior to any Agency taking Agency Action on the Project.

Based on a review of the FEIR, consultation with public agencies, and comments received on the FEIR, I have determined that the FEIR is adequate. The Town has made a commitment to continue development of the CWMP/TWMP and to strategically employ an adaptive

management approach to develop a cost-effective and balanced approach to wastewater management planning. Additional opportunities for public review and comment will be provided through the CCC DRI review, through the Updated 208 Plan process, through application for SRF assistance, through individual permitting processes and at the municipal level. To the extent that information developed during the implementation of this plan over the course of the next five years indicates that it is warranted, the CWMP/TWMP may be redirected to ensure compliance with water quality standards. The filing of a NPC at the conclusion of the 5-year construction and evaluation period for the Little Pond TWMP, as described below, will insure that overall planning and implementation is subject to additional public review. In addition, to the extent that individual projects exceed MEPA thresholds, a NPC will be filed for each Pilot Project.

CWMP/TWMP NOTICE OF PROJECT CHANGE

General

The NPC shall include: an update on construction and operation of the Little Pond sewering project; an update on design, construction and implementation of pilot projects; documentation of progress towards achieving TMDL's for each sub-watershed; data and analysis of water quality monitoring; and, based on the information developed over this time period, assessment of the effectiveness of the CWMP/TWMP in reducing nitrogen loads in Little Pond and other watersheds and the need for any revisions to the Falmouth CWMP/TWMP before initiating subsequent CWMP phases. The NPC will address how information, data and subsequent analysis obtained over the five year period has informed the Town's strategy for meeting water quality standards and TMDLs for Little Pond, Great Pond, Green Pond, Bournes Pond, Waquoit Bay East and the West Falmouth Harbor watersheds in Falmouth.

It shall also include an assessment of environmental impacts associated with any new plans or projects incorporated into the CWMP/TWMP. It will include an assessment of the consistency of proposed projects with regulatory programs including the Wetlands Regulations and associated Stormwater Management Standards, c.91 Waterways permitting, 401 Water Quality Certification requirements, Modified Groundwater Discharge Permit requirements and the U.S. Army Corps of Engineers (ACOE) Section 404 permitting requirements.

The NPC should be filed by December 31, 2019. Prior to filing the NPC, the Town should consult with MEPA Office, MassDEP, and CCC regarding the scope and timing of the NPC filing.

Updated Project Description

The NPC should include an updated CWMP/TWMP to reduce nutrient loading to all of the marine embayments and freshwater ponds in Falmouth. It should identify any areas where the construction and/or implementation of sewers and/or Pilot Projects is proposed, including maps that show where sewer lines, cross-country easements, pumping stations, groundwater discharge sites and other facilities will be located.

The NPC should identify opportunities to accelerate implementation of nutrient reduction projects. It should identify the estimated percent of nitrogen removal that anticipated by sewering the Lower Little Pond sewer area and the construction of the proposed inlet widening of Bournes Pond, oyster aquaculture in Little Pond and the installation of PRBs in West Falmouth compared to the total load for removal identified by the MEP. The CWMP NPC should include a discussion of the feasibility for targeting traditional and non-traditional nitrogen reduction technologies to serve neighborhoods located in the sub-watersheds of the most significantly impacted coastal embayments in Falmouth including, but not limited to, the West Falmouth Harbor watershed and the Waquoit Bay East and West watersheds. The CWMP NPC should discuss the potential benefits of constructing in extremely stressed watersheds to expedite the time frame for nitrogen reduction.

It should describe the Town's continued efforts to actively engage residents in this planning process including opportunities for public review and comment. I note that the SRF program will require the Town to conduct a minimum of one public meeting and one public hearing.

Water Quality Monitoring and Adaptive Management

The NPC should include data and analysis of the Water Quality monitoring plan. During the five-year period, water quality monitoring and reporting should be conducted annually and monitoring reports should be provided to MassDEP, DMF, CCC and the Buzzards Bay Coalition. Reporting should document reductions in watershed nitrogen loads. The NPC should address the extent to which CECs are included in the monitoring plan.

Based on results of monitoring, the CWMP NPC should identify the need for and extent of a contingency plan to demonstrate how the Town will meet the TMDLs established for Little Pond, Great Pond, Green Pond, Bournes Pond, Waquoit Bay East and the West Falmouth Harbor watersheds within an appropriate planning horizon. The CWMP NPC should discuss whether any of the Town's previously identified CWMP alternatives are being further considered or retained as a contingency plan to augment the Town's currently proposed draft CWMP activities.

The NPC should include information required by MassDEP to assess the efficacy of the Pilot Projects in providing nitrogen reductions so that it may consider whether credits can be applied to the CWMP/TWMP.

The NPC and individual TWMPs should provide a more definitive schedule for project implementation and attainment of nitrogen thresholds. In addition, this section of the NPC must consider how climate-related impacts to groundwater hydrology and coastal resources may impact the Town's CWMP/TWMP.

The Town should continue to identify potential regional wastewater management solutions with the Towns of Bourne, Mashpee and Sandwich, the Falmouth Country Club and the MMR. The CWMP NPC should include a discussion of additional wastewater disposal or reuse alternatives that may be required to support inter-municipal (regional) approaches to wastewater management. The Town should continue to work closely with CCC to ensure that the NPC is consistent with the goals of the Regional Policy Plan (RPP). The NPC should include an update

of the Town's ongoing efforts to coordinate with CCC and other municipalities to identify regional strategies and opportunities for reducing the nutrient loading to coastal embayments.

To the extent that additional sewering is proposed in the NPC CWMP/TWMP, it should include a discussion of potential land use control mechanisms to limit unwanted secondary growth. I remind the Town of the flow-neutral requirements associated with the use of SRF assistance. I encourage the Town to consult with MassDEP and the CCC who can provide assistance in developing growth-neutral policies.

Wetlands

Additional projects proposed under the CWMP/TWMP may trigger jurisdiction under the WPA. The NPC should identify the locations of proposed construction activities and describe potential wetlands and watershed impacts, including creation of impervious surfaces, and measures to avoid and minimize or mitigate impacts. The NPC should include an analysis of both direct and indirect resource area impacts and a breakdown of impacts for individual project components. The NPC should include a plan that delineates resource areas located within or adjacent to proposed projects including: wetlands resource areas and applicable buffer zones, drinking water supplies, fisheries, rare species habitat, historic resources and parklands. Project elements should be superimposed on a proposed conditions plan to facilitate review and assessment.

Where wetland impacts are unavoidable, the NPC should demonstrate that the impacts have been minimized and mitigated, and that the project will be accomplished in a manner that is consistent with the performance standards. The NPC should provide stormwater management plans, where appropriate.

Historical and Archaeological Resources

The Town will continue to consult with MHC during the planning and final design process for each of the CWMP/TWMP project components. The Town should provide the Massachusetts Historical Commission (MHC) with a USGS topographical map that locates the final Falmouth CWMP/TWMP project areas and scaled project plans showing existing and proposed conditions. These plans should be submitted to MHC as early as possible during the design phase. If MHC determines that the project will have an "adverse effect" on historic or archaeological resources, the NPC should identify measures to avoid and minimize, or mitigate impacts to cultural resources.

Greenhouse Gas Emissions (GHG)

I expect the Town will continue to consult with MassDEP and DOER during final design of proposed improvements and upgrades for the Blacksmith Shop Road WWTF and will consider implementation of additional GHG reduction measures. Upon completion of the construction of the sewer system and associated improvements to the WWTF, the Town will be required to provide a certification to the MEPA Office signed by an appropriate professional (e.g., engineer, architect, general contractor) indicating that the all of the GHG mitigation measures committed to by the Town as described in the CWMP NPC, or as modified as part of the MassDEP

permitting process, have been incorporated into the project. This certification will need to be supported by as-built plans. For those measures that are operational in nature the Town will be required to provide an updated plan identifying the measures, the schedule for implementation and how progress towards achieving the measures will be obtained. The proposed draft Section 61 Findings in the CWMP NPC should include this self-certification requirement.

I strongly encourage the Town to continue evaluation of the feasibility of solar photo-voltaic (PV) systems (either ground-mounted or building-mounted). Feasibility of these systems can be evaluated through use of on-line resources provided by DOER to calculate potential project cost, payback periods and returns on investment and should include consideration of a third-party leasing arrangement. The CWMP NPC should state assumptions with regard to available area for PV equipment, efficiencies, etc. If determined feasible, I encourage the Town to commit to the use of PV systems at their facilities.

Construction

The NPC should evaluate construction period impacts including, but not limited to noise, dust, odors, vehicle emissions, construction and demolition debris, and construction-period traffic. It should identify efforts to avoid, minimize and mitigate construction impacts. To the extent warranted, the NPC should include a draft Construction Management Plan (CMP) that provides a description of schedule, sequencing, site access, truck routing, and best management practices (BMPs) that will be used to avoid and minimize adverse environmental impacts. I strongly encourage the Town to commit to participation in the MassDEP Diesel Retrofit Program and to use ultra low sulfur diesel (ULSD) in off-road engines. The CWMP NPC should describe how the Town will minimize construction-period diesel emissions.

Mitigation/Section 61 Findings

The NPC should include a separate chapter on mitigation measures, which should include proposed and/or revised Section 61 Findings for all state permits and a summary table of all mitigation proposed. It should identify all mitigation measures, including GHG commitments; provide a schedule for implementation, and identify parties responsible for funding and implementing the mitigation measures.

PILOT PROJECT NPCs

It is anticipated that a number of Pilot Projects proposed as part of the Town's CWMP/TWMP project are likely to exceed MEPA review thresholds including, but not limited to, the Bourne's Pond Inlet Widening, installation of an aquaculture system in Little Pond, and the installation of a PRB in the West Falmouth Harbor watershed. The Town will file a separate NPC for each Pilot Project that exceeds MEPA review thresholds. The purpose of the NPC is twofold: 1) identify the project's potential contribution towards attaining water quality standards within the watershed; and, 2) identify potential environmental impacts, summarize alternatives considered to avoid, minimize and mitigate impacts, and identify measures that will be incorporated to avoid, minimize and mitigate impacts.

Pilot Project NPCs should identify the proposed sites, include maps and plans at a reasonable scale that clearly locate and delineate project elements, surface water and wetlands resource areas, water supply resources, conservation areas and any priority and estimated rare species habitat in the project area. These NPCs should identify the estimated percent of nitrogen removal that could be achieved by the proposed Pilot Project compared to the total load for nitrogen removal needed as identified by the MEPs for these watersheds. The Pilot Project NPCs must include a list of permits required and a timetable and cost estimate for each Pilot Project. The NPC should identify the Town's plan to avoid, minimize and mitigate adverse resource area impacts associated with the construction of each Pilot Project. These NPCs should contain an update on the status of design and permitting each of these Pilot Projects and a schedule for their construction. The NPC should include a discussion of any changes to the project since the filing of the FEIR.

The NPC should provide a detailed project description and use the NPC form as the basis of the filing. To the extent that agency comments on the FEIR identified issues, concerns and/or provided recommendations associated with a Pilot Project, they should be addressed in the NPC.

The Town should consult with the MEPA Office regarding the timing and content of the NPC prior to filing. The NPC for the Bourne's Pond Inlet Widening should be provided to the MEPA Office by December 31, 2014.

REGIONAL WASTEWATER PLANNING

Comments on the FEIR identify strong support for the development of the updated Section 208 Plan and the opportunities for employing a watershed based approach to increase effectiveness of efforts and reduce costs through regional cooperation.

As the 208 Plan is under development, municipalities are encouraged to consult with CCC and MassDEP to ensure coordination between active wastewater planning efforts and the development of the 208 Plan and, to the extent possible, establish consistency between any proposed CWMP and the updated 208 Plan with respect to the evaluation of wastewater needs, wastewater management alternatives and alternatives analyses. This consultation should occur during development of the CWMP and prior to filing a review document with MEPA. During review of any CWMP, MEPA, CCC, and MassDEP will assess the consistency of the identification and analysis of wastewater needs and wastewater management alternatives with the development of the 208 Plan to the extent feasible.

In addition, I note that the MEPA regulations include provisions for development of a Special Review Procedure (SRP) to address the review of projects that do not conform to the typical review process. A SRP can be established for projects that are planned and implemented over long time periods of time, often in phases (such as a master plan), and may include multiple proponents. Development of a SRP between EEA, CCC and Cape Cod communities may be appropriate to support this regional planning effort. I have directed the MEPA Office to consult with CCC and MassDEP regarding establishment of a SRP that could provide a framework for review and implementation of regional wastewater projects and provide flexibility and opportunities for streamlining, as necessary and advisable. I encourage the Town of Falmouth to consider participation in this process.

Circulation

In accordance with Section 11.16 of the MEPA Regulations and as modified by this Certificate, the Town should circulate a hard copy of the CWMP NPC and any Pilot Project NPC to each State Agency from which the Town will seek permits. The Town must circulate a copy of the CWMP NPC and any Pilot Project NPC to local officials in Bourne, Mashpee and Sandwich, to the MMR, the Falmouth Country Club and all other parties that submitted written comments on the FEIR. Per 301 CMR 11.16(5), the Town may circulate copies to these other parties in CD-ROM format or by directing commenters to a project website address. The Town should make available a reasonable number of hard copies to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis. The Town should send correspondence accompanying the CD-ROM or website address indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. A CD-ROM copy of the filing should also be provided to the MEPA Office. A copy of any NPC should be made available for public review at the Falmouth, Bourne, Mashpee and Sandwich Public Libraries.

January 10, 2014
Date

Richard K. Sullivan Jr

Comments Received:

~~10/13~~/2013	Massachusetts Historical Commission (MHC) #2.1 : 9-20-13 #2.1 : 10-28-13
12/29/2013	The Green Center, Inc. #3
12/29/2013	The Green Center, Inc. #4
12/29/2013	The Green Center, Inc. #5
12/31/2013	Buzzards Bay Coalition #6
12/23/2013	Sierra Club #7
12/23/2013	Town of Falmouth, Office of the Town Manager & Selectmen #8
1/2/2014	Department of Fish and Game (DFG), Natural Heritage and Endangered Species Program (NHESP) #9
1/2/2014	Alison A. Robb #10
1/2/2014	Cape Cod Commission (CCC) #11
1/3/2014	Association to Preserve Cape Cod #12
1/3/2014	Association for Crocker Pond #13
1/2/2014	Division of Marine Fisheries (DMF) #14
1/3/2014	Andrew P. Bunker #13
1/6/2014	Office of Coastal Zone Management (CZM) #15
1/7/2014	Department of Environmental Protection (MassDEP) - SERO #16
1/9/2014	Department of Energy Resources (DOER) #17

RKS/NCZ/ncz
FEIR #14154

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
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March 11, 2016

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
NOTICE OF PROJECT CHANGE

PROJECT NAME	: Comprehensive Wastewater Management Plan (CWMP) and Targeted Watershed Management Plan (TWMP)/ Bournes Pond Inlet Opening
PROJECT MUNICIPALITY	: Falmouth
PROJECT WATERSHED	: Cape Cod
EEA NUMBER	: 14154
PROJECT PROPONENT	: Town of Falmouth
DATE NOTICED IN MONITOR	: February10, 2016

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62I) and Section 11.10 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project change does not require the submission of a supplemental Environmental Impact Report (EIR). Outstanding issues associated with this project can be addressed during State permitting.

Project Description

As described in the Notice of Project Change (NPC), the project involves widening the inlet to Bournes Pond to increase tidal flushing and improve water quality and aquatic habitat. This was identified as a Pilot Project in the Town of Falmouth's Comprehensive Wastewater Management Plan (CWMP) to reduce nitrogen in Bourne's Pond and potentially in other waterbodies.

The project includes the following components:

- Widening the inlet from 50 feet to 90 feet by removing 12,600 square feet (sf) of the Coastal Bank and Barrier Beach east of the existing inlet;
- Installing a new two-span bridge on Menauhant Road across the inlet;
- Dredging approximately 5,800 cubic yards (cy) from the inlet channel within Bournes Pond;
- Nourishment of adjacent beaches and dunes with dredged material;
- Repositioning the existing eastern inlet jetty to the eastern side of the widened inlet;
- Extending the existing jetty on the western side of the inlet by 25 feet;
- Removing an existing 25-foot-long jetty on the beach west of the inlet; and
- Providing a public fishing platform adjacent to the bridge abutment.

The Massachusetts Estuaries Project (MEP) identified high levels of nitrogen in Bournes Pond that are due to groundwater infiltration from septic systems, the use of fertilizers, stormwater runoff, and direct atmospheric deposition to water surfaces. The MEP indicated that elevated nitrogen levels in the pond contribute to low dissolved oxygen levels, declining areas of eelgrass, and impaired benthic habitat. A Total Maximum Daily Load (TMDL) for nitrogen was established at a level to support ecological health. The NPC described other measures the Town has implemented or will be evaluating to achieve compliance with the nitrogen TMDL in Bournes Pond (the Preferred Scenario). A Nitrogen Control Bylaw, adopted in 2012, prohibits the use of nitrogen fertilizers within 100 feet of an estuary and the Town will install Best Management Practices (BMPs) to remove nitrogen from stormwater on a case-by-case basis. Preliminary studies have begun to identify one or more locations where Permeable Reactive Barriers (PRB) could be installed to remove nitrogen in groundwater flowing into Bournes Pond. The Town may also implement a shellfish aquaculture pilot project that would use the natural nitrogen-removing characteristics of quahogs and oysters to improve water quality. An aquaculture pilot project is currently underway in Little Pond which has yielded promising results. According to the NPC, modeling results indicate that these measures, in addition to the inlet opening, could achieve the TMDL limit for Bournes Pond. If any of the measures are determined to be infeasible, the Town will employ Innovative/Alternative (I/A) Septic Systems or traditional sewering to meet the TMDL.

Project Change/Procedural History

The project was identified as one of several Pilot Projects in the Town's CWMP. It is designed to support attainment of the nitrogen TMDL for the pond and potentially in other waterbodies analyzed by the MEP. The Certificate on the FEIR/CWMP issued on January 10, 2014 required that pilot projects exceeding MEPA thresholds undergo further review in the form of NPCs in order to: 1) identify the project's potential contribution towards attaining water quality standards within the watershed; and, 2) identify potential environmental impacts, summarize alternatives considered to avoid, minimize and mitigate impacts, and identify measures that will be incorporated to avoid, minimize and mitigate impacts.

The CWMP process was developed to address nitrogen loading issues and water quality problems that have been documented by the MEP for Little Pond, Great Pond, Green Pond,

Bournes Pond, and Waquoit Bay. The MEP technical reports document excessive nitrogen loads for each of these estuaries. The MEP reports developed nitrogen thresholds to restore these waterbodies and potential nitrogen reduction scenarios that allow these estuaries to meet their respective nitrogen thresholds. The MEP nitrogen thresholds were subsequently adopted by the Massachusetts Department of Environmental Protection (MassDEP) as TMDLs pursuant to the Federal Clean Water Act (CWA).

The CWMP includes: sewer extensions to portions of the Little Pond Watershed; improvements to the Blacksmith Shop Road Wastewater Treatment Facility (WWTF); new treated wastewater recharge beds north of the WWTF, and implementation of the Nitrogen Control Bylaw for Fertilizer. The CWMP also identifies non-traditional wastewater and nutrient removal techniques, including shellfish aquaculture, inlet widening, PRBs, stormwater management, composting Eco-Toilets, and I/A denitrifying septic systems. The FEIR Certificate required that the Town provide periodic updates, in the form of NPCs, to document implementation and evolution of the CWMP, including development of Targeted Watershed Management Plans (TWMPs) and updates on the Towns progress on achieving TMDL goals. The FEIR Certificate also required that NPCs be filed for any pilot projects that exceed MEPA review thresholds. The Town has also developed an Adaptive Management Plan (AMP) that documents the steps that will be taken to implement the CWMP, including any changes that are necessary to meet the TMDL. The AMP is intended to be updated every five years, consistent with the timeframe for subsequent NPCs required by the FEIR Certificate and wastewater discharge permit renewals.

Project Site

Bournes Pond is an approximately 153-acre water body located along the southern coast of Falmouth. Its watershed covers an area of approximately 1,494 acres that is characterized primarily by low-density residential uses. The pond is connected to Vineyard Sound through a 50-foot wide inlet through Menauhant Beach which was created in 1985. Prior to this date, the inlet was located approximately 800 feet west of its present location. The inlet in that location had shoaled to such an extent that tidal exchange was limited. Historically, the inlet location has naturally moved along Menauhant Beach and the width of the inlet has varied from 88 feet to 400 feet. Menauhant Road crosses the inlet via a two-lane bridge.

The project is located within *Estimated and Priority Habitat of Rare Species* for Least tern (*Sternula antillarum*), a species of Special Concern, and Piping Plover (*Charadrius melodus*), a State-listed Threatened species. Bournes Pond and adjacent coastal waters are mapped by the Division of Marine Fisheries (DMF) as habitat for bay scallops (*Argopercten irriadians*) and quahog (*Mercenaria mercenaria*). Bournes Pond also contains habitat for winter flounder (*Pseudopleuronectes americanus*) and American eel (*Anguilla rostrata*), and the waters of Vineyard Sound contain spawning habitat for longfin squid (*Loligo pealei*). Menauhant Beach is a nesting area for horseshoe crab (*Limulus polyphemus*). According to maps of eelgrass (*Zostera marina*) beds prepared by the Massachusetts Department of Environmental Protection (MassDEP) in 2001 and 2015, the area covered by eelgrass beds has declined from 27.9 acres to 21.9 acres, a decrease of approximately 25 percent.

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) (number 25001C0741J, dated July 16, 2014), Menauhant Beach, including the inlet, the adjacent coastal waters, and Bournes Pond are located in a Coastal Flood Hazard zone (VE) with a Base Flood Elevation (BFE) of 14 feet North American Vertical Datum of 1988 (NAVD 88).

Environmental Impacts and Mitigation

Environmental impacts associated with widening of the Bournes Pond inlet include the conversion of 12,600 sf of Coastal Beach/Barrier Beach to Land Under the Ocean (LUO) and dredging of 3,200 cy of sediment in connection with widening the inlet from 50 feet to 90 feet. The project includes widening of the 1,500-foot-long inlet channel extending north into Bournes Pond from its existing width, which ranges from 30 to 60 feet, to 90 feet. Widening the inlet channel will require improvement dredging of 5,800 cy of sediment from an area of 50,250 sf of Land Under Salt Ponds (LUSF)/Land Containing Shellfish (LCS). The project will also impact LUO in connection with lengthening the jetty along the eastern side of the inlet by 25 feet.

The project is intended to improve water quality and help restore marine habitat in Bournes Pond by increasing tidal exchange. The Town will also provide a public fishing platform adjacent to the inlet. This impact of the extended jetty will be mitigated by removing a 25-foot section of a groin located on Menauhant Beach west of the inlet. The dredged material will be used to nourish the dunes and beach adjacent to the inlet. The Town will develop and implement a monitoring program to determine the effectiveness of the project in improving water quality and shellfish and eelgrass habitat, and to identify any impacts to adjacent coastal waters and habitat.

Permitting and Jurisdiction

The CWMP required a mandatory EIR pursuant to 301 CMR 11.03(5)(a) because it involves construction of a new wastewater treatment and disposal facility with a capacity of 2,500,000 gallons per day (gpd), and 301 CMR 11.03(5)(a)(3) because it will result in construction of one or more new sewer mains ten or more miles in length. The project is subject to review pursuant to 301 CMR 11.03(1)(b)(1) because it will alter more than 25 acres of land; 301 CMR 11.03(1)(b)(3) because it may convert land held for natural resource purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to a purpose not in accordance with Article 97; 301 CMR 11.03(2)(b)(2) because it may 'take' of an endangered or threatened species; 301 CMR 11.03(3)(b)(1)(d) because it may alter 5,000 or more square feet (sf) of Bordering Vegetated Wetlands (BVW); 301 CMR 11.03(b)(1)(f) because it may alter more than half an acre of other wetlands; 301 CMR11.03(b)(10)(b)(2) because it may result in destruction of an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth; and 301 CMR 11.03(11)(b) because the project is located within a designated Area of Critical Environmental Concern (ACEC).

Components of the CWMP will require one or more Groundwater Discharge and Sewer Extension/Connection Permits, 401 Water Quality Certifications (WQC), Chapter 91 (c. 91)

Licenses, and, on appeal only, Superseding Orders of Conditions from MassDEP. The CWMP may require an Act of Legislation for disposition of Article 97 land and may require a Conservation and Management Permit from the NHESP. The project is subject to the MEPA Greenhouse Gas Emission Policy and Protocol (GHG Policy).

Projects identified in the CWMP will require one or more Orders of Conditions (OOC) from the Falmouth Conservation Commission and the CWMP is subject to review by the Cape Cod Commission (CCC) as a Development of Regional Impact (DRI). The project will also require a National Pollutant Discharge Elimination System (NPDES) Construction Activities Permit from the U.S. Environmental Protection Agency (EPA) and will require authorizations from the U.S. Army Corps of Engineers (ACOE) under the General Permits for Massachusetts.

The FEIR required that NPCs be filed for pilot projects identified in the CWMP that exceed MEPA review thresholds. The Bournes Pond Inlet Opening project requires State Agency Actions and exceeds the MEPA thresholds at 301 CMR 11.03(3)(b)(1)(a) because it will alter a coastal dune and barrier beach; and 301 CMR 11.03(3)(b)(1)(e) because it includes new fill or structure or Expansion of existing fill or structure in a velocity zone. The Bournes Pond Inlet Opening will require a c.91 License and a 401 WQC from MassDEP. The project may require a Conservation and Management Permit (CMP) from the NHESP and a Federal Consistency Certification from the Office of Coastal Zone Management (CZM). It will require an OOC from the Falmouth Conservation Commission, an NPDES Construction Activities Permit from the EPA and will require authorizations from ACOE under the General Permits for Massachusetts.

The Town will receive Financial Assistance from the Commonwealth through the State Revolving Fund (SRF). Therefore, MEPA jurisdiction is broad and extends to all aspects of the project with the potential to cause Damage to the Environment as defined in the MEPA regulations.

Review of the NPC

The NPC provided a detailed description of the project and plans of the widened inlet and proposed bridge. The NPC identified impacts of the project and reviewed alternative inlet widths and alternative measures that could be implemented to reduce nitrogen levels in the pond. The NPC provided water quality data and analysis performed as part of the MEP, and included detailed reports describing the models used to evaluate the water quality, hydrological, and geological/sediment transport effects of the proposed project and alternatives. The NPC assessed the potential impacts of climate change and sea level-rise on the project and considered whether the widened inlet would increase the potential for flooding or storm damage to properties located on the shores of Bournes Pond.

If this pilot project is successful, based on the results of post-construction water quality monitoring, the Town may seek to implement a similar inlet widening project in Little Pond to support achievement of the TMDL in that water body. Comments from State Agencies are supportive of the project's goals while recommending that the Town continue to pursue source reduction methods identified in the CWMP, including sewering and treatment options. Agencies

have recommended that the Town develop a robust post-construction monitoring program to monitor changes to water quality, shellfish and eelgrass in the pond resulting from the project. The Town should also include a sampling station in Vineyard Sound determine whether the project has increased levels of nitrogen outside of the pond. The monitoring programs should be designed to help make determinations about the applicability of inlet widening to Little Pond and potentially other watersheds. The Town should work with MassDEP to develop a Bournes Pond TWMP identifying measures to achieve the TMDL goals and a monitoring program that will track changes to the pond water quality and habitat.

Alternatives Analysis

The NPC summarized the modeling analysis that evaluated a series of increasing inlet widths. Maximizing the inlet width would increase the volume of water entering the pond over each tidal cycle (the "tidal prism"). However, wider inlets will be subject to sediment transport processes along the coast that cause shoaling within the inlet. The 90-foot wide design of the inlet would maximize the tidal prism to increase the flushing effect in the pond while minimizing the potential for shoaling in the inlet.

The NPC reviewed four alternatives for the design of the 90-foot wide opening and roadway crossing of the opening. Each alternative would include reconstruction and extension of the west inlet jetty and construction of a new jetty on the eastern side of the inlet. Each alternative would provide a wider roadway crossing that would meet American Association of State Highway and Transportation Officials (AASHTO) design standards, including two 11-foot wide travel lanes, two two-foot offsets, a five-foot sidewalk on the south side of the roadway, and metal bridge railings on both sides of the roadway. The Single Span Bridge alternative would span the widened inlet with a 97-foot wide single-span bridge. The single span would have a more extensive bridge superstructure that would require the profile of a 200-foot section of Menauhant Road to be raised to meet the bridge elevation and installation of retaining walls along the north side of the road to prevent filling of wetlands resource areas. This alternative was determined to be infeasible because of its additional construction costs. The Existing Bridge with Adjacent Box Culverts alternative would retain the existing bridge and use two 19-foot wide by 12-foot high precast concrete box culverts to allow additional tidal flow to provide an approximately 100-foot wide inlet. Due to the site's exposure to storm events, the culverts would be anchored to a concrete base slab supported by timber piles. This alternative was deemed infeasible because the wider, double channel opening would be more susceptible to shoaling. The Multiple Box Culverts alternative would replace the existing bridge with five 19-foot wide by 12-foot high precast concrete box culverts. The culverts would have to be anchored in place to a pile-supported concrete base. This alternative was determined to be less advantageous than the Preferred Alternative because of its higher construction cost, higher maintenance costs, and frequency of maintenance dredging to address increased shoaling.

Wetlands and Water Quality

Widening the inlet will convert 12,600 sf of Coastal Beach/Barrier Beach to LUO and will dredge 3,200 cy of sediment from the inlet. The project will also impact an area of 50,250 sf to widen the 1,500-foot long inlet channel in Bournes Pond north of the inlet. The impacts are

related to the optimal inlet width and associated dredging needed to maximize flushing while minimizing shoaling. Because the goals of the project are to improve water quality and shellfish habitat and help increase the areal extent of eelgrass in the pond, MassDEP has indicated that the project could be eligible to be reviewed as an Ecological Restoration limited project pursuant to the Wetlands Regulations at 310 CMR 10.24(8). The Town should consult MassDEP's comment letter for detailed information and analysis, much of which has been presented in the NPC, that should be included in the Notice of Intent to support the project's review as an Ecological Restoration limited project.

The NPC reviewed the expected water quality and ecological benefits of the project. The nitrogen TMDL limit for Bournes Pond is 24.56 kilograms per day (kg/day). The MEP model was updated to account for increased build-out of the watershed in the 10 years since the MEP modeling was completed. According to the NPC, attainment of this limit will require nitrogen removal at a rate of 11.5 kg/day or approximately 4,000 kg/year. The project will increase the tidal exchange to the pond by 10.3 percent, which represents an increase of nine million gallons of water per tidal cycle. The increased tidal flushing resulting from widening the inlet is projected to lower the level of nitrogen by 2,000 kg/year. According to the NPC, the increased tidal exchange will improve water quality, lead to increased dissolved oxygen levels in Bournes Pond, reduce the incidence of algal blooms that block sunlight to aquatic vegetation, and improve benthic habitat for shellfish and other marine organisms. The NPC presented modeling results that indicate the project could restore approximately 7.24 acres of eelgrass habitat in the vicinity of previously-mapped eelgrass where suitable sediment is located.

The project will include dredging to extend the existing inlet channel to the north to match the proposed inlet width and extend the reach of tidal flushing in Bournes Pond. The existing channel currently ranges from 60 feet wide and 6.5 feet deep at mean low water (MLW) near the inlet to 30 feet wide and 3.5 feet deep MLW at its northern end. The channel will be dredged to a width of 90 feet for its entire 1,500-foot length to existing depths. According to the NPC, the sediment in the channel has been tested and is compatible with the grain size of beach and dune material located on Menauhant Beach. As noted by DMF, the channel is located near an eelgrass bed which should be delineated prior to dredging to ensure that it is avoided and that any necessary mitigation measures, such as silt curtains or establishment of buffer zones, are implemented to avoid or minimize impacts. The dredged material will be used to nourish Menauhant Beach east and west of the inlet. The project will reconstruct the jetty along the eastern side of the expanded inlet and extend the jetty by 25 feet. This is necessary to prevent sediment from moving into the inlet and causing shoaling of the inlet channel. The Town has proposed to remove a 25-foot section of a groin located west of the inlet to compensate for the additional coastal structure and impact to LUO.

Rare Species and Marine Habitat

The dredging and beach nourishment will impact shellfish habitat in Bournes Pond and rare species habitat on Menauhant Beach. DMF has recommended implementation of a time-of-year (TOY) restriction for all in-water silt-producing work from January 15 to June 30. In addition, NHESP has indicated that the project will require a direct filing pursuant to the Massachusetts Endangered Species Act (MESA) to determine whether the beach nourishment

activities will result in a "take" of rare species. According to NHESP, the Town should prepare detailed plans of the nourishment, including the areas of proposed beach and dune nourishment, construction methods, schedule for placement of the material with respect to shorebird breeding season, and proposed measures to minimize and mitigate impacts.

Climate Change Adaptation

The NPC included a Flooding and Coastal Erosion Analysis that evaluated the potential of the inlet opening to exacerbate flooding and/or erosion along adjacent areas of shoreline. The analysis included an evaluation of relative sea-level rise scenarios based on a report by the Intergovernmental Panel on Climate Change (IPCC) where the worst-case scenario for the year 2100 was an increase of 2.8 feet. Under existing conditions, Menauhant Beach is completely overtopped during severe coastal storm events. According to the NPC, the project will not cause an increase in the severity of flooding or storm wave damage because both the existing and proposed inlets function similarly under storm conditions. Because the beach and inlet would become inundated during a 100-year storm event, there would be no wave attenuation with either inlet width. The project is not expected to affect the ability of Menauhant Beach to dissipate wave and storm energy.

Conclusion

The NPC has sufficiently defined the nature and general elements of the project for the purposes of MEPA review. I am satisfied that any outstanding issues can be addressed by State Agencies during permitting.

March 11, 2016
Date

Matthew A. Beaton

Comments received:

02/29/2016	Massachusetts Department of Environmental Protection (MassDEP)/Southeast Regional Office (SERO)
02/29/2016	Office of Coastal Zone Management (CZM)
02/29/2016	Natural Heritage and Endangered Species Program (NHESP)
03/01/2016	Cape Cod Commission (CCC)
03/01/2016	Division of Marine Fisheries (DMF)

MAB/AJS/ajs

MassDEP
Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

February 29, 2015

Mathew A. Beaton,
Secretary of Environment and Energy
Executive Office of Environmental Affairs
ATTN: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: NPC Review EOEEA # 14154 - FALMOUTH. Bournes Pond Inlet Opening at Menauhant Road

Dear Secretary Beaton,

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) for the proposed Bournes Pond Inlet Opening at Menauhant Road, Falmouth, Massachusetts (EOEEA # 14154). The project proponent provides the following information for the project:

The Bournes Pond Inlet Widening Project (Project) is a tidal restoration and water quality improvement project being advanced by the Town of Falmouth (Town) and the Town's Water Quality Management Committee (WQMC). The goal of the Project is to increase tidal flushing (i.e. minimize tidal dampening at the inlet) to Bournes Pond. The inlet is proposed to be widened from its existing width of 50-feet to the optimal size of 90-feet. Bournes Pond has been determined by the Massachusetts Estuaries Project (MEP) to have habitat and water quality impairment due to its high watershed nitrogen loads and resultant high nitrogen concentrations. MEP evaluations (MEP, April 2005) led to the nitrogen Total Maximum Daily Load (TMDL) limit that was developed by Massachusetts Department of Environmental Protection (MassDEP) in April 2006 and approved by the United States Environmental Protection Agency (USEPA) in July 2007.

As the proposed work represents an ecological restoration of an impaired water body, no mitigation is proposed for impacts to resource areas. In general, most of the resource area impacts are limited to conversion of one resource area to another associated with inlet widening (i.e. conversion of Coastal Beach to Land Under the Ocean). The design effort ensures that impacts to resource areas are minimized, including preventing any increase to storm damage, no expansion of overall area/footprint of coastal engineering structures, and placement of excavated/ dredged material on the barrier beach system.

Wetlands and Waterways Comments:
The Southeast Regional Office, Wetlands and Waterways Program have reviewed the above-referenced Notice of Project Change (NPC) and have the following comments. The Town of Falmouth proposes to widen Bournes Pond inlet to improve water quality, reduce nitrogen levels,

This information is available in alternate format. Call Michelle Waters-Ekanem, Diversity Director, at 617-292-5751. TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

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enhance shellfish habitat, and increase eelgrass bottom coverage area within Bournes Pond. Specifically, the NPC proposes to widen the existing tidal inlet from 50 feet to 90 feet and replace the existing bridge to improve tidal flushing and reduce nitrogen impacts. The project is being proposed as a Section 208 Demonstration/Pilot Project to evaluate inlet widening efficacy as a cost-effective alternative/innovative technology to reduce excess nutrients.

The project proposes to remove/excavate barrier beach and coastal dune in order to widen the existing inlet. This would result in the permanent conversion of barrier beach to land under the ocean. The project also proposes to relocate and extend the rock jetty on the eastern side of the inlet. Prior DEP guidance to Falmouth suggested that the Town would seek to permit the project as an Ecological Restoration Limited Project consistent with 310 CMR 10.24(8).

To meet the definition of an Ecological Restoration Limited Project, Falmouth will need to provide information to clearly demonstrate that the project can reasonably meet its intended goals of nutrient reduction/water quality improvement in Bournes Pond. Further, Falmouth will need to demonstrate that the water quality improvements will likely lead to increases in eelgrass coverage and enhancements to shellfish habitat.

Falmouth will need to show that the proposed inlet widening project avoids or minimizes adverse impacts to the Resource Areas that will be negatively impacted by the project (i.e., barrier beach and coastal dune that will be permanently converted to land under the ocean). To make such a showing, Falmouth needs to consider if there are alternatives to attain the project goals that can avoid impacting the barrier beach or, if avoidance is infeasible, minimize impacts.

The following information or demonstrations would need to be provided:

- Falmouth's project goals include:
    - 1. Total Nitrogen reduction of approximately 2000 Kg/year for the purpose of water quality improvement to partially meet the TMDL for Bournes Pond;
    - 2. Eelgrass habitat restoration; and
    - 3. Shellfish habitat restoration

- The Town's project goals align with the Ecological Restoration Limited Project standards at 310 CMR 10.24(8)(e)3, that reference eelgrass and shellfish habitat restoration. The Town, however, still needs to further refine how the proposed inlet widening will contribute to eelgrass and shellfish habitat restoration, including establishment of measureable enhancement goals.

- The Town will need to demonstrate that the proposed inlet widening will improve water circulation, quality and clarity to such an extent (at least in the southern end of Bournes Pond) that eel grass and shellfish habitat restoration are viable project benefits.

- The Town will need to show they have avoided or minimized armoring the coastal dune and barrier beach to the maximum extent practicable.

- The Department recently surveyed the extent of eelgrass in Bournes Pond. The mapped data and analysis is being provided to assist the Town in its efforts to depict current versus historic eelgrass footprint areas in Bournes Pond. Informed by the historic and current eelgrass coverage, the Town should quantify how much area is potentially suitable for eelgrass restoration.

- The Town should evaluate whether the existing substrate/sediment characteristics within the historic eelgrass footprint are suitable for eelgrass restoration. Further, the Town should evaluate the suitability of the existing water depths, and projected water quality, circulation and clarity in terms of eelgrass restoration potential.

- The Town should look at the critical characteristics of Salt Ponds discussed in the Wetlands Regulations at 310 CMR 10.33(1) in terms of suitability of eelgrass and shellfish habitat restoration. These critical characteristics include: water circulation; distribution of sediment grain size; freshwater inflow; productivity of plants; and, water quality.

- The Town has indicated that the tidal flats in the southwest end of Bournes Pond serve as a viable shellfish resource. The Town will need to demonstrate how the inlet widening and resultant water quality improvements will enhance or expand the area of shellfish habitat.

- The Town has provided a flooding analysis to evaluate the change in extent of flooding associated with the pond widening. This information should be carried forward in future filings to document the project's impact on the storm damage prevention and flood control interests of the Wetlands Protection Act.

Since the Massachusetts Natural Heritage and Endangered Species Program (NHESP) has mapped a portion of the coastal beach and dune within the project area as habitat for rare and endangered species (shorebirds), Falmouth should coordinate with the NHESP relative to the timing of dredging/excavation, jetty reconstruction, and beach nourishment.

The Department supports Falmouth's goals of water quality improvements along with eelgrass and shellfish habitat enhancements.

This proposed project will require an Order of Conditions under the Wetlands Protection Act, a 401 Water Quality Certification and a Chapter 91 license.

Bureau of Waste Site Cleanup

NPC #14154 – Based upon the information provided, the Bureau of Waste Site Cleanup (BWSC) searched its databases for disposal sites and release notifications that have occurred at or might impact the proposed project area. A disposal site is a location where there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000].

There are no listed MCP disposal sites located at or in the vicinity of the proposed project area that might impact the site. Interested parties may view a map showing the location of BWSC disposal sites using the MassGIS data viewer (Oliver) at:

http://maps.massgis.state.ma.us/map_ol/oliver.php Under "Available Data Layers" select "Regulated Areas", and then "DEP Tier Classified 21E Sites". The compliance status and report submittals for specific MCP disposal sites may be viewed using the BWSC Waste Sites/Reportable Release Lookup at: http://public.dep.state.ma.us/SearchableSites2/Search.aspx

The Project Proponent is advised that if oil and/or hazardous material are identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A Licensed Site Professional (LSP) should be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary if contamination is present. The BWSC may be contacted for guidance if questions arise regarding cleanup.

Proposed s.61 Findings

The "Certificate of the Secretary of Energy and Environmental Affairs on the Environmental Notification Form" may indicate that this project requires further MEPA review and the preparation of an Environmental Impact Report. Pursuant to MEPA Regulations 301 CMR 11.12(5)(d), the Proponent will prepare Proposed Section 61 Findings to be included in the EIR in a separate chapter updating and summarizing proposed mitigation measures. In accordance with 301 CMR 11.07(6)(k), this chapter should also include separate updated draft Section 61 Findings for each State agency that will issue permits for the project. The draft Section 61 Findings should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation.

Very truly yours,

Jonathan E. Hobill,
Regional Engineer,
Bureau of Water Resources

JH/GZ

Cc: DEP/SERO

ATTN: Millie Garcia-Serrano, Regional Director
David Johnston, Deputy Regional Director, BWR
Maria Pinaud, Deputy Regional Director, BAW
Gerard Martin, Acting Deputy Regional Director, BWSC
Jennifer Viveiros, Deputy Regional Director, ADMIN
Allen Hemberger, Site Management
Jim Mahala, Chief, Wetlands and Waterways

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
(617) 626-1200 FAX: (617) 626-1240

MEMORANDUM

TO: Matthew A. Beaton, Secretary, EEA
ATTN: Alex Strysky, MEPA Unit
FROM: Bruce Carlisle, Director, CZM
DATE: February 29, 2016
RE: EEA-14154 NPC, Bourne's Pond Restoration Project, Falmouth

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Notice of Project Change (NPC) noticed in the *Environmental Monitor* dated February 10, 2016, and offers the following comments.

Project Description

The project involves the inlet widening of Bourne's Pond in Falmouth. This would be accomplished by moving the eastern jetty at the inlet entrance to the east and dredging the existing barrier beach. This would widen the inlet from 50 to 90 feet. The western jetty would be extended by 25 feet and the existing groin located to the west of the inlet would be removed. Approximately 5,800 cubic yards of material will be dredged (improvement) to widen the channel to 90 feet, with the material used beneficially on beaches adjacent to the jetties. The purpose of the project is to improve: tidal flushing within Bourne's Pond to facilitate a Total Nitrogen reduction of approximately 2000 Kg/year to partially meet the TMDL for Bournes Pond; eelgrass habitat restoration; and shellfish habitat restoration. Bourne's Pond is listed on the Massachusetts Year 2010 List of Integrated Waters (303(d) List) as being an impaired water body, with total maximum daily loads (TMDLs) developed for both nutrients and pathogens. The project will require an Order of Conditions under the Wetland Protection Act and the Town of Falmouth Wetland Bylaw, a Massachusetts Department of Environmental Protection Chapter 91 License and 401 Water Quality Certification, a U.S. Army Corps of Engineers Permit, and may require a federal consistency determination from CZM.

Project Comments

As stated in CZM's comments provided for the earlier MEPA filing, that while increasing tidal flushing to an impaired water body can achieve improvements to water quality within that system, it may also result in a net export of nutrients and contaminants to surrounding coastal waters. CZM continues to recommend that this type of project should be done in conjunction with other efforts to address and reduce the sources of nutrient and contaminants within the watershed, such as improved wastewater treatment and stormwater management. More information should be provided that details current plans and efforts to address sources of nutrients and other contaminants currently impacting water quality within the Bourne's Pond watershed. It appears that water quality information presented by the town may be from analyses conducted over 10 years ago. The projected water quality improvements may not be attained without accounting for any additional nitrogen loading to the watershed during the intervening years caused by additional development. This information should be provided and any changes to the resulting performance criteria should be documented.

The NPC describes the project as a restoration project, designed to improve water quality, habitat, and ecological functions within Bourne's Pond. CZM believes additional information should be provided to describe in detail how the proposed inlet widening will contribute to eelgrass and shellfish habitat restoration. Further, the establishment of defined and measurable enhancement goals should be provided. This information should demonstrate that the inlet widening will improve water clarity and dissolved oxygen concentrations which meet the goals of eelgrass and shellfish restoration. Additional information should be provided as to the suitability of existing sediment types within Bourne's Pond showing that the above-stated improvements will support colonization by eelgrass and shellfish. The present plan states that the total nitrogen is expected to be reduced and the habitat will improve by widening the pond inlet and adding an aquaculture operation consisting of several million oysters and quahogs to the area. It should be noted that the there is no U.S. Army Corps of Engineers restriction on the area of a water body that can be employed for aquaculture activities, as stated in the NPC (10%). The town assumes a 50% survival rate of shellfish to harvestable size in approximately 2 growing seasons. CZM recommends that an adaptive management plan be developed which presents alternative actions to be taken in the event that the water quality and habitat enhancement goals of the project are not met using the proposed techniques. The town should also demonstrate that the project avoids or minimizes armoring of the coastal dune and barrier beach to the maximum extent practicable.

CZM believes that this additional information is important to determine that every effort is being taken to minimize and mitigate potential environmental impacts that could result from this project. CZM believes that the specific design and associated review(s) can be effectively accomplished through the required local, state and federal permitting process.

Federal Consistency

The proposed project may be subject to CZM federal consistency review, in which case the project must be found to be consistent with CZM's enforceable program policies. For further information on this process, please contact, Robert Boeri, Project Review Coordinator, at 617-626-1050 or visit the CZM web site at www.state.ma.us/czm/fcr.htm.

BC/rlb

cc: Stephen McKenna,
CZM Cape & Islands Regional Coordinator
Jim Mahala, Section Chief
Southeast Regional Office, MA DEP
Neal Price, Horsley Whitten Group
90 Route 6A, Sandwich, MA 02563

Commonwealth of Massachusetts
Division of Fisheries & Wildlife
MassWildlife

Wayne F. MacCallum, *Director*

February 29, 2016

Matthew A. Beaton, Secretary
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Alex Strysky, EEA No. 14154
100 Cambridge St.
Boston, Massachusetts 02114

Project Name:	*Bourne's Pond Inlet Widening Project*
Proponent:	*Town of Falmouth*
Location:	*Menauhant Road, Falmouth, MA*
Project Description:	*Widen inlet from 50 feet to 90 feet*
Document Reviewed:	*Notice of Project Change*
EEA File Number:	*14154 (Falmouth Comprehensive Wastewater Management Plan)*

Dear Secretary Beaton:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the "Division") has reviewed the *Notice of Project Change* (NPC) for the proposed Bourne's Pond Inlet Widening Project to increase tidal flow and reduce nitrogen levels in Falmouth, MA and would like to offer the following comments.

This project occurs within *Estimated and Priority Habitat of Rare Species* for Least tern (*Sternula antillarum*) and Piping Plover (*Charadrius melodus*), species state-listed as "Special Concern" and "Threatened" respectively. and this project requires review through a direct filing with the Division for compliance with the rare wildlife species section of the Massachusetts Wetlands Protection Act Regulations (WPA; 310 CMR 10.37) and the Massachusetts Endangered Species Act (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00) (MESA). The Piping Plover is also protected pursuant to the U.S. Endangered Species Act (ESA, 50 CFR 17.11).

As stated in the NPC, the project, as proposed includes a 25-foot extension to the western jetty. It is not clear whether the "Bournes Pond Inlet Opening Flooding and Coastal Erosion Analysis" (ACRE & GHD 2015) report included the proposed jetty extension as part of the analysis. According to the information provided, it does not appear the report addressed sediment transport relative to the proposed jetty extension. Additionally, the report recommends an appropriately designed beach nourishment plan for areas west of the inlet; however, the NPC indicates that the primary nourishment areas are east of the inlet. The proponent should provide clarification regarding these topics. Additionally, in order for the Division adequately review the project during the WPA & MESA process, the proponent should provide detailed site plans, nourishment plans, and if work is scheduled to occur during the shorebird breeding period (April 1 – August 31), then protective measures that avoid and/or minimize impacts should be included.

The Division will not render a final decision until the MEPA review process and associated public and agency comment period is completed, and until all required MESA filing materials are submitted by the

Division of Fisheries and Wildlife
Field Headquarters, 1 Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7890
An Agency of the Department of Fish and Game

proponent to the Division. As our MESA review is ongoing, no alteration to the soil, surface, or vegetation and no work associated with the proposed project shall occur on the property until the Division has made a final determination. We look forward to coordination with the proponent on the details of the project design and implementation. If you have any questions about this letter, please contact Amy Hoenig, Endangered Species Review Biologist, at (508) 389-6364 or Amy.Hoenig@state.ma.us. We appreciate the opportunity to comment on this project.

Sincerely,

Thomas W. French

Thomas W. French, Ph.D.
Assistant Director

cc: J. Jefferson Gregg, GHD
Falmouth Board of Selectmen
Falmouth Conservation Commission
Falmouth Planning Department
DEP Southeast Regional Office, MEPA

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CAPE COD
COMMISSION

By Electronic Mail

March 1, 2016
Matthew A. Beaton, Secretary
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office, Alex Strysky, Analyst
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: ***Notice of Project Change - EEA No. 14154***
Bourne's Pond Inlet Opening- Town of Falmouth
(CCC Project No. 16002)

Dear Secretary Beaton:

The proposed inlet widening project at Bourne's Pond is one that has already been contemplated in the Town of Falmouth's Comprehensive Wastewater Management Plan (CWMP)/ Targeted Watershed Management Plan (TWMP), approved by the Commission as a Development of Regional Impact (DRI) on Feb 27, 2014. The CWMP/ TWMP lists the inlet widening project as one of several non-traditional wastewater and nutrient management alternatives that the town intends to evaluate through demonstration projects, and specifically, is a component of the comprehensive plan's adaptive management plan.

As the project is a water quality management initiative, the Cape Cod Commission provides the following comments on the NPC concerning water and other natural resource issues in Barnstable County's Regional Policy Plan (RPP).

The proposed inlet widening project is designed to improve water quality in Bourne's Pond, maintain vehicle access between Davis Neck and Menauhant with a bridge, maintain existing boat access between Bourne's Pond and the Sound (i.e. will not increase access for larger boats), and minimize impacts to the environment.

With regard to impacts to coastal resources, the project will result in the loss of barrier beach-coastal beach, to be replaced with land under the ocean. A proposed revetment to stabilize the widened inlet will replace the existing revetment. The inlet widening and beach nourishment aspects of the project are all located within rare species habitat.

The town has not proposed mitigation to address the impacts to these resources, noting that the project itself is mitigatory, styled as an ecological restoration project that will result in improvements to water quality within Bourne's Pond. With the proposed improvement in water quality, the town hopes that eelgrass loss will stop or reverse, and that habitat for shellfish will improve as well.

The impacts from the proposed physical changes appear to have been minimized, and the project has been designed to consider the potential effects of sea level rise. Commission staff does not recommend that additional MEPA review be required, and suggests that impacts to rare species and coastal resources should be addressed through permitting. Post-project monitoring for changes in water quality, eelgrass, and shellfish should be incorporated into the permitting process.

According to the NPC, the project is currently at an early, 10% design phase. This is presumably why no stormwater management plans or sedimentation and erosion control plans have been included in the NPC submission. Because the inlet widening component of this project entails re-developing the span of Menauhant Road that runs across the inlet, stormwater management plans and erosion and sediment control plans should be provided to Commission staff for review prior to the work commencing to ensure that stormwater runoff from this stretch of road will be managed according to Stormwater Management goals in the RPP.

The inlet widening project will also include maintenance dredging of the channel; application of dredge spoils as beach nourishment to Menauhant Beach on both the east and west sides of the inlet; extension of the western jetty; and shortening of a western groin. With construction scheduled to last anywhere from 18-24 months, sedimentation and erosion control plans for the aforementioned activities should be provided to Commission staff for review prior to the commencement of such work.

Nitrogen Reduction

The proposed project aims to widen the existing inlet at Bourne's Pond in Falmouth from 50ft to 90 ft, resulting in greater tidal flushing of Bourne's Pond and reduce nitrogen concentrations. Bourne's Pond is a nitrogen-overloaded coastal pond with a nitrogen TMDL based on the 2005 Massachusetts Estuaries Project (MEP) Technical Report. According to the MEP report and TMDL, Bourne's Pond requires a 76% reduction in total nitrogen load, equating to a target removal of approximately 4,000 kg N/yr in order to restore ecological health of Bourne's Pond.

Materials submitted as part of the Notice of Project Change (NPC) support the potential water quality benefits of the widening effort with detailed analyses. Nitrogen-reduction benefits of widening the Bourne's Pond inlet have been analyzed over the past 10 years, with the most recent estimate resulting from updated modeling efforts.

MEP first analyzed the widening in their 2005 report, where it was determined that a 100-foot opening would reduce tidal dampening and rather significantly reduced N concentrations at the sentinel station. GHD has evaluated Bourne's Pond inlet widening in Technical Memos published in 2008 and 2013. The most recently issued memo, Technical Memorandum BP-1, included results from an update of the hydrodynamic and water quality linked model used in the MEP reports. The results of this updated model are the most recent estimates of nitrogen reduction and support the nitrogen reduction benefits of the project.

By incorporating data from updated bathymetric surveys, more localized inlet depth measurements, and an updated evaluation of local coastal process, the linked model was re-calibrated to reflect the most current conditions. Modeling results indicate the opening will increase tidal exchange by 10.3%, equating to an increase in over 9 million gallons of water per tide. As a result of greater tidal exchange, the estimated load removal is 1,995 kg/yr, which

achieves approximately half of the required nitrogen load removal required from the Bourne's Pond watershed.

208 Consistency

Commission staff suggests that the Bourne's Pond Inlet Widening project is consistent with nitrogen reduction goals set out in Barnstable County's Section 208 Areawide Water Quality Management Plan. Not explored in the Technical Memorandum BP-1, is how the updated hydrodynamics and water quality model have reduced the calibrated present condition concentrations at the Bournes Pond monitoring stations:

NPC (Tech Memo BP-1)

Table 5-3. Comparison of model average total N concentrations from present loading and present loading with a widen inlet, with percent change against background nitrogen concentrations, for the Bournes Pond systems. Sentinel threshold station for Bournes Pond is B3 and is in bold print.

Sub-Embayment	monitoring station	present (mg/L)	Widened Inlet (mg/L)	% change
Bournes Pond - head	B1	0.927	0.915	-1.9%
Bournes Pond - upper	B2	0.837	0.815	-3.9%
Bournes Pond - mid	**B3**	**0.578**	**0.555**	**-7.8%**
Bournes Pond - lower	B4	0.412	0.395	-13.3%
Israels Cove	B5	0.581	0.564	-6.0%
Bournes Pond - lower	B6	0.338	0.330	-15.6%

MEP

Table VIII-5. Comparison of model average total N concentrations from present loading and the modeled threshold scenario, with percent change, for the Ashumet Valley systems. Sentinel threshold stations are in bold print.

Sub-Embayment	monitoring station	present (mg/L)	threshold (mg/L)	% change
Coonamessett River (estuarine)	GT2	0.875	0.549	-37.3%
Great Pond - upper	GT3	0.782	0.498	-36.6%
Perch Pond	GT4	0.859	0.471	-45.2%
Great Pond - mid	GT5	0.591	0.404	-31.7%
Great Pond - lower	GT6	0.339	0.302	-11.0%
Green Pond - upper	G2	0.932	0.646	-30.6%
Green Pond - upper	G2a	0.792	0.570	-28.1%
Green Pond - mid	G3	0.642	0.487	-24.2%
Green Pond - mid	G4	0.526	0.421	-19.9%
Green Pond - lower	G5	0.409	0.355	-13.3%
Bournes Pond - upper	B2	0.901	0.566	-37.2%
Bournes Pond - mid	B3	0.643	0.454	-29.3%
Bournes Pond - lower	B4	0.426	0.355	-16.7%
Israels Cove	B5	0.633	0.424	-33.0%
Bournes Pond - lower	B6	0.340	0.312	-8.2%

The original MEP model calibrated a present concentration at sentinel station B3 of 0.643 mg/L, to match the observed data mean at the B3 station, 0.670 mg/L, according to Table VI-1 in the MEP report. According to the Technical Memorandum BP-1, the updated model yields a present concentration of 0.578 mg/L. It is presumed that this new concentration was calibrated to an updated data set of observed concentrations, which are not included in documentation supporting the NPC.

Because modeled baseline conditions at the sentinel station have improved since the MEP report, the overall nitrogen reduction required by MEP should also change. The overarching effects of the updated linked model should be addressed in the project's Adaptive Management

Plan, as the change in baseline conditions affects the systematic accounting of nitrogen loading in the watershed. Nitrogen removal as a consequence of updated hydrodynamics vs. nitrogen removal credits achieved by the inlet widening project should also be considered.

Commission staff notes that it believes there is in error in Section 3.3.3. of the NPC, where the NPC describes MEP's initial analysis of an inlet widening scenario at Bourne's Pond. The NPC makes reference to a reduction in concentration at the sentinel station from 0.782 mg/L to 0.569 mg/L. The initial concentration of 0.782 is an error carried over from Table IX-16 of the Bourne's Pond MEP report. The present concentration at the Bourne's Pond sentinel station is actually 0.643 mg/L (as shown in the MEP table Table VIII-5, above). The "% change" numbers in Table IX-16 of the MEP report, however, do internally reference the correct Bourne's Pond concentrations.

Additionally, Commission staff notes that it is not clear in the NPC what the current observed data mean for updated present Nitrogen concentration is for sentinel station B3. Presumably, observed data was used to calibrate the updated concentration, but this should be confirmed in order for Commission staff to fully understand how the model has changed.

Adaptive Management
Water staff suggests that the Bourne's Pond Inlet Widening project is part of an acceptable adaptive management framework that attempts to minimize the cost of nitrogen management. The Bourne's Pond Inlet Widening project is considered alongside other approaches that include implementing PRBs, Shellfish Aquaculture, and I/A systems. The Bourne's Pond Inlet Widening Project and all other demonstration projects will be subject to Adaptive Management evaluations where projects will be evaluated on a broad set of criteria. Evaluation Criteria will compare and balance social issues, environmental issues, ease of implementation, resource requirements, regulatory approvals, and resilience.

Monitoring
Nitrogen reduction credits for the inlet widening will be derived from actual monitoring data. The project will need to develop a robust monitoring plan that includes water quality monitoring, alongside other monitoring such as infaunal surveys. Currently, the Town of Falmouth's Draft Adaptive Management Plan contains only generic information regarding embayment water quality monitoring; a more detailed monitoring plan specific to this project should be included alongside future design plans submitted to Commission staff for review.

Thank you for the opportunity to provide comments on the above-referenced NPC. Cape Cod Commission staff is available and happy to answer any questions about these comments.

Sincerely,

Patty Daley
Deputy Director

Cc: Project File
Jeff Gregg, GHD, Project Consultant via email
Town of Falmouth Cape Cod Commission representative via email

Commonwealth of Massachusetts

Division of Marine Fisheries

251 Causeway Street, Suite 400
Boston, Massachusetts 02114
(617) 626-1520
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Mary-Lee King
Deputy Commissioner

March 1, 2016

Secretary Matthew A. Beaton
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Alex Strysky, EEA No. 14154
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Secretary Beaton:

The Division of Marine Fisheries (*MarineFisheries*) has reviewed the Notice of Project Change (NPC) by the Town of Falmouth for the Bournes Pond Inlet Opening Project. Inlet widening would be achieved by moving the eastern jetty at the inlet entrance further east and dredging the existing barrier beach. The inlet width would increase from 50 to 90 feet. The western jetty would be extended by 25 feet while an existing 25 foot groin located to the west of the inlet would be removed. Improvement dredging is also proposed to widen the channel to 90 feet through the removal of 5,800 cubic yards of sediment over 50,250 square feet of Land Under Ocean. Fill material would be deposited on the coastal beaches to the east and west of the inlet jetties. Existing marine fisheries resources and potential project impacts to these resources are outlined in the following paragraphs.

Bournes Pond and bordering coastal waters currently support a variety of marine resources. The proposed dredge area is mapped as bay scallop (*Argopecten irradians*) habitat. The coastal waters bordering the inlet are mapped shellfish habitat for quahog (*Mercenaria mercenaria*). The western shoreline of Bournes Pond bordering the inlet is a horseshoe crab (*Limulus polyphemus*) nesting beach. Bournes Pond also provides spawning habitat for winter flounder (*Pseudopleuronectes americanus*). Bournes Pond provides nursery and foraging habitat for American eels (*Anguilla rostrata*). The coastal shoreline bordering the inlet and several regions within Bournes Pond have been mapped previously by the Department of Environmental Protection (DEP) as eelgrass (*Zostera marina*) habitat. Coastal waters of Vineyard Sound also provide spawning habitat for longfin squid (*Loligo pealei*) [1].

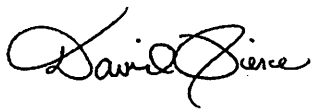
MarineFisheries offers the following comments for your consideration:

- The inlet widening project described in this NPC is designed to increase flushing of Bournes Pond, not reduce nitrogen inputs into the coastal ecosystem. *MarineFisheries* continues to recommend the development of strategies for source reduction. The Nitrogen Control Bylaw for Fertilizer referenced in the NPC (P. 33) is consistent with this approach, and *MarineFisheries* encourages continued development of complementary strategies to reduce source nitrogen.
- Further permit applications would benefit from inclusion of modeled estimates of total nitrogen (TN) in the coastal waters bordering the Bournes Pond inlet post-widening. During the MEPA site visit on February 24, John Ramsey of Applied Coastal Research and Engineering described an expected initial pulse of nitrogen transfer immediately following widening. Subsequent permit applications should better describe anticipated patterns of TN transfer following the widening project including both short and long term anticipated TN exports.

- *MarineFisheries* recommends staging timing of dredging and inlet widening work to minimize impacts to local marine resources. The existing inlet provides the only connection between Bournes Pond and Vineyard Sound. Winter flounder enter this embayment from January through May to spawn and deposit eggs on the substrate within this system. Horseshoe crabs spawn from late spring to early summer [2], and adults congregate in deep waters near nesting beaches during this period prior to spawning. To protect winter flounder and horseshoe crabs during their respective spawning periods, *MarineFisheries* recommends a time of year (TOY) restriction on all in-water, silt producing work from **January 15 to June 30**. This TOY period would also protect glass eels during their spring migration into this system. If the initial channel widening will result in a short term release of waters from Bournes Pond with high TN concentrations, widening should be staged to occur during a time of year when biological activity is low to minimize the potential facilitation of phytoplankton or macroalgal blooms. A late fall to early winter (i.e., completion prior to January 15) staging should meet these criteria.
- *MarineFisheries* concurs with the DEP recommendation (NPC P. 20) to develop a monitoring plan to assess potential changes in water circulation, quality, and clarity post-widening. In addition to monitoring within Bournes Pond, *MarineFisheries* recommends that the plan include stations in the coastal waters outside of the inlet. Eelgrass distribution should also be monitored both within Bournes Pond and in these bordering coastal waters to quantify potential changes in distribution since eelgrass has been historically mapped by DEP in both areas. *MarineFisheries* recommends that the proponent develop a draft monitoring plan for review as part of the Notice of Intent application. If there are existing monitoring activities producing data relevant to assessing the relative impact of this project, those activities should be identified and how the data can be used by this project should be clarified.
- The dredge track inside Bournes Pond borders an area mapped by DEP as an eelgrass bed (NPC Fig. 16). An eelgrass survey should be performed prior to dredging to delineate existing bed dimensions. The track should be modified to maintain a minimum 100 foot buffer between the top of the slope plus overdredge from any identified eelgrass in this region. A buffer of 25 feet should be applied for the dredge track for any bordering intertidal habitat.

Questions regarding this review may be directed to John Logan in our New Bedford office at (508) 990-2860 ext. 141.

Sincerely,



David E. Pierce
Director

cc: Falmouth Conservation Commission
J. Jefferson Gregg, GHD Inc.
Chuck Martinsen, Falmouth Shellfish Constable
Christopher Boelke, Sue Tuxbury & Alison Verkade, NMFS
Robert Boeri, CZM
Ed Reiner, EPA
Ken Chin, DEP
Richard Lehan, DFG
John Sheppard, John Mendes, Tom Shields, Kathryn Ford, Christian Petitpas, DMF

References

1. Evans NT, Ford KH, Chase BC, Sheppard J (2011) Recommended Time of Year Restrictions (TOYs) for Coastal Alteration Projects to Protect Marine Fisheries Resources in Massachusetts. Massachusetts Division of Marine Fisheries Technical Report, TR-47.

2. Barlow Jr. RB, Powers MK, Howard H, Kass L (1986) Migration of *Limulus* for mating: relation to lunar phase, tide height, and sunlight. Biological Bulletin 171: 310-329.

DP/JL/sd

AMENDMENT (Putnam): Add $70,000 to line 5 for a total of 431,550.

VOTED: By a counted vote of 76 in favor and 121 in opposition, a quorum being present on Monday, April 4, 2011 the Town voted not to amend Article 15.

VOTED: By a declared two thirds vote, a quorum being present on Monday, April 4, 2011 the Town voted to raise and appropriate the sum of $361,530.00 for the purposes of Article 15, including costs incidental and related thereto; provided, however, that no money shall be raised hereunder by assessing taxes in excess of levy limitations unless the Town shall have voted to exclude this amount from the provisions of Proposition 2 ½, so called, under M.G.L. Ch.59, sec. 21C (i ½) as a capital exclusion and only after passing a Town-wide referendum vote on the ballot of the May 2011 annual town election, said sum to be expended under the jurisdiction of the Board of Selectmen.

ARTICLE 16: To see if the Town will vote to appropriate a sum of money for the purpose of funding the deficit of the Main Street Phase II Project, and to determine how the same shall be raised and by whom expended. Or do or take any other action on this matter. On request of the Board of Selectmen.

VOTED: By a unanimous vote, a quorum being present on Monday, April 4, 2011 the Town voted to raise and appropriate the sum of $25,498.00 for the purposes of Article 16 to be expended under the jurisdiction of the Board of Selectmen.

ARTICLE 17: To see if the Town will vote to appropriate a sum of money to fund wastewater management studies, planning, design, repairs and construction of related projects to implement the Comprehensive Wastewater Management Plan, and to determine how the same shall be raised and by whom expended. Or do or take any other action on the matter. On request of the Board of Selectmen.

MOTION (Patrick): I move that the town appropriate $2,772,250.00 for the purposes of Article 17 including costs incidental and related thereto as follows: to fund wastewater management studies, planning, design, construction and demonstration with up to $500,000.00 for sewer design and engineering to implement the Comprehensive Wastewater Management Plan. To meet this appropriation, the Town Treasurer with the approval of the Board of Selectmen, is authorized to borrow said sum under the provisions of M.G.L. c. 44, s. 7(1), or any other enabling authority, and to issue bonds and notes of the Town therefore; provided, however, that no money shall be borrowed hereunder unless the Town shall have voted to exclude by Debt Exclusion this appropriation from the provisions of Proposition 2 and ½, so called, under the provisions of M.G.L. c. 59, s. 21C(k) and only after passing a Town wide referendum vote that shall be placed on the ballot at the May, 2011 town election, said sum to be expended under the jurisdiction of the Board of Selectmen.

VOTED: By a unanimous vote, a quorum being present on Wednesday April 6, 2011 the Town voted to appropriate $2,772,250.00 for the purposes of Article 17 including costs incidental and related thereto as follows: to fund wastewater management studies, planning, design, construction and demonstration with up to $500,000.00 for sewer design and engineering to implement the Comprehensive Wastewater Management Plan. To meet this appropriation, the Town Treasurer with the approval of the Board of Selectmen, is authorized to borrow said sum under the provisions of M.G.L. c. 44, s. 7(1), or any other enabling authority, and to issue bonds and notes of the Town therefore; provided, however, that no money shall be borrowed hereunder unless the Town shall have voted to exclude by Debt Exclusion this appropriation from the provisions of Proposition 2 and ½, so called, under the provisions of M.G.L. c. 59, s. 21C(k) and only after passing a Town wide referendum vote that shall be placed on the ballot at the May, 2011 town election, said sum to be expended under the jurisdiction of the Board of Selectmen.

ARTICLE 18: To see if the Town will vote to appropriate a sum of money to engineer, design and construct repairs, modifications and improvements to the town's sewer system, including but not limited to, odor control systems and sewers/force mains, and to determine how the same shall be raised and by whom expended. Or do or take any other action on the matter. On request of the Board of Selectmen.

VOTED: By a unanimous vote, a quorum being present on Monday, April 4, 2011 the Town voted to appropriate the sum of $1,500,000.00 for the purposes of Article 18, including costs incidental and related thereto, and that to meet this appropriation the Town Treasurer with the approval of the Board of Selectmen, is authorized