



Upon completion of the construction of proposed improvements and upgrades and new wastewater management systems and facilities, 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 DEIR, or as modified as part of the MassDEP permitting process, have been incorporated into the projects. This certification should be supported by project 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 DEIR should include this self-certification requirement.

**A17. *The self-certification requirement has been added to Chapter 8 Section 8.2.***

Adaptation, Resiliency and Coastal Hazards

Current rates of sea level rise, as well as projections for accelerated rates of sea level rise, pose significant threats to coastal development and resource areas by increasing storm surge heights and coastal flooding events. The DEIR provided sufficient information to identify many elements of the project that are clearly outside of flood zones and unlikely to be affected. Other areas warrant further analysis as revised floodplain mapping (July 16, 2014) and incorporation of sea level rise projections may identify project elements that will be located within flood zones.

The FEIR should include revised flood zone maps that incorporate effects of sea level rise and identify vulnerable facilities or infrastructure. The FEIR should identify specific measures that can be incorporated into the design or operation to facilitate adaptation and create resiliency. In addition, the Town should consider model results produced by USGS and modeling being conducted by APCC to assess potential changes to groundwater elevations associated with sea level rise and address any potential impacts to project elements.

Comments provide a list of resources to support these efforts. In addition, State Agencies and CCC have offered to provide technical assistance to support these efforts. The Town should refer to the CZM report, *Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning*, to guide selection of appropriate sea level rise scenarios.

Additional resources include:

- FIRM maps through the National Oceanic and Atmospheric Administration viewer
- the CCC Sea Level Rise Viewer available on the Commission website
- dynamic models created by the Woods Hole Group
- StormSmart Coasts -Visualizing Sea Level Rise on the CZM website

**A18. *The FEIR includes updated FEMA flood maps as shown on Figures referenced in Chapters 7 and 8. Additional description of mitigation measures has been added to Chapter 8.***



#### Construction Period Impacts

The FEIR should identify any changes to construction management and potential construction period impacts (including but not limited to land disturbance, noise, vibration, dust, odor, nuisance, vehicle emissions, construction and demolition debris, impacts on trees and other vegetation, and construction-related traffic). The Town should identify any changes or addition of measures to avoid, minimize and mitigate impacts.

**A19. *Mitigation measures were discussed in Chapter 8 of the DEIR and any additional measures can be found in Chapter 8.***

#### Mitigation and Section 61 Findings

The DEIR includes a separate chapter on mitigation measures and Section 61 Findings; however, it consists of general commitments and deferral of specific commitments to subsequent design and permitting. It does not include a specific draft Section 61 Finding for each agency action. As a long-term planning document, it is not feasible to identify specific commitments for every project element; however, the Town should revise and update the mitigation section to provide a summary of all mitigation commitments and to identify specific commitments where feasible and appropriate, in particular for early phases of the Plan (e.g. shellfish propagation program, construction of Site 4 WWTF).

**A20. *The Section 61 findings have been expanded for Phase 1 and are discussed in Chapter 8 Section 8.3.***

In addition, draft Section 61 Findings must be developed for each State Permit (e.g. Groundwater Discharge Permit, c.91 Permit, 401 Water Quality Certification). Draft Section 61 Findings will serve as the primary template for subsequent permitting conditions and should address specific regulatory program standards and requirements. The Section 61 Findings should describe proposed mitigation measures, contain clear commitments to mitigation and a schedule for implementation based on the construction phases of the project, estimate the individual cost of each proposed measure, and identify parties responsible for funding and implementing the mitigation measures. The draft Section 61 Findings will serve as the primary template for permit conditions.

**A21. *Additional description has been provided to the Draft Section 61 Findings presented in the DEIR. The Draft Section 61 findings can be found in Chapter 8.***

#### Responses to Comments

The FEIR should include a copy of this Certificate and a copy of each comment letter received. In order to ensure that the issues raised by commenters are addressed, the FEIR should include a response to comments received on the DEIR to the extent that the subject matter of the comment is within the Scope. The FEIR should include either an indexed response to comment format, or direct narrative response. The FEIR should present any additional narrative or quantitative analysis necessary to respond to the comments received. This directive is not intended to, and shall not be construed to enlarge the scope of the DEIR beyond what has been expressly identified in this Certificate.

**A22. *This memorandum is presented as the requested Response to Comments and is included in the FEIR in Appendix 1-1.***



#### Circulation

The FEIR should be circulated in compliance with Section 11.16 of the MEPA regulations and copies should also be sent to the list of "comments received" below and to town officials in Barnstable, Falmouth and Sandwich. A copy of the FEIR should be made available for public review at the public libraries in the Towns of Mashpee, Barnstable, Falmouth and Sandwich.

**A23. Final copies of the FEIR shall be provided to the public libraries of the communities of Barnstable, Falmouth, Mashpee, and Sandwich.**

#### B. COASTAL ZONE MANAGEMENT – LETTER DATED 9/5/14

##### Flood Zone Mapping

Figure 8-1 in the DEIR depicts flood zones in the planning area including the 100-year flood, the 100-year flood with velocity hazard, and the 500-year flood. A note on the figure states that "Digital Q3 Flood data was obtained through MassGIS (1997)". Updated FEMA Flood Hazard Layers are currently not available for this area." As of July 16, 2014, new data and maps are now available. The Town can access these data via the National Oceanic and Atmospheric Administration's viewer or can contact CZM. These maps should be consulted to ensure that the proposed infrastructure is outside of all flood zones. While it appears that the existing New Seabury wastewater treatment plant and Site 7 discharge location are outside the current 1% and 0.2% flood zones (i.e., 100 and 500-year floods, respectively), the Town should evaluate the flood risk given the expected sea level rise over the design life of the proposed structures.

**B1. See Response A18.**

In addition, the U.S. Geological Survey (USGS) has just completed a model of how groundwater will migrate upward as sea level rises on Cape Cod. We encourage the Town to use the results of this model to evaluate the long-term (20, 40, 60-year) viability of proposed and existing treated wastewater discharge sites and to plan for and acquire any necessary additional discharge sites as the Town moves toward build-out and as rising groundwater affects existing sites.

**B2. Depth to groundwater tables may be available based on existing monitoring wells in the vicinity of existing leaching facilities or historic data in those areas and will be considered during final design permitting of each site.**

##### Bivalve Propagation as a Nutrient Remediation Strategy

A major component of the Town's proposed nutrient remediation plan is to remove nitrogen from watersheds via bivalve propagation. While the Town provides some estimate of the ability of bivalves to remove nitrogen in various watersheds (e.g., Tables ES-1 and 5-16), the assumption that littlenecks contain 60 g of nitrogen and that oysters contain 100 g of nitrogen (see Notes at the bottom of ES-1) appears to be significantly higher than published estimates. For example, the January 2014 Woods Hole Sea Grant Program Marine Extension Bulletin described Cape Cod quahogs (littlenecks) as containing 0.22 g of nitrogen on average and Cape Cod oysters as containing 0.28 g nitrogen on average.<sup>1</sup> Using the Woods Hole Sea Grant Program values to revise the values in Table 5-16, 5 million oysters have the potential to remediate 1.4 metric tons of nitrogen (only 28% of the Mashpee



River Watershed load, not 50% as stated in the DEIR) and 4.87 million quahogs have the potential to remediate 1.07 metric tons of nitrogen (only 71% of the Popponesset Bay Watershed load, not 100% as stated in the DEIR). CZM suggests that the Town revise its estimates of the number and cost of bivalve propagation proposed for remediation in each sub watershed. Further, the costs associated with bivalve aquaculture (e.g., Table 5-18) appear to make several assumptions that do not appear to be realistic. For example, the Town's approach assumes that no individuals are lost to predators, weather, parasites, poaching, or low dissolved oxygen associated with eutrophication.

**B3. *There is a typographic error in the notes at the bottom of Table 2 (referred to as Table ES-1 in the comment above) in Appendix 5-1 Shellfish Aquaculture/Fisheries for Water Quality Restoration of the DRP/DEIR 06-24-14 in which "littleneck quahogs @ 60 g N" should be "littleneck quahogs @ 60 g live weight". "Live weight" should also be added to the "oysters @ 100 g". This will be corrected in the FEIR. This does not affect the numbers in Table 2 or Table 5-16 in Chapter 5 of the DRP/DEIR (or anywhere else) which were calculated using a nitrogen content of 0.5% of live weight of shellfish. This is calculated from the relevant data from oysters and quahogs collected from Mashpee in 2012 by Extension Agent Josh Reitsma that are in the data set used for the January 2014 Woods Hole Sea Grant Marine Extension Bulletin. Nitrogen content of Mashpee shellfish was higher than the average of shellfish from all towns. The nitrogen content data from Mashpee is in the "Shellfish Sample Data" table in Appendix 5-1. At the nitrogen content of 0.5% live weight, a 100 g oyster would contain 0.5 g nitrogen, and a 60 g littleneck quahog would contain 0.3 g nitrogen. Harvest data by live weight is used to calculate nitrogen removed from the estuary. The number of shellfish harvested is needed to estimate the number of seed to be planted. This does include loss due to predators, etc. The numbers of seed to be planted exceeds the number of shellfish to be harvested to account for these losses.***

***Bivalve aquaculture removes nitrogen from the water column by consuming the plankton that presently erodes the health of Mashpee estuaries. The potential effectiveness of one, or millions of bivalves, in removing nitrogen can only be estimated. Effective planning requires that their contribution, like other parts of Mashpee's CWMP, will be managed proactively through adaptive management. Mashpee's plan seeks to harvest bivalve aquaculture potential while recognizing and providing for whatever efficiencies, or lack thereof, are achieved. The actual performance of the aquaculture portion of the project remains to be demonstrated; however, it is viewed at this time that, barring a massive failure of the program to reduce nitrogen, this aspect of the project will remain cost-effective to implement.***

In addition, it is not clear if the costs include the costs of replacing lost individuals, the cost of hiring staff, or all costs associated with bivalve husbandry (vessels, gas, cages, upwellers), and the cost of enforcement. CZM also notes that several of the water bodies (Mashpee River, Shoestring Bay, Hamblin Pond) proposed for shellfish propagation are impaired by high bacteria concentrations and are on the Massachusetts Department of Environmental Protection (MassDEP) "Integrated List." Nowhere in the DEIR is there mention that the shellfish propagation approach is supported by Massachusetts Division of Marine Fisheries (MarineFisheries). If the Town intends to move forward with bivalve propagation, CZM would expect that the Final EIR (FEIR) would contain specific itemizations of all costs as well as a letter of support from MarineFisheries. While it appears that there are many logistical



hurdles to using bivalve propagation as a successful nutrient remediation strategy in waters that are already impaired, we applaud the Town for beginning to discuss alternative nutrient remediation and for considering a contingency plan should the proposed scheme for remediating nutrients via bivalve aquaculture not be adequate. We believe this contingency plan should be more explicitly stated in the FEIR (e.g., how many years of study would be needed and what would the threshold level be in order for the Town and MassDEP to consider bivalve propagation to be an inadequate remedy).

***B4. DMF has sent a letter of support—see comment letter dated September 5, 2014 included in this Appendix. In addition, the Mashpee Shellfish Constable (Rick York) met with DMF in December 2014 to review their comments and confirm their support.***

***The costs do not include staff, which is funded by the Town. The areas of water bodies proposed for shellfish propagation are approved for the harvest of shellfish by DMF as shown in the DMF Shellfish Area Classification Maps in Appendix 5-1 of the DEIR. After implementation, the success of shellfish propagation should be demonstrated within the first 5-year period.***

Lastly, should the Town move forward with bivalve propagation as a nutrient remediation strategy, CZM suggests that the Town describe how the nitrogen will be removed from the greater Cape Cod watershed. If the proposal is simply to harvest the clams and oysters and sell them to Cape Cod residents or use them in some other fashion on Cape Cod, the nutrients may not truly be leaving the impaired watersheds.

***B5. This is not proposed as a source removal approach, but a mitigation approach at the water body. Nutrients are coming from other watersheds and regions and traveling to other watersheds and regions as part of the nature of Cape Cod and its tourist population. It is understood as part of the plan that if the shellfish (or any other new source or load) are creating new impacts or such that nitrogen isn't being reduced in the water column, it will be apparent in the long-term monitoring and will require other approaches to reduce nitrogen at the source. Even if shellfish were sold to Cape Cod residents for consumption, this would represent a net loss of nitrogen since the locally consumed shellfish would not be new nitrogen, but rather would replace other sources of nitrogen from edibles that come from outside of the watershed (e.g. food from supermarkets).***

#### Nitrogen Source Reduction

CZM looks forward to seeing the Town develop and implement a fertilizer bylaw to help reduce the sources of nutrients to coastal water bodies. We agree with the DEIR that purchasing open space and developing a growth neutral/flow neutral policy are important tools to reducing future sources of nitrogen. It is clear from Table 1-1 that the Town will need to address 100% of the existing septic system load in at least half of the sub watersheds of the planning area; this indicates that any additional load to these areas will also need to be addressed. Even if sewered areas appear to be built out, additional nutrient loads are expected in sewered areas because relief from Title 5 constraints can expand occupancy on built properties and allow development on previously undevelopable properties. If the Town does not plan for future sources of nutrients, then the great public investment proposed in the DEIR related to sewerage, building treatment and discharge facilities, and shellfish propagation would be at risk for not achieving the desired water quality and ecological goals. We look forward to seeing the Town further develop source reduction strategies in the FEIR.



***B6. Appendix 4-2 of the DEIR included a copy of the Town's Nitrogen Bylaw regarding fertilizer, which was adopted at the October 20, 2014 Town Meeting and has been approved by the Cape Cod Commission under the Cape-wide fertilizer management DCPC. The plan is also based on a build-out condition which is intended to project future nitrogen loads from the development allowed or expected throughout the community. The Town is in the process of developing a flow/growth neutral bylaw to address this future loading concern as well.***

#### Nitrogen Removal and Long-Term Monitoring

In our comments on the Daft Alternative Scenarios Analysis and Site Evaluation Report, CZM requested that information be presented in the DMP/DEIR relating to the efficacy and fate of nutrients in the water quality models. This requested information included the following:

- A description of the modeling and monitoring that will be used to establish the efficacy of the proposed alternative at removing nitrogen from the watershed,
- A description of the modeling and groundtruthing efforts that will be used to determine the ultimate fate of the nitrogen load, and
- The long-term monitoring program upstream and downstream of the project that will be used to ensure that the selected alternative continues to remove nitrogen at the required rate for the duration of the project

CZM believes this information is an important part of the Town's Comprehensive Wastewater Management Plan, the results of this modeling and monitoring will guide the Town in its proposed adaptive management approach, and will ultimately be used to determine the success of the Town's nitrogen removal efforts. CZM recommends this information be provided prior to final development of the FEIR.

***B7. We agree that modeling and monitoring are key components and should represent the current conditions at the time of sampling in order to track progress. Additional details on the modeling and monitoring program are provided in Chapter 10 Section 10.2. The Mashpee Water Quality Monitoring Program that provided the data used to establish the TMDL-N is ongoing, and will supply the data needed for TMDL-N compliance and determination of water quality. Shellfish harvest and nitrogen content data will determine the amount of nitrogen removed by shellfish. Other data such as that collected upstream and downstream from alternatives such as shellfish beds is supplementary and subject to variability requiring large numbers of samples in some cases.***

C. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION – LETTER  
DATED 9-5-14

#### General Comments

MassDEP would expect Mashpee to initiate discussions with these and any other entities over which the town has no ownership or control to establish agreements for use of property for any uses relative to the contingency plan. Such agreements and their status, or alternatives should agreements be unobtainable, should be more fully discussed in the Final EIR. MassDEP also notes that it is not specifically stated in the DEIR if this contingency plan alone will meet the nitrogen removal targets necessary for TMDL compliance. The Final EIR should clarify this point. As an alternative to effluent recharge at these sites, recent changes



to the Ocean Sanctuaries Act may make an ocean outfall feasible which could possibly negate the need for effluent recharge at these sites. The Final EIR should explore this option in more detail.

***C1. The FEIR clarifies that the contingency plan is established to address nitrogen removal through traditional means in the absence of a working shellfish program. This is discussed in Chapter 6. Since the ocean outfall option was not a possibility during the majority of the planning stage of the project, it has not been evaluated. At this time, it is not clear if this would be a cost-effective option. The project does not have a central facility planned; therefore it may require multiple outfalls or means of conveyance into one outfall. The planning and construction of outfalls are costly. It is not clear what the operational or monitoring requirements placed on the facility would be, and it would be anticipated that the permitting process would be long and potentially contentious.***

***Should development of facilities in Phases 3 and 4 be required and the proposed discharge site at the New Seabury golf course be implemented, detailed analysis of the impacts of sea level rise on groundwater levels will be done to determine whether an ocean outfall might be required as an alternative at some future date.***

The DEIR provides a detailed phasing plan that extends from 2016 to 2040. The interim timeframe from the present through 2015 includes establishing an MOU between the Town and the District. The Final EIR should provide more detail with respect to the MOU in outlining responsibilities of each party and the means by which they will coordinate their efforts in refining the recommended plan. Other actions proposed during this period are to continue with the shellfish propagation program, continue with ownership discussions regarding JBCC and the use of private wastewater treatment facilities, continued discussion for regional MOUs with the towns of Barnstable, Falmouth and Sandwich, implementation of fertilizer management and/or bylaw and continued use of stormwater BMPs.

***C2. Recent developments have made the creation of the Mashpee Water & Sewer District unlikely and discussions between the Town and Mashpee Water District regarding an MOU (except regarding metering and billing) have been halted by the Board of Selectmen, who have also reversed their position and voted to recommend against creation of the District. In addition, the District will only come into existence upon a favorable ballot vote at the May 16, 2015 Town election; however, the Mashpee Selectmen are now recommending a “no” vote. Results of that meeting will be known before implementation of this plan.***

Monitoring will be an important part of the recommended plan so that progress and effectiveness of its various elements can be properly documented. The DEIR acknowledges that wastewater treatment facility performance will be monitored through MassDEP’s Groundwater Discharge Permit Program. Performance of the shellfish propagation program is proposed to be evaluated through commercial harvest data reported to the Division of Marine Fisheries (DMF) and recreational harvest data monitored by Mashpee. Shellfish will be analyzed for nitrogen content and quantified. While water quality monitoring data will follow the same protocols through the ongoing Mashpee Water Quality Monitoring Program, Mashpee and MassDEP need to discuss the details of the shellfish aquaculture program to insure that all monitoring and data collection is adequate and appropriate for use in determining nitrogen removal credits assigned to shellfish aquaculture.



***C3. It is understood that the monitoring program (of the stated components: shellfish, wastewater treatment, adaptive management programs, etc.) will be reviewed with several agencies, including MassDEP, in relation to the various goals of each agency. This monitoring program will also be developed such that it will work with the proposed modeling programs anticipated to be used in the compliance process, however these too may change with technology, time, and adaptive management approaches that may be implemented in the future.***

The approach taken in the DEIR appears to be consistent with the spirit and intent of the Cape Cod Commission's ongoing 208 planning process. The plan addresses a nitrogen mitigation and management plan with respect to watersheds and sets the groundwork for a regional approach among four municipalities. It also embraces the use of non-traditional approaches while at the same time recognizing the need for core areas of traditional infrastructure. The DEIR clearly lays out an adaptive timeline with decision points allowing the plan to pivot to various options as needed. Through the 208 process, the Cape Cod Commission has developed watershed tools to help assess proposed nitrogen load reductions, assign and select priorities, and take advantage of regional efforts. MassDEP recommends that Mashpee coordinate closely with the Commission as the FEIR is developed.

***C4. The Town/Sewer Commission will continue to coordinate with the CCC in the completion of this FEIR and subsequent phases of work.***

#### Specific Comments

Table 1-1 does not reference removal requirements for the Child's River subwatershed. However, Phase 5 does reference nitrogen management in the Child's River portion of Subarea H. The Final EIR should clarify or reconcile the level of removal anticipated for this subwatershed.

***C5. Childs River Watershed is not part of the project planning area; however, the small portion of Mashpee that falls within the watershed is part of the planning area. This portion of Mashpee was identified for sewerage based on its location relative to other areas requiring service. It is unclear under the most recent modeling by MEP whether they accounted for the nitrogen removal in this area for Childs River when considering the larger Waquoit Bay watershed. We do not plan to address this entire watershed as part of this project. A note will be added to Table 1-1 clarifying the project planning area watersheds listed.***

Section 4.2 discusses various options for source removal. As part of the discussion an existing town policy for eco-toilets is mentioned. The Final EIR should provide a brief synopsis of the policy or, alternatively, provide the policy as an appendix.

***C6. A copy of the Town's Board of Health Regulation regarding Eco-toilets (composting) has been included in Appendix 4-2.***

Section 4.5.2.2 references construction of wastewater treatment facilities initially designed to treat to 6 to 10 mg/L of total nitrogen (TN) with the capability of adding denitrification filters to achieve a level of 3 mg/L. It is unclear if the TMDL compliance is achievable at the 6 to 10 mg/L TN level or if it is necessary to treat to 3 mg/L. Perhaps the different levels of treatment relate to the effectiveness of the shellfish propagation program. The Final EIR should clarify this point.





***C7. This is clarified in Chapter 6 Section 6.4. The performance of the facility will depend on the shellfish program and its effectiveness. The first step is to construct or improve facilities to a higher level of treatment. Ultimately, if the shellfish aquaculture program is not as successful as estimated in the CWMP, these facilities will need to achieve 3 mg/L total nitrogen removal and therefore improvements made to these facilities will need to be done so with this taken into consideration.***

Section 4.5.2.6 references BMPs for stormwater. The Final EIR should clarify if Mashpee intends to require BMPs for new development or redevelopment only or if it will embark on a program of retrofits for existing stormwater structures.

***C8. The existing bylaws were included in the DEIR in Appendix 4-2 and apply to all new residential and non-residential developments. The Town through its own DPW efforts is making improvements to stormwater structures, but at this time does not require existing private residential property owners to implement BMPs, although the Town would encourage BMPs be employed.***

Section 5.4 and Table 5-2 reference wastewater treatment for Briarwood/Otis trailer Village and Tri-Town Circle which are in areas ostensibly not requiring nitrogen removal. MassDEP understand that inclusion of these areas is in anticipation of future build-out loads. The Final EIR should clarify this point.

***C9. This is clarified in Chapter 4. However all of the watersheds within the planning area contribute nitrogen load to one of the embayments of interest and although the MEP report identified “one” scenario for nitrogen removal, removal in other portions of the watershed is not a negative and shouldn’t be flagged as “not-requiring” nitrogen removal—it is a function of cost-effectiveness, coordination, and addressing other needs as well. It should also be noted that reduction of phosphorus impacts on freshwater bodies, such as Ashumet and Johns Ponds, is of importance to the Town.***

Table 5-17 suggests that shellfish aquaculture may account for 100% or the required nitrogen removal in some subwatersheds. MassDEP acknowledges that these are projections and will be evaluated for verification as part of adaptive management; however, MassDEP cautions against over optimistic expectations for effectiveness.

***C10. That is understood and is why there is such a “robust” traditional fallback plan to address nitrogen if shellfish do not achieve the nitrogen removal levels estimated.***

Section 5.9 references the extension of the Wampanoag Village wastewater treatment facility to pick up an additional 7,000 gpd from adjacent areas. It is not clear if this 7,000 gpd is in addition to the offset required under the existing GWDP. The Final EIR should clarify this point.

***C11. The expansion is required to offset 237 lbs N/yr produced by the housing development. In addition, the constructed treatment plant has significant capacity in excess of that needed for Wampanoag Village and the 237 lbs N/yr GWDP requirement, regarding which the Town and Tribe have begun discussions about extending the collection system served by the facility to include Town Hall and the surrounding area.***



Section 6.2.1 discusses shellfish aquaculture and references Appendix 5-1. The figures presented in the Appendix are presented in kg/d. In looking at total loads incorporating benthic flux, it should be recognized that benthic flux is not exerted throughout the entire year. It is not clear if the values are annualized. This should be clarified in the Final EIR.

***C12. Table 1 in Appendix 5-1 and the discussion in the Draft under section 6.2.1 focus on the present septic load in kg N/day and the threshold septic load in kg N/day, and therefore the reduction does not consider benthic flux in the evaluation. Based on discussions with MassDEP, it is understood that the benthic flux exerted is typically over a 60 to 90 day period and septic loads in kg N/day are representative of an annualized load (i.e. could be multiplied by 365 days whereas benthic flux would not be). Values reported in Table 1 are those from MEP Table ES-2 with the note “(2) Composed of combined natural background, fertilizer, runoff and septic system loadings.” Benthic flux is discussed because it can be a significant percentage of the total N load in some cases, and shellfish can remove nitrogen from that source, but the calculations are not based on removal of benthic nitrogen.***

Section 6.2.2 discusses the use of JBCC relative to this DEIR. As discussions with JBCC proceed, considerations for all potential future needs for Barnstable, Bourne, Falmouth, and Sandwich should be considered.

***C13. The Town of Mashpee is not in a position to “project” what other communities may or may not want or need for treatment or recharge at JBCC. Our plan is based on addressing the needs of the watersheds related to Mashpee, which does consider adjacent communities. In consideration of Barnstable, their connection to JBCC would need to be through either Mashpee or Sandwich in order to use the facility; therefore that is a larger unknown or possibly an unlikely consideration. If other communities are planning to use that facility as well (as stated in previous JBCC/MassDevelopment reports) then the larger regional effort will be necessary to distribute capacity appropriately. At this time, the Town is simply stating their needs, with potential fallback provisions if JBCC is not available.***

Section 6.2.3 discusses wastewater treatment alternatives including effluent recharge. Proposals for the use of drip irrigation at the New Seabury and Willowbend golf courses are good ideas, but the specifics of design, location loading rates, etc. will have to be evaluated during the permitting process.

***C14. This would be done as part of the permitting process as you state and will be called out in the revised Draft Section 61 findings.***

Section 6.2.4 discusses improvements to existing wastewater treatment facilities. In addition to securing agreements with the facilities not under Mashpee's control, a complete evaluation of capacity for expansion will have to be conducted.

***C15. It is expected that this would be done prior to each implementation phase as it related to each facility. A level of evaluation was performed as part of the Needs Assessment Report; however, due to the number of years that have passed a review needs to be done again closer to the implementation phase.***



Section 6.2.7 discusses management of onsite I/A systems. MassDEP agrees that a management entity is required and suggests that the entity could be developed as a municipal function or within the water and sewer district. It may not necessarily require a separate management district.

***C16. The Town has not established what type of structure it foresees for the limited number of I/A systems in town.***

Section 6.3.1 discusses stormwater management. It appears that the DEIR is not seeking credit for nitrogen removal from stormwater BMPs.

***C17. That is correct, it is assumed that through future modeling efforts, any benefits from fertilizer reductions and stormwater improvements will show up in the water quality of the estuaries and therefore the extent of traditional wastewater infrastructure and shellfish can be adjusted through the adaptive management program without specifically having to claim credit for other nitrogen reductions.***

Section 6.3.3 discusses future demonstration projects. MassDEP encourages the town to keep its options open as various non-traditional approaches are piloted and based on results, these could be incorporated into the recommended plan as part of the adaptive management process.

***C18. That is our approach in using adaptive management.***

Section 7.2.2 makes reference to the hydrogeologic investigations at Site 4. Further evaluation of these findings will be part of the groundwater discharge permitting process.

***C19. It is understood that additional evaluations of any of the sites may be required as part of the permitting process.***

#### Construction Stormwater Permit

The project construction activities may disturb one or more acres of land and therefore, may require a NPDES Stormwater Permit for Construction Activities. The proponent can access information regarding the NPDES Stormwater requirements and an application for the Construction General Permit at the EPA website: <http://cfpub.epa.gov/npdes/stormwater/cgp.cfm>

***C20. This was identified in DEIR Chapter 8 – Draft Section 61 Findings.***

#### Bureau of Waste Site Cleanup

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 or prudent if contamination is present. The BWSC may be contacted for guidance if questions arise regarding cleanup.

***C21. This was discussed in Chapter 8 of the DEIR Section 8.3.2 regarding LSPs and review of sites within the Project Planning Area (PPA) as defined in the previous MEPA submittals.***



#### Proposed s.61 Findings

The "Certificate of the Secretary of Energy and Environmental Affairs on the Draft Environmental Impact Report" may indicate that this project requires further MEPA review and the preparation of a Final 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.

***C22. Chapter 8 of the DEIR included this information with the exception of a cost breakout for mitigation measures as it is impossible to determine the cost or extent of those measures until a design is prepared and the impacts are fully identified. An expanded section will be prepared for the recommended Phase 1 work, however we do not believe it is appropriate to try to be more specific on permitting that is many years out. We do believe that the chapter prepared as part of the DEIR covered this information at a similar level of detail as the Easton CWMP /EIR (as referenced in previous comments/statements as part of the MEPA review) and similar EIRs filed by GHD for other Cape Cod approved projects, although organized differently.***

D. CAPE COD COMMISSION – STAFF REPORT DATED 9-5-14

#### LAND USE

Goal LU2 is to use capital facilities and infrastructure efficiently and in a manner that is consistent with Cape Cod's environment, character, and economic strengths, and that reinforces traditional village- centered development patterns. MPS LU2.1 states that proposed or expanded infrastructure shall support compact development patterns. It is recommended that the FEIR include a more detailed discussion of how proposed wastewater infrastructure will support compact development patterns in the Town consistent with RPP Land Use goals, local planning goals and current Mashpee zoning which includes but is not limited to mandatory cluster, transfer of development rights (TDR), and two acre zoning.

***D1. Mashpee is essentially built-out as regards its development pattern, with the only significant property remaining to be developed being the Mashpee Commons project, which is/will be a compact New Urbanist development supported by a private sewer system which may become part of the municipal system. All other remaining development is either infill lots in existing subdivisions or remaining portions of compact developments (New Seabury, Southport, Quashnet Valley) which were permitted in the 1960s and 1970s and are "grandfathered" from current or future zoning requirements. Remaining development at New Seabury and Southport is being connected to their private wastewater systems, which may become part of the municipal system. Otherwise, the proposed early-phase wastewater facilities have been targeted at high-density existing developed areas.***



### Land Use Control Mechanisms

As these strategies are a key component of reducing future growth potential, the FEIR should either include those not currently in existence (i.e. Growth Neutral) or elaborate on how they are already included in the proposed phasing plan for implementation and provide additional information on each of the proposed strategies, including a description of near-term solutions for seasonal areas. It would also be helpful to provide a summary of past and ongoing land management activities (e.g. past land acquisitions protective of the Mashpee River, adoption of mandatory cluster and TDR bylaws, etc.) as well as a characterization of the how close the town is to reaching buildout.

**D2. The Town intends to propose a Growth Neutral bylaw similar to that adopted by the Town of Falmouth.**

***Regarding past land acquisitions protective of the Mashpee River it should be noted that, building on the extensive ownership of lands along the River by TTOR since 1949, the Town and Mass DFW have, beginning in the mid-1980s, acquired every undeveloped parcel of land along the River at a cost of over \$8 million. Mashpee has protected over 1,826 acres of land under the control of the Conservation Commission and an additional 405 acres under the Land Bank Act, which are controlled by the Board of Selectmen, along with more than 159 acres of other Town-owned land with open space restrictions. In addition, 266 acres are owned by the US Fish & Wildlife Service, 265 acres are owned or restricted from development by the US military in clear zones related to the aviation activities at Joint Base Cape Cod, 1,170 acres are owned by Mass DFW or DCR, 1,331 acres is private condo or cluster subdivision protected open space, 177 acres are protected well sites owned by the Mashpee Water District, 474 acres is owned by land conservation trusts, 64 acres of Falmouth Rod & Gun Club land are subject to a conservation restriction, and 482 acres are subject to Chapter 61 current use taxation restrictions, for a total of 6,619 protected acres, of the total town land area of 14,894 acres (44.4%). Another 1,160 acres owned by the US government lies within Joint Base Cape Cod and approximately 1,000 acres lies within the layouts of public and private roadways.***

***The Town's TDR zoning bylaw (Open Space Incentive Development) was adopted in 1987, requiring 50% open space in specific mapped areas and targeting the resulting development to other specific areas; as well as providing density bonuses as an incentive for transfers, including a bonus for sewerage. Mandatory cluster subdivision, with a minimum of 50% open space and incentives for a larger percentage, was adopted in 2006 (replacing cluster zoning provisions that dated back to 1963 and 1971 which were used in the large majority of non-condo developments since then).***

***The year-round population in 2014 was 14,842; the summer peak day population was 33,847; 6,384 homes were occupied year-round; and 3,558 were only occupied during the summer. Projected build-out population is 22,704 in 9,790 year-round occupied homes, with summer build-out population of 35,928 and 3,046 summer-only homes. Total private housing units are projected to increase from 10,313 in July 2014 to 12,836 at build-out, or 24.5%.***

### Water Resources

The Mashpee CWMP includes innovative aspects that the Commission finds consistent with the draft 208 Plan Update and could be found as consistent with the Regional Policy Plan. However, additional work is



needed to better characterize the incremental nitrogen reduction of the Phased plan and its prioritization. The Commission can provide technical assistance for these characterizations and will devote staff and new tools, including the WatershedMVP, to assist the town upon request.

***D3. Additional clarification is provided in Chapter 9, and Tables 9-2 and 9-3. The Mashpee Sewer Commission will coordinate with the CCC as part of the Adaptive Management Plan to determine what additional characterization may be requested.***

The DEIR/CWMP retains and modifies Option 1A, which continues to propose Site 7 and additional areas of New Seabury and no longer proposes use of the Rock Landing well site for wastewater disposal, as the default traditional plan. Because this option rests on the results of the 2012 MEP results, it is assumed that the previous discharge distribution conceptually conforms to the new discharge configuration of the 2014 Modified Option 1A below, but the FEIR should clarify.

***D4. The recharge configuration does conform to the results developed as part of Option 1A and is further clarified in Chapter 6, Section 6.2.3 of the FEIR.***

However, in a plan that will be incrementally implemented, a cost premium for an independent facility may be desirable. The plan compares potential advantages and disadvantages of both approaches but does not conclude which may be the best option. An additional detail that should be considered is the total nitrogen contribution to the overall and sub-embayment load of the watershed. Staff used the Watershed/MVP tool to list the nitrogen flow through factor associated with each of these areas accounting for natural attenuation. In some cases like Tri-Town, only 20% of the nitrogen will get to the embayment. In the case of Pirates Cove 100% of the nitrogen load gets to the embayment. Use of the Commission's tools provides an ability to rank explicit nitrogen reduction benefits for making decisions on priorities and staff is available to work with the town to further explore these options.

***D5. The DEIR did examine the impacts of attenuation in the nitrogen loading and cost per pound nitrogen removed for that very reason. Because these areas are in later phases of the project they can be reviewed with the CCCs MVP tool as those Phases are approached.***

Several of the proposed discharge sites of the DEIR/CWMP will require further negotiations and agreements; contingencies within the plan for alternative sites may have an effect on nitrogen reduction targets and anticipated treatment levels. Given the uncertainty of New Seabury as a major discharge site further evaluation of expanding the potential for use of JBCC for regional discharge is warranted. The site characterizations appear to indicate the suitability of the discharge sites. Discharge sites located north of the John's Ponds area should be further evaluated for potential impacts on the downgradient fresh water ponds.

***D6. The additional evaluations necessary for the sites north of Johns/Ashumet Ponds presuming that JBCC were not available would be determined during the Adaptive Management Program and as part of preliminary and final design and site evaluations.***



### Shellfish Aquaculture

Because this option rests on the results of the 2012 MEP results, it is assumed that the previous discharge distribution conceptually conforms to the new discharge configuration of the Recommended Plan as outlined below, but the FEIR should clarify.

**D7. See D4.**

### Total Plan Cost and Phasing

The town submitted a matrix of parameters as a supplement to the EENF/ DEIR that compares and selects potential sewer areas for collection and accumulated wastewater treatment flows for existing and proposed WWTF. The matrix ranks the priority of the previously delineated Planning Areas. It is not clear how the matrix assigned nitrogen loads, either existing or attenuated, to the areas. Commission will review and comment more fully on this matrix pursuant to the FEIR.

**D8. Attenuation was considered in the matrix analysis; however, the matrix does not evaluate nitrogen loading, it only prioritizes areas identified for nitrogen removal as determined in the analysis using the MEP rainbow spreadsheet land use model which includes attenuated loads. This is clarified in Chapter 6 and 9 of the FEIR. Nitrogen loads are determined by detailed identification of individual properties and modeling of the nitrogen from each property through the watersheds to each of the estuaries.**

### Adaptive Management

The DEIR/CWMP incorporates the elements of an Adaptive Management Plan for monitoring, and reviewing data and making adjustments and modifications of the plan. The Commission will provide additional comments and direction on the proposed adaptive management plan for the Phase 1 Plan in the DRI review. It is suggested that the Town appropriately budget for the necessary evaluations and adaptive management provisions within the aquaculture component of the Phase 1 project.

**D9. The Town is considering how they will budget for the program and how much.**

### Coastal Resources/Natural Resources

The RPP generally prohibits impacts to wetlands and the 100ft buffer to wetland resources, though utility infrastructure installation may be allowed where there is no other feasible alternative. During CWMP implementation, project planners should avoid direct and indirect wetland and buffer impacts wherever possible. Indirect impacts could include actions that may be expected to alter the natural functions of the wetland. At the same time, alterations that include associated wetland restoration are supported in the RPP.

**D10. This is discussed in Chapter 8 of the DEIR.**

The RPP also generally prohibits activities that would impact rare species or their habitats. According to the DEIR, three of the plan's potential "greenfield" sites (Sites 4, 2, and 6) are located in mapped habitat of two state listed species, the Eastern Box Turtle and the Grasshopper Sparrow. The Natural Heritage and Endangered Species Program indicated in correspondence on the project in 2008 that efforts to minimize impacts to these habitats should be addressed during the design phase of the project. As the town moves



forward with selecting sites for wastewater implementation they will need to coordinate with the NHESP for additional guidance on avoiding or mitigating impacts to rare species.

***D11. Additional coordination at any of the proposed sites will be conducted as the Town/District moves forward with the implementation of the plan.***

With the exception of the shellfish restoration aspects of the proposal, the Mashpee CWMP appears to propose limited impacts to coastal resources (section 8.3.2. To the greatest extent feasible, collection system components should be located within existing roadways or disturbed areas wherever feasible in coastal resource areas. In addition, the RPP permits new non water- dependent public infrastructure within land subject to coastal storm flowage where there is no feasible alternative, a public benefit is demonstrated, and provided that the infrastructure will not promote new growth and development in flood hazard areas. The staff recognizes the public benefit of nitrogen reduction activities and suggests that the FEIR address how new growth and development will be controlled in flood hazard areas.

***D12. See D1 regarding build-out in Mashpee. The FEIR discusses this in Chapter 10.***

Commission staff sought comments from the Cape Cod Cooperative Extension/WHOI SeaGrant staff with regard to the shellfish restoration components of the plan. CCCE staff commented that the proposed sites are feasible, but that it would be advisable to pre-identify actual areal coverage of bottom habitat suitable for planting shellfish in order to accurately assess available space for the proposed shellfish densities. Potential concerns raised by CCCE staff deal with the availability of appropriate shellfish seed to undertake the aquaculture project. Commission staff assumes that consideration for location/design of shellfish proposals will not conflict with vessel navigation. Figure 1.2: Provided by CCCE staff, the locations are feasible and identified as approved shellfish growing/harvest areas by the MA Division of Marine Fisheries. Exceptions include the upper reaches of Hamblin Pond, Mashpee River, and Shoestring Bay which are designated prohibited areas.

***D13. Additional mapping showing the proposed locations is provided in Chapter 6, Figures 6-1 through 6-3.***

#### Effluent Recharge Sites

The potential new effluent discharge sites 4 and 6 are all mapped for rare species habitat, as noted above, and are greenfield sites. However, they are not mapped for other sensitive resources, including wetlands, certified or potential vernal pools, or BioMap2 Core Habitat. Additionally, selection of these parcels for development over others within the town will serve to minimize additional fragmentation of habitat in Mashpee, as these parcels are already disconnected from large contiguous open space tracts, and/or are adjacent to existing development. Commission staff recommend that fragmentation of habitat and open space at all of the sites considered should be minimized by siting the disposal beds as close to existing development as is feasible, given other land use values, concerns and interests.

***D14. Figures 7-11 and 7-12 of the DRP/DEIR show the mapping for vernal pools, DEP wetlands, and other sensitive habitats, and these same figures will be carried forward for the maps in the FRP/FEIR. Fragmentation of habitat will need to be considered as the preliminary site plans are***





***developed, as part of the initial planning process, and in coordination with NHESP and CCC as discussed in Section 7.3.2.5.***

#### Collection System

To the extent possible, pump stations should be located near roads and away from wetlands and wetland buffer areas, to minimize the footprint of additional disturbance. Also, as a general matter, the collection system network should be installed within existing road networks to the extent feasible, and avoid “overland” installations that will result in large, new additional areas of disturbance and habitat fragmentation where economically feasible.

***D15. This will be considered during design.***

#### TRANSPORTATION RESOURCES

Regardless of any new facility's(s) trip generation, MPS TR1.8 requires acceptable sight distances at all access and/or egress locations for DRIs. With a special concern to a site with a high percentage of truck traffic, it is recommended that the Town confirm to the Commission that any new treatment facility(s) be sited such that any new site driveway provides sight distances that meet the stricter of the Massachusetts Department of Transportation and American Association of State Highway Transportation Officials guidelines for safe stopping sight distances.

***D16. Additional statements regarding sight distances have been added to Section 7.3.2.6 and Section 8.3.1 of the FEIR (Mitigation Measures and Draft 61 Findings)***

#### HISTORIC PRESERVATION/COMMUNITY CHARACTER

The Comprehensive Watershed Nitrogen Management Plan for Mashpee includes a variety of methods to address nitrogen. Several of the proposed methods are unlikely to affect historic or archaeological resources due to their limited ground disturbance or their location in previously disturbed areas. None of the proposed methods appear to impact structures within the Mashpee Historic District. In order to be consistent with RPP Standards HPCC1.1 (Historic Resources) and HPCC1.2 (Cultural Landscapes), the town will need to work with Massachusetts Historical Commission (MHC) and local historic boards to insure that final design plans for new infrastructure will avoid impacts to these resources.

***D17. This would be done as part of the next steps of plan implementation during detailed site planning and design.***

Potential new facilities proposed at Site 4 and Site 6 appear to be located outside of highly sensitive archaeological resource areas, but additional archaeological reconnaissance survey work will be necessary if construction (treatment facilities, pumping stations, and collection systems) is proposed beyond already surveyed areas. The same is true of other undisturbed sites being considered for construction of new treatment facilities. Installation of sewer lines and ground-disturbing infrastructure should occur in previously disturbed areas as much as possible in order to avoid possible impacts to historic and archaeological features. As the final design of other project elements is completed, MHC review is needed to assess areas where ground disturbance is proposed and to determine whether additional archaeological survey work is needed, consistent with RPP Standard HPCC1.3 (archaeological sites).



**D18. As stated previously, this is done as part of the design process.**

Permittee Responsibilities

The Town of Mashpee filed this CWMP/DEIR with the MEPA Unit. The Sewer Commission may be absorbed into a new entity if a town referendum passes next spring to create a new Mashpee Water and Sewer Commission. The town should explain who will be the responsible party for future permitting, implementation, operation and management, and provide details about how Sewer Commission activities might be succeeded via the new entity. In addition, it is staff's understanding that the existing and potential new commission will control traditional collection, treatment and disposal facilities. The FEIR should address how the town will be responsible for implementing traditional and non-traditional proposals contained in the CWMP/DEIR whether or not the new entity is approved in the Spring of 2015.

**D19. Text has been provided in Chapter 9 Section 9.1 discussing this process.**

E. DIVISION OF MARINE FISHERIES – LETTER DATED 9-5-14

MarineFisheries offers the following comments for your consideration:

- MarineFisheries commends the proponent for designing a shellfish remediation plan that is consistent with the MarineFisheries Shellfish Planting Guidelines [6]. The proposed shellfish planting regions are all in areas currently listed as Approved for shellfish harvest, thus avoiding potential health risks associated with illegal harvest.

MarineFisheries is supportive of shellfish restoration and the inclusion of shellfish aquaculture and propagation in nitrogen remediation efforts. The town will need to modify their existing municipal propagation permit with MarineFisheries to conduct these activities.

**E1. The Town will submit permit modifications to DMF.**

- While we are supportive of shellfish propagation for the purposes of augmenting harvest opportunities and maintaining and increasing local populations, we caution against relying on shellfish as a primary nutrient remediation technique. Past research has demonstrated that nitrogen removal varies among estuaries and years due to differences in environmental conditions (e.g., food availability, temperature, nitrogen loading) [7,8]. Nitrogen removal from shellfish propagation can be negatively impacted by factors leading to reduced growth rates or increased mortality (e.g., hypoxia events, reduced food availability). Given the ambitious scale of the shellfish remediation component, MarineFisheries requests further information on this component and also provides comments below on the approach outlined in the DEIR:

**E2. Please see Chapter 6 for updated/additional information regarding the program.**

- The general approach of quantifying nitrogen removal through shellfish harvest consists of multiplying total shellfish harvest by an average estimate of individual shellfish nitrogen content. The former will be based on both commercial and recreational harvest data. While collection of commercial data involves a relatively straightforward use of DMF catch reports, non-commercial harvest will likely be more challenging to quantify. Particularly given the ambitious scope of the



shellfish component, proposed recreational harvest data collection methods should be explained in greater detail.

**E3. Recreational harvest data will be collected from surveillance cameras and patrols by the Shellfish Constable and assistants.**

- Since the seed to be used in this effort will be coming from outside sources, the initial weight of the seed shellfish should be subtracted from the harvest weight used to calculate nitrogen removal. While individual initial seed weight will be quite small, this overall weight for all shellfish seed could be relevant at the proposed scope of planting and removal.

**E4. The weight of oyster seed from the hatchery at about a millimeter in size is insignificant. The weight of 1-inch quahog seed from the hatchery is about 6 grams each which is 10% of the 60 g average harvest size of littleneck quahogs. In areas seeded with 1-inch quahogs, the weight of littleneck quahogs harvested the following year needed to remove the required amount of nitrogen would be increased by 10% in Table 2 of Appendix 5-1 of the DRP/DEIR (Shellfish Aquaculture/Fisheries for Water Quality Restoration 06-24-14). Seed planted would have to be increased by 10% for the estimated survival rate in the plan. If the quahog seed is grown in an aquaculture system from small (~1 mm) seed in the water body that it is to be planted in, then the initial weight is insignificant. In addition, if the population becomes self-sustaining through spawning, then the initial weight is not relevant.**

- Shellfish aquaculture and propagation is proposed as a tool to address 50% (Mashpee River, Shoestring Bay) to 100% (Popponesset Bay, Ockway Bay, Great River, Jehu Pond, Hamblin Pond) of the of the nitrogen load exceeding the threshold set through the Massachusetts Estuaries Project (MEP). A recent study on Cape Cod concluded that the likely range of land-derived nitrogen that could be removed by shellfish bioremediation was 1-15% [7]. Proposed nitrogen removal by shellfish should be reported in terms of total estimated nitrogen load to these systems. The approximate numbers of shellfish required to reach the MEP thresholds are included in the report. The estimated total area required to house these numbers of shellfish, associated shellfish densities, and the planting area locations should also be included in the report. This information is needed to better understand the likelihood of attaining nitrogen removal goals through the proposed intensive shellfish bioremediation approach.

**E5. Based on the draft MEP Report for the Waquoit Bay system, the amount of nitrogen to be removed by shellfish to achieve the TMDL-N and restore water quality in the Great River, Little River/Hamblin Pond, and Jehu Pond area (DMF area SC16) is about 15% of the total land-derived present watershed nitrogen load, see MEP Report Table ES-1 (Howes, et.al 2012, page ES-12). In the Popponesset Bay system, the removal by shellfish is approximately 25% of the total land-derived present watershed nitrogen load, see MEP Report Table ES-1 (Howes, et.al 2004, page ES-9). The numbers are included in the FEIR Chapter 6, Section 6.2.1.1 "Nitrogen Removal". In a review of published studies, Carmichael, et al, 2012, found that shellfish have been reported to remove up to 25% of the total daily nitrogen load. Shellfish densities and planting area location maps (Figures 6-1 through 6-3) are included in the text.**



- The “nitrogen removal” section of the Shellfish Aquaculture/Fisheries for Water Quality Restoration component of the DEIR refers to higher historic shellfish carrying capacities. If habitat conditions have declined, these historic densities may no longer be supported in the current environments of these systems.

Consequently, intensive planting may have high rates of mortality if seed shellfish are being introduced to areas that no longer can sustain high shellfish densities.

***E6. Oyster aquaculture uses gear and/or habitat enhancement (culch) to make up for historic habitat loss. For quahogs, there is enough good habitat remaining in the areas proposed. Habitat maps have been updated by the Mashpee GIS Department with GPS data collected by the Shellfish Constable and will be included in the FEIR. For example, more than 102 acres of good quahog habitat have been mapped in the SC16 area. The 20 million littleneck quahogs needed to remove the required amount of nitrogen there would only be at an average density of about 3 to 7 per square foot, which is well below historical limits and high densities at which quahogs can grow.***

- Both oysters and quahogs are proposed for use in the nitrogen remediation plan. For more eutrophic water bodies where food supply to filter feeders tends to be higher, shellfish growth tends to increase. However, mortality rates can also increase under these conditions, likely due to hypoxia. Oysters, which have high feeding and assimilation rates as well as high survivorship in hypoxic conditions, would be better suited than quahogs for nitrogen remediation in such areas [7,8].

***E7. As described in Appendix 5-1 of the DPR/DEIR, risks for oyster propagation are minimized in lower salinity areas where diseases and most predators are eliminated. In areas with higher salinities such as most of the Waquoit Bay system, oyster losses due to predation and disease are problems. Quahogs are the best option for higher salinity areas because disease is not a problem for them in the warm waters in Mashpee and predation is not a problem for quahogs larger than an inch in size. Both species do well in eutrophic waters and can survive short-term hypoxic conditions.***

#### **F. DIVISION OF FISHERIES & WILDLIFE – LETTER DATED 9-5-14**

Portions of the Town of Mashpee are mapped as Priority and Estimated Habitat for twenty-seven (27) state-listed rare species, in accordance with the 13th Edition of the MA Natural Heritage Atlas, including but not limited to the Eastern Box Turtle (*Terrapene carolina*, state-listed as “Special Concern”) and Grasshopper Sparrow (*Ammodramus savannarum*, state-listed as “Threatened”) provided in Section 7.2.5 of the DIR. All projects proposed within Priority and Estimated Habitat, which are not otherwise exempt pursuant to 321 CMR 10.14, will require review through a direct filing with the Division for compliance with the Massachusetts Endangered species Act (MGL c. 131A) and its implementing regulations (MESA; 321 CMR 10.18) and/or the rare species provisions of the Wetlands Protection Act Regulations (WPA; 310 CMR 10.37 & 10.59).

The Division would encourage the Town to incorporate design and implementation alternatives that avoid and minimize impacts to state-listed species and their habitats, and to initiate consultations with the Division during the design phase. Division staff are available to evaluate alternatives and work proactively with the Town to address any concerns related to state-listed species prior to submission of a formal MESA filing.



***F1. As site plans are more fully developed, they will be coordinated through NHESP in order to evaluate alternatives and work to protect these habitats.***

G. ASSOCIATION TO PRESERVE CAPE COD – LETTER DATED 9-5-14

Targeted Watersheds- One of the core principles of the 208 Plan is a targeted watershed approach. While the Popponesset Bay portion of this plan is arguably a targeted approach (Barnstable remains missing), the portion of the plan addressing Waquoit Bay is anything but a targeted watershed approach. Falmouth has the largest contribution of nitrogen to Waquoit Bay and is essentially absent from the plan. <sup>1</sup> This is simply not a watershed based plan, but is instead the usual plan based upon municipal boundaries and singular municipal action. Mashpee is not completely at fault here as Falmouth has been reluctant to address Waquoit Bay and has focused more in the central portion of that town. Additionally a Total Daily Maximum Load (TMDL) for Waquoit Bay came late in the Massachusetts Estuaries Program watershed evaluation process.

***G1. We understand your concern, however when the project was developed it was to address the areas identified in the PPA. Although the Waquoit Bay portions of Mashpee's plan do not consider the entire embayment, they are steps in the right direction to address this need. Waquoit Bay was evaluated on a "fair share" basis to identify how much nitrogen would need to be managed by Falmouth and Mashpee. This plan reflects the commitment that Mashpee needs to put forth to manage their nitrogen contribution to Waquoit Bay. This approach also does not eliminate the ability to adaptively address this entire area in the future.***

Waquoit Bay is the one Area of Critical Environmental Concern (ACEC) covered by this plan and deserves a fully targeted plan involving Sandwich, Falmouth and Mashpee. The 208 plan and planning process identified both the need and the cost savings for towns to cooperate on a watershed basis as opposed to each town sticking to its municipal boundaries. The Secretary should require a targeted watershed approach for Waquoit Bay-making the three towns work toward a solution for this severely impaired ACEC.

***G2. See response G1. The issue of requiring each town to deal with Waquoit Bay is now an issue to be addressed by the Commonwealth of Massachusetts.***

Land use initiatives -The Secretary's Certificate dated November 1, 2013 stated that "[t]he DEIR include a detailed discussion of potential land use control mechanisms that can be employed to limit secondary growth impacts associated with implementation of the CWMP."

Mashpee has done a good job in dealing with new development. Currently, Mashpee has several growth management bylaws in place that do go beyond many towns in controlling the rate of growth and protecting natural resource areas. The challenge will be to bring redevelopment and expansion of existing structures and uses into a sound and equitable regulatory environment.

Mashpee's zoning should reflect the goal of directing compact development to targeted areas where infrastructure can support the growth, but at the same time, offset that growth with a balanced, growth-neutral reduction in development potential outside of the targeted growth areas.



The town adopted a permit phasing requirement that allows no more than 20 percent of the lots in a new subdivision to receive building permits each year. The town-wide limit is 90 building lot permits per year. Mashpee has an optional Open Space Incentive Development bylaw for subdivisions on 20 acres or more of land, and a mandatory cluster subdivision bylaw for subdivisions on five or more acres. Both bylaws require a special permit, as opposed to being by right. The minimum open space set-aside for both is 50 percent. A Transfer of Development Rights option is available with the Open Space Incentive Development bylaw.

While these bylaws are more progressive than cluster bylaws in many other Cape towns, there are innovative natural resource protection bylaws being used on the Cape and elsewhere in Massachusetts that are very effective in managing growth and protecting resources. APCC adds the following initiatives to the discussion of Mashpee's growth management strategy:

- Natural Resource Protection Zoning (NRPZ)
- Open Space Residential Design (OSRD)
- Managing Expansion of New and Existing Uses
- Floor Area Ratio
- "Sliding Scale" FAR Hybrid (Wellfleet Example)
- Maximum Site Coverage in the National Seashore Park (Wellfleet)
- Lot Area Maximum
- Site Coverage

***G3. While the Town appreciates these suggestions, most are merely other towns' versions of bylaws that have been in place for many years and were pioneered on the Cape by Mashpee. While the Town does have maximum lot coverage requirements, the suggested Floor Area Ratio examples will be studied to determine their efficacy for Mashpee. It must be noted that the vast majority of existing and potential new development in Mashpee is protected from such dimensional zoning changes by the "grandfathering" provisions of G.L. Chapter 40A, Section 6 regarding separately owned lots and protection of rights vested under existing Special Permits; and that a large portion of new potential development has been permitted, or is proposed to be permitted, under G.L. Chapter 40B.***

#### Sewer Hookup Cap

Some Massachusetts towns have adopted or are considering regulations that place a ceiling on the number of allowable sewer hookups within a sewer district. If desired by the town, additional building permits may be allowed only through a special permit. These caps allow for targeted zones of contribution.

***G4. This is not an issue in Mashpee, as almost all proposed sewers are to serve existing development which is contributing nitrogen to our estuaries and which must be hooked up to the sewer system to achieve our nitrogen TMDLs.***

#### Growth Management Bylaw (Provincetown Example)

The purpose of this bylaw is to maintain a sustainable rate of residential and commercial development in the town in order to ensure that adequate infrastructure continues to be available to meet current and future demand without overburdening the town's natural resources or infrastructure capacity. A limited number of



annual permits are issued for any new or expanding uses that will increase Title 5 flow. Issuance of these permits is based on a predetermined hierarchy of priority types of uses, with affordable housing being the highest priority. The types of uses that are higher in priority go to the top of the waiting list.

**G5. As noted above by APCC itself, Mashpee has had a growth management bylaw in place since the 1980s.**

#### Wetland Setback Requirements

Mashpee has a 100-foot setback requirement for development along the Mashpee and Quashnet rivers, while development near other wetlands and water bodies in town must observe a 50-foot setback requirement. The town should consider expanding the 100-foot setback requirement to all ponds and other wetlands. In addition, the board of health should consider expanding the current 100-foot setback requirement for septic leaching systems near ponds and other fresh water bodies to 300 feet.

**G6. Although this could potentially reduce the number of future buildable lots, it would not impact existing properties (beyond redevelopment) and would be a policy issue that would need to be taken up by the Town. In addition, given the size of most waterfront lots in Mashpee—most of which were laid out as many as 90 years ago—the 300-foot proposal would be impossible to meet in the vast majority of cases.**

#### Special Permits

The town should evaluate whether the Board of Appeals should be required to make a specific finding of more or less nutrient loading in all special permits decisions related to redevelopment or existing structures and uses in determining whether or not a project is "substantially more detrimental," with the goal being net reductions.

**G7. Although we question the legal basis for such a requirement under zoning, this proposal will be considered.**

#### Mandatory Advanced Wastewater Treatment

Mashpee should consider a mandatory requirement for advanced wastewater treatment for all upgrades or replacement of existing systems, such as, all cluster or conventional subdivisions of four units or greater must be connected to an advanced wastewater treatment system if those subdivisions are in areas that do not have sewer service, or that are in designated water protection districts. The Harwich board of health has adopted this requirement in its regulations.

#### Fertilizer Management

In addition to examining new growth management bylaw and regulation options, Mashpee hopefully will adopt the Cape Cod Commission's fertilizer management model bylaw at its fall town meeting. The Secretary should send a strong message of the value of adopting this proposed bylaw and its potential for inexpensive water quality improvement.

**G8. The Town has already adopted a nitrogen management bylaw at its October 20, 2014 Town Meeting and a copy of this document is included in Appendix 4-3.**



Reliance on aquaculture - Mashpee has assembled one of the best teams imaginable to carry out its aggressive shellfish program. The cooperation and collaboration of the Mashpee Wampanoag Tribe is an added bonus and an addition to the likelihood of success. Mashpee Shellfish Constable Rick York is regarded as one the preeminent experts on shellfish management and has a track record of success of utilizing shellfish as a tool for water quality improvement. The plan has a heavy reliance upon this approach, which is subject to wide range of challenges from the environment including disease, predation, weather, ocean acidification and climate change. The town has embraced adaptive management and is prepared to move to a more conventional approach if shellfish efforts disappoint. However, how success or failure are to be quantified and determined is not established in the CWMP with the necessary degree of certainty.

***G9. The shellfish potential contribution to the CWMP will evolve from monitoring of the estuaries prior to the implementation of later stages; however, the CWMP is based on a traditional infrastructure approach to achieve the TMDL supported by an adaptive approach to reduce this infrastructure through the implementation of shellfish use to help remove nitrogen from the impacted waterbodies and take advantage of the cost savings through reduction in traditional infrastructure.***

That shellfish take up nitrogen and convert it into shell and tissue is not in question. However, the use of shellfish to take up and remove nitrogen from eutrophic coastal waters, on a scale that would provide noticeable improvement in water quality, is a new area of environmental management. It is critical that we advance this potentially important management tool with a clear understanding of the risks and benefits and a sound means of evaluating success and failure. APCC's main concerns relate to: 1) accurately estimating the concentration and amount of nitrogen removed by shellfish, 2) contingency planning to address limitations on nitrogen removal that may occur if shellfish are impacted by disease, predation, harmful algal blooms, climate change, ocean acidification, cessation or slowing of harvesting, 3) the reliability of this method of removing nitrogen from estuaries, and 4) monitoring to ensure performance.

***G10. The CWMP will only include "the actual" contribution attained by shellfish implementation. These concerns are addressed in Chapters 6 and 9.***

- 1) The 2012 study was performed over one growing season. Pilot tests should be conducted for at least two or more years in order to obtain enough data to yield robust estimates of the amount and concentration of N in shellfish. Two years is also preferable because older shellfish will generally be larger and contain more nitrogen than younger oysters.

***G11. Mashpee will have five years or more of background data before significant capital infrastructure is installed in the CWMP. The results of the 2012 sampling confirm earlier data on the nitrogen content of oysters sampled previously from Mashpee. The shellfish sampled in 2012 were more than a year old and representative of shellfish that are harvested. The nitrogen content of quahogs and oysters will be analyzed annually for more data in the future.***

- 2) The 2012 study was apparently not used to differentiate nitrogen uptake according to different size classes. Reitsma et al. (2014) and the Falmouth pilot study (Karplus, personal communication) showed that size class is an important factor in determining the percent of nitrogen in shellfish-generally the older the shellfish, the larger it is and the more nitrogen it





contains. Using one number for the percent of N could result in over- estimating or under-estimating the amount of nitrogen removed by shellfish, particularly when extrapolated to five million shellfish.

***G12. Mashpee's inclusion of shellfish effectiveness is on a "results only" basis. The sizes of shellfish sampled in the 2012 study were representative of the sizes that are harvested.***

- 3) Mashpee's assumption of 0.5 g of N removed per oyster assumes a 100-g oyster (0.5% N times 100 g oyster = 0.5 g N per oyster). The 2012 study tested oysters whose whole weights ranged from 37.26 g wet weight to 97.46 g wet weight, with the average being 59g. If harvested shellfish are smaller than 100 g, the town's assumptions may result in overestimating the amount of N removed. Again, characterization of N content based on size classes would help the town to more accurately estimate the amount of N that could potentially be removed. Reporting of N concentrations and amounts in terms of dry weight would facilitate comparison with published values.

***G13. Mashpee's inclusion of shellfish effectiveness is on a "results only" basis. The nitrogen removal estimates from harvest data are based on weight, not size, for the reasons stated in the comment. The 2012 data includes dry weight but percentage of N in live weight is used for the calculations because the harvest data is live weight.***

- 4) Variation in N concentration and amount in shellfish should be characterized in order to bracket the upper and lower bound s of N-removal. Variation could occur due to seasonality, size classes (as indicated above), estuary conditions, species, shellfish health, and other factors. This is important for judging whether shellfish aquaculture will meet regulatory standards for N removal.

***G14. Mashpee's inclusion of shellfish effectiveness is on a "results only" basis. This plan is based on the nitrogen content of shellfish where and when they are harvested and at the sizes harvested as calculated from the relevant Mashpee data from the 2012 sampling. As noted above, more sampling is planned.***

- 5) When N concentrations, amounts and estimates are being discussed, the narrative should be clear whether this refers to oysters, quahogs or a combination of both.

***G15. This will be clear in the FEIR, but the results of the 2012 sampling are that the nitrogen content of Mashpee oysters and quahogs are both 0.5 % of live weight.***

Recommendation 1:

Because there is much riding on using shellfish to remove nitrogen, Mashpee should conduct additional pilot testing for at least a second and probably a third year, to provide more accurate estimates of the amount of N to be removed . Additional testing should characterize the mean, median, variation (maximum, minimum, standard deviation) in nitrogen concentration and amount according to species, size class, estuary, seasonality, and growing configuration. The results should be used to re-estimate the amount of nitrogen that may be removed by oysters or shellfish.



**G16. See response G9. More sampling and analysis is planned.**

Recommendation 2:

Provide backup plan if shellfish cannot be harvested or populations are reduced (in addition to other contingencies).

**G17. The traditional infrastructure outlined in the phasing plan is the backup plan to shellfish, in addition to any future adaptive management approaches shown to be effective in nitrogen removal. The plan is predicated on the fact that if shellfish aren't successful, or show promise but then are wiped out for some reason or another, then traditional infrastructure (or other adaptive management programs) will be put in place to reduce the sources of nitrogen.**

Stormwater - The nexus of stormwater management to edible, sustainable shellfish does not seem to be captured/appreciated in the plan. APCC believes that a successful shellfish program is dependent upon sound stormwater management. Moreover, protecting water quality is critical to maintaining the integrity of Cape Cod's public water supplies, swimming beaches, and recreational resources. While water pollution is often associated with industrial activities and maritime accidents, stormwater runoff from developed areas is a major contributor to the problem. Excess fertilizers and insecticides and the harmful chemicals that accumulate on roofs, pavement and other impervious surfaces, are transported by stormwater to surface and ground waters. This runoff severely degrades water quality, harming the ecology of coastal waters and threatening public health. While federal and state water quality standards require communities to treat and manage stormwater, municipal stormwater management requires an investment in trained staff, infrastructure improvements, maintenance, and management systems. Finding the funding to manage stormwater runoff to meet water quality standards is often a challenge. Traditional sources of funding (state and federal grants) are typically not enough to address all of a community's stormwater management needs. In recent years, communities across the country have adopted stormwater utilities as a way to create adequate funding for comprehensive municipal stormwater management programs. These utilities have proven to be a successful way for cities and towns to fund stormwater programs that will bring communities into compliance with federal regulations for non-point source pollution under the Clean Water Act. APCC recommends that Mashpee evaluate the creation of a stormwater utility.

**G18. Additional discussion regarding stormwater improvements to further protect shellfish resources is discussed in Chapter 8. The reliance on stormwater management for nitrogen removal can be a significant management cost for minimal benefit. The USEPA is addressing some of this in their updated MS4 program in Massachusetts. The creation of another utility beyond the Town's Department of Public Works is a more complex endeavor with minimal benefit to the community relative to nutrient removal.**

Failure of on-site systems -There is compelling evidence that some on-site septic systems are failing and not being detected as failing. The Silent Spring Institute, which is studying the levels and impacts of pharmaceuticals in the groundwater on Cape Cod, has noted that a functioning Title 5 system does an excellent job of breaking down acetaminophen. The Provincetown Center for Coastal Studies is currently monitoring bays and estuaries surrounding Cape Cod for pharmaceuticals, and has detected acetaminophen in our bays, estuaries and sounds. The only potential source for detectable acetaminophen is from failing on-



site systems. There are a number of explanations including the failure of Title 5 to eliminate the use of cesspools. APCC has assembled anecdotal information that the majority of existing cesspools have a direct hydraulic connection with groundwater. APCC believes that CWMPs should address both cesspools and monitoring of on-site systems (which often escape inspection under current regulations). The Secretary can take a lead in this endeavor by ordering an update of Title 5 regulations that phase out cesspools and require periodic inspection of on-site systems (not just at sale or an identifiable problem like frequent pumping).

***G19. Due to the age of Mashpee's development, there are very few cesspools located within Town. The Town also has the largest number of I/A systems on Cape Cod. The DEIR discusses the benefits of increased management and monitoring of their existing systems; however, this comes at a cost and is a Town decision. The suggested update to Title 5 would provide a necessary underpinning to such Town efforts and would be welcomed.***

Sea level rise and the efficacy of on-site systems in low lying areas - While the plan addresses climate change, it overlooks some of the critical dynamics ultimately impacting wastewater decision making. APCC is coordinating a multi-level, multi-year modeling project to determine the impact of sea level rise on groundwater elevation and flow. One of the major climate challenges facing Cape Cod is sea level rise. Cape Cod is one of the global "hot spots" for sea level rise, meaning Cape Cod will face well-above global average sea level rise. This could be as much as a seven-foot increase over the next century. Cape Cod has a sole source aquifer that is significantly affected by sea level. On the outer Cape our freshwater floats entirely on top of salt water. On the upper Cape, sea level will have the same impact as if the fresh water were completely afloat: groundwater elevation will rise as sea level rises. As sea level rises it will impact a wide range of ecosystems and infrastructure. On-site septic systems work because of the separation of leaching fields from groundwater. According to the Department of Environmental Protection, the number one cause of on-site septic system failure is groundwater infiltration. Rising sea level will mean rising groundwater elevations and more on-site septic systems will fail. Working with the U.S. Geological Survey, and the Cape Cod Commission, work is underway in this modeling effort. The model will predict where sea level rise will have the greatest impact on the ground water dynamic, which includes groundwater elevations, stream flow, pond size, and vernal pools, as well as human infrastructure (e.g. basements, septic systems, roads and underground utilities). Sea level rise will likely increase the rate of on-site septic systems and add to the cost of all in-ground infrastructure. This reality needs to be better integrated into the plan and priorities may have to be readjusted.

***G20. The Town looks forward to the results of APCCs study and ongoing work by USGS, which will provide a guide for potential amendments to the CWMP. These could potentially include expansion of sewered areas to deal with areas likely to be impacted by septic system failure induced by sea-level/groundwater table rise as a driver of the Plan in addition to dealing with nutrient issues and potential impacts on proposed wastewater facilities at the first scheduled 5-year review.***

Environmental Justice Issues -The plan should more formally address the affordability challenges facing an older demographic often living on fixed incomes and the low income community in Mashpee. These residents may not be able to carry the full cost of implementation. While the Commonwealth has made adjustments to the state revolving fund program which should benefit those least likely to afford the cost of



improvements, the town must take a more creative approach. APCC recommends the town consider income from commercial shellfishing associated with the plan be used to offset some of the financial impacts on those least able to afford costs associated with wastewater improvements.

***G21. Representatives of the town of Mashpee, from the conception of the need for a CWMP, have endeavored to develop the most cost-effective methodologies to address the affordability and implementation issues. As a “green” community having implemented progressive policies preserving open spaces, limiting development, harvesting solar power, educating on and regulating the limiting of fertilizer use, managing stormwater runoff, and expanding bivalve production, Mashpee has offset costs associated with wastewater management and will continue to do so.***

***At this time the Town only receives revenue from permit fees and is not currently in a position to charge shell fishermen (commercial or otherwise) a portion of their proceeds beyond implementing a new tax and therefore requiring special legislation to do so. Revenue from Shellfish Permit Fees is used for shellfish propagation. Fees are increased at times, but would not be a significant percentage of the cost to implement the plan.***

***In addition, the Sewer Commission believes that, as a matter of fairness based on the fact that all households within our watersheds contribute to our nutrient overload problem, capital costs should be funded through bonds supported by the general property tax and that betterment fees should not be used for that purpose. Doing so ensures that higher valued properties—often waterfront—will pay a higher share of such costs than lower-valued properties more likely to be occupied by lower-income residents. Other assistance programs for low income households required to make connections to proposed sewers will also be considered.***



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September 12, 2014

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

PROJECT NAME : Comprehensive Watershed Nitrogen Management Plan  
PROJECT MUNICIPALITY : Mashpee  
PROJECT WATERSHED : Cape Cod  
EEA NUMBER : 12615  
PROJECT PROPONENT : Town of Mashpee  
DATE NOTICED IN MONITOR : July 9, 2014

As Secretary of Environmental Affairs, I hereby determine that the Draft Environmental Impact Report (DEIR) – Draft Recommended Plan ***adequately and properly complies*** with the Massachusetts Environmental Policy Act (M.G.L. c. 30, ss. 61-62I) and with its implementing regulations (301 CMR 11.00). The Proponent may prepare and submit the Final EIR (FEIR) for review. The Scope included in this Certificate identifies additional analysis and information required in the FEIR.

Project Description

The Draft Comprehensive Watershed Nitrogen Management Plan (CWMP) presents the Town of Mashpee's recommendations to manage wastewater and remove nitrogen to address the Total Maximum Daily Loads (TMDLs) established for Popponesset Bay and eastern Waquoit Bay. The DEIR summarizes the Town's wastewater management planning process and identifies planning, programs and projects that will be implemented over a 25-year period. It addresses the environmental impacts and costs associated with elements of the Recommended Plan. It proposes a combination of traditional and non-traditional wastewater management approaches, including expansion of wastewater treatment facilities (WWTFs) for treatment and discharge, new treatment facilities, shellfish aquaculture for nitrogen removal, land use controls, fertilizer management, and demonstration projects. The latter projects include permeable reactive barriers (PRB), wetland restoration projects and a feasibility study for the Quashnet/Moonakis River.

Planning has emphasized consideration of more cost-effective approaches, compared to traditional wastewater management, and approaches better suited to the seasonal fluctuations of wastewater generation. The Adaptive Management approach to implementation will result in changes to the Plan based on opportunities, changing technology, long-term monitoring and results of modeling and monitoring. Planning, programs and projects will be phased and monitoring and modeling data will be evaluated in conjunction with the phasing to support evaluation of the effectiveness of the Plan. Notable elements of the plan include:

- The Plan relies heavily on potential for aquaculture to remove nitrogen loads and meet TMDLs for many of the embayments. Infrastructure components of the plan are identified to supplement the attainment of TMDLs through aquaculture and are deferred until necessary to meet TMDLs in the Mashpee River and Quashnet River watersheds.
- Use of existing capacity or expansion and upgrades to create capacity for treatment and discharge at existing private WWTFs (New Seabury, Willowbend, Mashpee Commons, Southport and Stratford Ponds in Mashpee; Cotuit Meadows in Barnstable; and Forestdale School in Sandwich). This approach may minimize environmental impacts and should reduce infrastructure costs significantly.
- Expansion and modifications to Joint Base Cape Cod (JBCC) (formerly Massachusetts Military Reservation) WWTF for regional wastewater management, including Quashnet (Areas H, G) and Sandwich (Sand-1,-2,-3).
- Construction of new wastewater treatment and recharge facilities.
- Development of a framework for regional cooperation with Barnstable, Falmouth and Sandwich. The Plan identifies PPA subareas within each town and associated wastewater treatment facilities that could be accommodated within the Plan.
- Development of a management structure for areas where septic systems and Innovative/Alternative systems will remain in use.

The project is proposed in phases from 2016 to 2040. Each phase includes the filing of an NPC with MEPA and Development of Regional Impact (DRI) modifications to the Cape Cod Commission (CCC). The phases incorporate evaluation of the effectiveness of shellfish propagation and contingency plans that will be implemented if aquaculture does not attain the identified targets. It identifies what facilities and associated capacity will be constructed. At the end of each phase, the MEP models (land use and hydrodynamic) are updated to calibrate with water quality and benthic flux sampling and compliance reports are provided.

#### **Phase 1: 2016-2020**

- File NPC and DRI modifications
- Shellfish propagation in Popponesset Bay (including the subwatersheds of Mashpee River, Shoestring Bay, Ockway Bay), and in Jehu Pond and Hamblin Pond (including Great River)
- Design and construction of JBCC for Area H (0.2 mgd), or Back Road if JBCC is not feasible
- Design and construction of Site 4 WWTF and related collection system for Subarea S2 (0.1 mgd)
- Connection of the Quashnet and Combs schools to the Mashpee Commons WWTF
- Feasibility study for Restoration of the Quashnet/Moonakis River
- MEP model updates and compliance reporting

**Phase 2: 2021-2025**

- File NPC and DRI modifications
- If expansion of the JBCC is feasible, then construct sewer collection system and connect Mashpee (0.20 mgd from H, L, M) and Sandwich (0.1 mgd from 1, 2 and 3)<sup>1</sup>
- Continue shellfish propagation
- If shellfish removal targets are not achieved, the following projects will be implemented:
  - o Site 4 expansion with recharge to Willowbend
  - o Upgrade private WWTF at Willowbend, Stratford Ponds, South Cape Village, Windchime Point
  - o Sewer S1 P1 south of Route 28 (to Mashpee River and Popponneset Bay)
  - o Coordinate with Barnstable regarding incorporation of sections of Cotuit
- MEP model updates and compliance reporting

**Phase 3: 2026 to 2030**

- File NPC and DRI modifications
- Continue shellfish propagation
- If shellfish removal targets are not achieved, the following projects will be implemented:
  - o Upgrade Southport private WWTF
  - o Site 4 expansion (0.39 mgd) including extension of sewer service area to Mashpee River and Popponneset Bay subwatersheds
  - o Expand Willowbend WWTF service area
  - o Design and construct WWTF at Site 6 to serve Ockway Bay Area (0.27 mgd)
  - o Construct new discharge beds at New Seabury for Mashpee Commons and Site 6 effluent. 0.71 MGD
  - o Coordinate with Barnstable and Sandwich regarding incorporation of remaining areas within the Popponneset watershed
- MEP model updates and compliance reporting

**Phase 4: 2031 to 2035**

- File NPC and DRI modifications
- Evaluate and implement if necessary the upgrade of Cotuit Meadows and Wampanoag Village private WWTF
- If shellfish removal targets are not achieved, the following projects will be implemented:
  - o Expansion of Site 6 and sewer collection systems
  - o Collection expansion to Site 4
  - o Collection expansion of Great Neck Road to Mashpee Commons
  - o Collection expansion of Hamblin and Jehu D2 and B
  - o Upgrade and expand New Seabury WWTF
- MEP model updates and compliance reporting

**Phase 5: 2036 to 2040**

- File NPC and DRI modifications
- Continue shellfish propagation

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<sup>1</sup> Future service area could include Falmouth (0.05 mgd from 13-17)

- If shellfish removal targets are not achieved, the following projects will be implemented:
  - o Remaining flow from Barnstable (B-37) and Sandwich (Sand-4, -5, -6) recharged outside of watershed
  - o Expand collection system to Subarea T (Main St/ Rt 130) to Site 4
  - o Expand collection system to Area A and C
  - o Expand collection system to Childs River Subarea H
- MEP model updates and compliance reporting

The Recommended Plan is estimated to cost \$140 Million for Mashpee and \$35 Million for the three neighboring towns for a total capital cost of \$180 million dollars. Alternative estimates are provided if aquaculture is not included and these include a capital cost of \$260 Million for Mashpee and an additional \$97 Million for the neighboring towns for a total of \$360 million dollars. The DEIR indicates that the Recommended Plan results in a 50% cost reduction compared to traditional infrastructure, although it is unclear whether the projected results can be obtained and costs of aquaculture may be underestimated. The DEIR also identifies cost estimates for Phase 1 - \$49 Million with a present worth estimate of \$92 Million over 20 years at 3% interest. Evaluation of the benefits and costs of Phase 1 will support development of the long-term plan and refinement of cost estimates.

#### Procedural History

An Environmental Notification Form (ENF) was submitted in October of 2001 to identify the planning process for the development of a CWMP. The Certificate on the ENF identified the four phases of the planning process and provided a Scope for the Needs Assessment Report (Phase 1). The Certificate on the ENF directed the Town to prepare and submit for review the first two reports prior to the submission of the Phase 3 (DEIR) and Phase 4 (FEIR) documents.

The Town submitted a Notice of Project Change (NPC) and a Needs Assessment Report to the MEPA Office in October 2007 in accordance with the MEPA regulations for a lapse of time, at 301 CMR 11.10(2). The NPC indicated that planning was delayed to support incorporation of the results of the MEP reports, which were released in 2004 and 2005. The NPC identified the nutrient loading limits and TMDLs developed through the (MEP) for coastal embayments located in Mashpee including Popponesset Bay, Waquoit Bay East, Hamblin Pond, Jehu Pond, the Mashpee River, Quashnet River, Great River, and Little River. It defined the Project Planning Area (PPA) and identified the amount of wastewater flow from the PPA to be approximately 2.7 million gallons per day (mgd). It provided information on existing wastewater facilities; physical features, land use and regulatory issues affecting wastewater facilities; and existing conditions related to environmental resources, nitrogen loadings and on-site septic systems. The Needs Assessment Report also identified the impacts of population growth in the PPA on wastewater collection, treatment and disposal facilities.

A second NPC was filed in 2012 because of a lapse in time in accordance with the MEPA regulations (301 CMR 11.10(2)). It indicated that EPA established TMDLs for nitrogen for the Popponesset Bay and the East Waquoit Bay estuaries (Quashnet River, Hamblin Pond, Little River, Jehu Pond and Great River). The TMDLs for Waquoit Bay (Childs River, Eel River) were being reviewed by EPA at the time the second NPC was filed.



The ASAR (Phase 2) was submitted in September of 2013. It projected that build-out of the PPA will result in approximately 2.9 mgd of wastewater flow. Approximately 2.2 mgd of future wastewater flow is attributed to the Town of Mashpee, 0.18 mgd to the Town of Barnstable, 0.39 mgd to the Town of Sandwich, and 0.12 mgd to the Town of Falmouth. It included an evaluation of alternative wastewater and nutrient management technologies to meet the wastewater management and TMDL reduction targets. Three potential alternative wastewater management options were presented for further evaluation:

1. Option 1A: Maximization of recharge outside the watersheds of the project planning area. Continued use and expansion of existing WWTFs, and the construction of new WWTFs to treat the estimated future build-out wastewater flows from the PPA (2.7 mgd). Under Option 1A, approximately 1.55 mgd of treated effluent would be conveyed to recharge sites located out of the watersheds, including the proposed New Seabury and Rock Landing discharge sites. The Rock Landing discharge site would require the Town's abandonment of its Rock Landing water supply wells and corresponding Zone II water supply protection areas for use as a recharge site for treated wastewater flow. Most of the estimated future wastewater flows from those areas of Barnstable, Falmouth and Sandwich located in the Popponesett and Waquoit Bay East watersheds would be recharged outside of the watersheds. Approximately 0.5 mgd of flow from on-site I/A and Title 5 septic systems would be recharged in the watersheds.
2. Option 1B: Recharge within the watersheds and address flows from outside the community within Mashpee. This option assumes that the Town's Rock Landing water supply wells and Zone II areas would be preserved for continued water supply and would not be available for recharge of wastewater flow from the PPA. Option 1B involves the expansion of existing WWTFs and the construction of new WWTFs to treat the future wastewater flow from the PPA and the recharge of 2.0 mgd of treated wastewater flow at existing and new recharge sites located in the watersheds. Most of the treated wastewater flows from Sandwich and Falmouth would be recharged in the watersheds. This option also incorporates continued use of Title 5 and I/A systems to recharge approximately 0.34 mgd of wastewater flow in the PPA watersheds, which is less compared to the other alternatives.
3. Option 1C: Outside communities handled the same, all Mashpee flows recharged within the watershed. Similar to Option 1B, this option also assumes the Town's Rock Landing water supply wells and Zone II areas would not be available for recharge of wastewater flow from the PPA. Option 1C includes the expansion of existing WWTFs and construction of new WWTFs to treat the wastewater flows from the PPA. Approximately 1.51 mgd of wastewater flow would be conveyed to recharge sites located in the watersheds and .423 mgd outside of the watersheds (including flows from Barnstable, Falmouth and Sandwich). This option also incorporates the continued use of Title 5 and I/A systems to recharge approximately 0.5 mgd of wastewater flow in the watersheds.

A Certificate on the ASAR was issued on November 1, 2013 and it included the Scope for the DEIR.

### Permits and Jurisdiction

The project was required to undergo MEPA review and prepare a Mandatory EIR pursuant to Sections 11.03(5)(a)(3) of the MEPA regulations, because the project would likely involve the construction of sewer mains ten or more miles in length. The project will require a Groundwater Discharge Permit, a Chapter 91 License, and a 401 Water Quality Certificate from MassDEP. It will undergo review by the Natural Heritage Endangered Species Program (NHESP) and the Massachusetts Historical Commission (MHC) because portions of the project will occur within Priority Habitat and within or adjacent to recorded archaeological sites and archaeologically sensitive areas, respectively. It may also require a Construction Access Permit from the Massachusetts Department of Transportation (MassDOT).

The project will require an Order of Conditions from the Mashpee Conservation Commission (and, on appeal only, a Superseding Order from MassDEP). The project may require Federal Consistency Review from the Massachusetts Coastal Zone Management (MCZM) Office. The project may need to obtain a Section 404 Permit from the U.S. Army Corps of Engineers. The project will require a National Pollutant Discharge Elimination System (NPDES) General Permit from the U.S. Environmental Protection Agency (EPA) for stormwater discharges from a construction site.

Because the Town is seeking Financial Assistance from the Commonwealth through the State Revolving Fund (SRF), MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations. The project is being reviewed under a Joint Environmental Review Process established between the Executive Office of Energy and Environmental Affairs (EEA) and the CCC.

### Review of the DEIR

The Recommended Plan represents a targeted and incremental approach to wastewater management with an emphasis on identifying lower cost solutions compared to traditional wastewater management solutions. Implementation will be driven through adaptive management, and includes alternative strategies that will be employed based on the results of monitoring and modeling. The Plan identifies opportunities for regional cooperation, including potential expansion of the JBCC WWTF. The Draft 208 Water Quality Plan Update was released during review of the CWMP; however, its development has been shaped by principles of the 208 Plan such as regional cooperation and development of targeted watershed plans. Information gleaned from other CWMP Plans, including the Town of Falmouth's CWMP, has also been employed in the development of the Recommended Plan.

The DEIR includes a comprehensive description of the Recommended Plan, identifies required permits and approvals, identifies phasing and scheduling, identifies alternative strategies for nitrogen reductions, and provides cost estimates for the Plan, Phase 1 and individual elements. The DEIR identifies potential environmental impacts, and measures that will be taken to avoid, minimize and mitigate impacts. It is supported by technical appendices and conceptual plans for infrastructure projects. The MEP watershed embayment model and the CCC's watershed management tool (Watershed-MVP) were used to evaluate nitrogen loading and reductions associated with proposed strategies. It identifies criteria developed to evaluate

strategies, including costs (capital, operation and maintenance), effluent quality, consistency with regulatory requirements, energy use, and ease of implementation and operation. It also includes a Response to Comments and identifies measures to avoid, minimize and mitigate environmental impacts.

The DEIR identifies several critical issues that must be addressed to finalize the Recommended Plan and implement it effectively. These issues are also identified in comment letters and include:

- Continued coordination with the CCC and MassDEP regarding enforcement, permitting and planning to ensure that each municipality understands its obligations to nitrogen reductions and receives technical and financial assistance to support management efforts.
- Development of a detailed long-term monitoring plan in cooperation with CCC, MassDEP and other municipalities to track effectiveness of plans and progress in attaining reductions.
- Evaluate ownership of collection systems, management options, related costs and strategies to support successful public/private initiatives and regional approaches.

Comments provided on the DEIR indicate support for the Recommended Plan and recognize the time and effort the Town has invested in this process. MassDEP, CZM, DMF, the CCC, and the Association for the Preservation of Cape Cod (APCC) provide constructive and detailed comments to guide the preparation of the FEIR, identify additional information and/or questions that should be addressed to ensure projections and assumptions are realistic and accurate, and identify issues that warrant additional consideration. State Agencies and the CCC also emphasize the availability of technical assistance and resources to support the Town's continued efforts.

#### *Wastewater Treatment and Discharge*

The Recommended Plan includes a combination of expansion and upgrades to existing WWTFs (public and private) and construction of new facilities. In addition, the Plan identifies expansion of and upgrades to the JBCC WWTF to increase capacity and identifies associated flows from subareas in Mashpee, Sandwich and Falmouth. The DEIR identifies sites proposed for new or expanded recharge. The previously identified Rock Landing site has been eliminated from consideration because it would have required abandonment of the existing high quality drinking water supply wells that supplies nearly 50 percent of the Town's water use. The DEIR provides a general characterization of the site's suitability for proposed uses. Additional analysis of Willowbend Golf Course and New Seabury Golf Course are required to address groundwater hydrology and potential impacts to groundwater flow and mounding conditions.

#### *New Facilities*

New WWTFs are considered for Site 4, Site 6 and the Back Road Sites. Site 4 would provide a central treatment location within Mashpee and the PPA. It would receive flow from Subareas S, F, N, and T and would require the installation of 30 miles of collections system, five miles of

force main, and up to nine pumping stations. Estimated average annual capacity would be 0.39 mgd but it would be phased in over time. Phase 1 would consist of 0.1 mgd from Subarea S1. Recharge is proposed at Site 4; Willowbend Golf Course is identified as a backup recharge location. It would require three recharge beds (240 ft x 240 ft each to recharge 5 gpd/sf) and occupy approximately 4 acres. Open sand beds are proposed.

Site 6 is located within the southern area of Mashpee and would serve Subareas A, C, D1, D2, E and Fal-2 through Fal-11. It would require the installation of 18 miles of collection system, three miles of force main and up to 11 pumping stations (not including Falmouth). If Falmouth were to contribute flow to the facility, it would require five miles of collection system and force main and up to 10 pumping stations. Estimated average annual capacity would be 0.27 mgd. Expansion of existing recharge beds at Site 7/New Seabury Golf Course is proposed to recharge treated effluent from Site 6. New facilities would consist of drip irrigation at eight potential fairways and associated distribution pumping, filtration, backwash facilities and receiving/storage tanks. The system is sized to provide 0.74 gpd/sf based on rates for drip irrigation.

The Plan considers either a Sequencing Batch Reactor (SBR) or membrane bio-reactor for the Site 4 and Site 6 treatment process because of the limited area available for the facilities and proximity to neighborhoods. Modular designs would support gradual expansion of the facilities consistent with the overall Plan approach.

Both facilities are proposed on undeveloped sites and would require significant clearing and land alteration. Layout of the Site 6 WWTF would include a 100-foot buffer from its property line, with the exception of the access road.

#### *Existing Facilities*

The Plan identifies improvements, expansions and/or modifications to existing WWTFs, including JBCC, Mashpee Commons (expand treatment and recharge capacity from 0.18 mgd to 0.33 mgd), New Seabury (expand recharge capacity from existing 0.3 mgd to 1.0 mgd to serve other WWTF sites), Willowbend (improve performance to 3 mg/L TN and expand recharge capacity from existing 0.13 mgd to 1.0 mgd), Mashpee High School (abandon facility and convert to a pump station or pump treated effluent to JBCC), Cotuit Meadows (limited expansion of service area to collect up to 5,000 gpd), and Wampanoag Village (expansion of service area to collect up to 25,000 gpd). In addition, it identifies opportunities to improve performance of existing WWTFs (3 to 6 mg/L TN) including: Forestdale School, Southport, South Cape Village, Stratford Ponds, Windchime Point, and Mashpee Village.

The DEIR/CWMP includes several options for use of the JBCC WWTF and its disposal capacity near the Cape Cod Canal. The primary goal of addressing these areas is to reduce nitrogen load in the Quashnet River watershed, which requires a high level of nitrogen removal to achieve the TMDLs and is not an area conducive to shellfish for nitrogen removal. The subareas to be served would include the northwestern sections of the PPA in Mashpee (H, L, M) and portions of Sandwich (SAND-1, -2, and -3) adjacent to the WWTF. Flow from Falmouth along the western side of the Moonakis/Quashnet River (FAL 13–17) could also be directed to the JBCC WWTF. Expansion would be based on 200,000 gpd from Mashpee, 110,000 gpd from

Sandwich and 50,000 gpd from Falmouth for a total of 350,000 gpd. It would require upgrades to increase the average annual design flow to 600,000 gpd and provide a design peak flow of 1.6 mgd.

The JBCC WWTF was constructed in 1996. It consists of an extended aeration type oxidation ditch system. The headworks provide grit and screening removal. It is followed by the secondary biological process of anoxic tanks prior to preceding the oxidation ditch system. The secondary process is followed by secondary clarifiers and disinfection and effluent disposal at open sand beds or "rapid infiltration basis" (RIBs). Solids handling consists of storage in aerated sludge holding tanks prior to hauling to an offsite facility. Upgrades include improvements to the SCADA system in 2006. The average annual design flow is 360,000 gpd and the peak day design flow is 800,000 gpd. It has a recharge capacity of 670,000 gpd (with the largest bed out of service) and a capacity of 960,000 gpd if all beds are in service. Existing flow is identified as 200,000 gpd and it is permitted for 360,000 gpd of discharge, which results in 160,000 gpd of existing excess capacity. The Plan indicates that improvements would include; addition of a parallel treatment train; addition of a secondary clarifier, anoxic tank and oxidation ditch; and, upgrades to the SCADA system, the headworks, and sludge handling facilities.

Wastewater from the subareas would be pumped directly into the headworks of the JBCC facility; however, recent information indicates that connection of Falmouth and Sandwich to the collection system may be viable because portions of existing collections system need repair to address operational issues and remove I/I. Removal of I/I would provide additional capacity. Mashpee would require approximately 15 miles of collection system, 2 miles of force main, and seven lift stations. Sandwich would require eight miles of collections system and forcemain and potentially three lift stations. Falmouth would require four miles of collection system and force main and approximately five pumping stations.

The Recommended Plan identifies 0.50 mgd of flow that will be continue to be managed treated through Innovative/Alternative (I/A) systems and Title 5 septic systems and would continue to be recharged in the watersheds. These include I/A facilities in Mashpee (0.02 mgd) and septic systems in Mashpee (0.27 mgd), Sandwich (0.13 mgd), Barnstable (0.07 mgd) and Falmouth (0.01 mgd). The Plan recommends consideration of operation, maintenance and monitoring of denitrifying on-site systems and establishment of decentralized management districts. At a minimum, the Plan identifies tracking of these systems through an operation/maintenance and monitoring database.

#### *Non-Traditional Wastewater Management*

The DEIR identifies land use controls and non-traditional wastewater management projects and programs, including demonstration projects, to provide targeted and incremental nitrogen removal. These include an ambitious shellfish aquaculture program, conversion of abandoned cranberry bogs and shallow ponds including Santuit Pond, open space acquisition and additional public drinking water supply well locations, fertilizer management, stormwater management; and zoning to address growth neutral requirements for 0% loans under the SRF program.

Use of shellfish aquaculture is the primary non-traditional means of nitrogen removal associated with the project. The DEIR includes a conceptual plan to implement a shellfish

aquaculture project in multiple embayments. It builds on the Town's experience with shellfish propagation, including projects in the Mashpee River (2004) and Great River (2013), which were developed by the Mashpee Shellfish Constable, in association with the Wampanoag Tribe. The DEIR identifies the amount of nitrogen uptake associated with quahogs and oysters (based on data collected in Mashpee in 2012), and estimates the ability of aquaculture to achieve nitrogen reduction targets (e.g., Tables ES-1 and 5-16). Approximately 35.5 million shellfish will be required for the program (16 million in Popponesset Bay and 19 million in the eastern portion of Waquoit Bay). The Plan indicates that shellfish will provide 50% of nitrogen removal within the Mashpee River and Shoestring Bay and will provide 100% of removal for Popponesset Bay, Ockway Bay, Great River, Jehu Pond, and Hamblin Pond. The Plan assumes that no individuals are lost to predators, weather, parasites, poaching, or low dissolved oxygen associated with eutrophication. Aquaculture is targeted towards critical embayments that have the characteristics necessary to support success of the program, such as a significant benthic flux associated with the nitrogen load.

Aquaculture has been identified as a viable alternative to complement and augment source reduction efforts but it has not been attempted on such a widespread scale to achieve the measure of significant required nitrogen removal anticipated in this plan. The aquaculture program and budget was developed based on shellfish planting and harvest data, and associated costs. The Town's experience with these projects and active participation by the Shellfish Constable and the Wampanoag Tribe's will support its overall effectiveness. However, comments indicate that the ability for aquaculture to provide reductions identified in the Plan may be overly optimistic and that program costs may be understated. Commenters express caution regarding the reliance on shellfish as a primary nutrient remediation technique. Comments from DMF indicate that the plan is consistent with its *Shellfish Planting Guidelines* and indicate that projects are proposed in areas listed as Approved for shellfish harvest, thus avoiding potential health risks associated with illegal harvest. DMF notes that the projects will require a modification to the Town's municipal propagation permit.

Comments from CZM indicate that the January 2014 Woods Hole Sea Grant Program Marine Extension Bulletin described Cape Cod quahogs (littlenecks) as containing 0.22 g of nitrogen on average and Cape Cod oysters as containing 0.28 g nitrogen on average. CZM indicates that application of these rates would result in much lower nitrogen removal: 5 million oysters could remediate 1.4 metric tons of nitrogen which would address 28% of the Mashpee River Watershed load, not 50%; and, 4.87 million quahogs have the potential to remediate 1.07 metric tons of nitrogen which would address 71% of the Popponesset Bay Watershed load, not 100%.

As noted previously, the Town has developed and will implement contingency plans if the aquaculture program does not achieve projected reductions. Comments request that the contingency plan be described in more detail in the FEIR and include specifics regarding monitoring and triggers for action.

The DEIR notes that the CCC has developed model regulations for fertilizer management that can be adopted by local Boards of Health. The Town of Mashpee has drafted a Nitrogen Control Bylaw for the Town of Mashpee. It identifies exempt activities, restricts the application of nitrogen fertilizer between October 30 and April 14 and before or during a heavy storm, and

identifies a buffer zone to resource areas where application is prohibited. It recommends the judicious use of fertilizer and use of organic, slow release, water-insoluble forms of nitrogen.

The DEIR briefly address other alternatives, including use of PRBs, bog and wetlands restoration, and composting toilets. It indicates that these elements are not specifically incorporated into the Recommended Plan; however, the Town will consider results of several demonstration projects proposed in Falmouth and, if necessary to attain nitrogen reductions, may incorporate these approaches into later phases of the Recommended Plan.

The DEIR includes a brief discussion of strategies to reduce future growth potential. These include: development of a growth neutral/flow neutral policy, open space acquisition, acquisition of water supply and/or treatment and disposal site. The DEIR indicates that stormwater Best Management Practices (BMPs) will continue to be implemented on a case-by-case basis, with nutrient removal considered in the most sensitive watersheds and the Town will continue to ensure conformity with stormwater standards included in existing zoning bylaws and subdivision regulations. These strategies are critical to reducing nitrogen loading from future growth.

### *Adaptive Management*

The Recommended Plan is centered on an Adaptive Management Plan (AMP) to provide incremental and targeted reductions in nitrogen with regular evaluation and re-evaluation of Plan components based upon a robust water quality monitoring program and associated modeling.

The DEIR identifies the existing Mashpee Water Quality Monitoring Program (MWQMP) which documents improvements in total nitrogen concentration, chlorophyll (salinity), dissolved oxygen (DO) and other parameters at the sentinel and other stations consistent with the protocols, sampling stations and analysis used to prepare MEP and TMDL reports. Water quality parameters measured including conductivity, chlorophyll, DO, Nitrogen (TN, NH<sub>4</sub>, NO<sub>2</sub>/NO<sub>3</sub>, TDN, POC/N), phytoplankton (microscopic identification and count), Secchi disk visibility, suspended solids, and temperature. In addition, monitoring instruments (YSI sondes) are maintained at several locations in the estuaries. They collect data every 15 minutes and measure conductivity, chlorophyll, DO, pH, turbidity and temperature.

The DEIR includes a commitment to provide compliance documents, including monitoring data and reports, to MassDEP, DMF, CZM, MEP, neighboring communities and other agencies. The reports will be provided every five years. The DEIR identifies components of the monitoring and modeling program for the Recommended Plan; however it does not include a specifics or details that clearly identify what data will be collected and frequency of sampling and collection. The monitoring plan will include the following components:

#### Short-Term Monitoring and Modeling

- Shellfish/estuary baseline monitoring
- Estuary short-term (on-going) intensive water quality and shellfish quality monitoring to check near-term performance following MEP protocols for estuary water quality and health
- MEP flushing and stream gauge monitoring necessary to update MEP TMDL compliance points

- Groundwater/drinking water supply quality
- Ground water mounding analysis through localized modeling

#### Long-Term Monitoring and Modeling

- Monitoring associated with groundwater discharge permits for treatment facilities:
  - Daily monitoring of flow, pH, disinfection, and turbidity
  - Weekly/monthly monitoring of flow, biochemical oxygen demand (BOD), total suspended solids (TSS), total nitrogen (TN), and possibly total phosphorus (TP)
  - Groundwater monitoring well data typically quarterly; upgradient and downgradient of recharge facilities
- MEP estuary monitoring and modeling (land and hydrodynamic)
  - TMDL compliance
  - Long-term trending of standard MEP water quality parameters
  - Eelgrass surveys typically provided by MassDEP
  - Benthic habitat surveys
- Shellfish/Estuary Monitoring
  - Long term compliance monitoring performed following the same MEP protocols to measure estuary health
  - Shellfish monitoring in compliance with DMF requirements
- Groundwater quality monitoring through existing drinking water supply wells as required by MassDEP and EPA and groundwater monitoring wells as required by groundwater discharge permits issued by MassDEP for wastewater treatment facilities.

The DEIR includes a phasing plan with identified evaluation points. Through the development of the 208 Plan process, the CCC has developed watershed tools to help assess proposed nitrogen load reductions, assign and select priorities, and take advantage of regional efforts. MassDEP recommends that Mashpee coordinate closely with the CCC as the FEIR is developed.

#### *Regional Strategies*

The Recommended Plan is based on reducing nitrogen loads from watersheds within the PPA. The PPA extends beyond Town lines to areas of Falmouth, Sandwich and Barnstable. The Plan acknowledges areas outside of Mashpee that contribute nitrogen to its embayments and it identifies opportunities for regional approaches to wastewater management. The information provided in the Plan, in addition to the Draft 208 Water Quality Plan developed by CCC, provides a framework for regional cooperation and will guide subsequent filings.

In particular, expansion of the JBCC WWTF provides an opportunity to eliminate nitrogen loads and flows out of the watershed, which provides additional flexibility to each of the Towns. Although progress has been made on development of regional use of JBCC, significant additional work will be required. Comments from CCC indicate that it has applied for funding from the Department of Defense to study the feasibility of transferring the JBCC wastewater and



water supply systems to a regional entity, or another public entity. CCC is also seeking funding to make an economic case for future ownership and operation by Mass Development.

The Plan includes recharge of wastewater outside of the PPA consisting of 0.08 mgd (average annual) from Barnstable (Barn-37, -39 and -42) and 0.2 from Sandwich (Sand-4, -5, -6 and -8). In addition, it identifies 0.05 mgd from Falmouth (Fal-13 through -17) to JBCC. Project costs for neighboring communities are included to provide a rough estimate. They are dependent upon how each community addresses nitrogen removal within these estuaries and development of regional agreements. Their viability depends upon site availability, successful negotiations, establishment of nitrogen loading responsibilities, and extent of nitrogen removal required based upon actual build-out within the PPA. Again, adaptive management and monitoring and modeling will support the identification of each community's contribution. The DEIR indicates that the Town will consider entering into MOUs with Barnstable and Sandwich to support the shellfish aquaculture program in the spirit of a "fair-share" approach.

The approach taken in the DEIR appears to be consistent with the spirit and intent of the CCC's ongoing 208 planning process. I recognize comments from APCC which identify an interest in developing a Targeted Watershed Management Plan for Waquoit Bay to ensure that each municipality takes responsibility for their contributions and works cooperatively to identify effective and cost-effective approaches.

#### *Wetlands and Rare Species*

The Recommended Plan will impact inland and coastal wetland resources. Overall, the Plan should improve water quality with related improvements in estuary health and habitat. The DEIR provides conceptual plans for proposed facilities and collection systems and identifies on-and off-site resources including wetlands, floodplains, vernal pools, water supply protection areas, and rare species habitat. The DEIR does not address potential wetland impacts in detail nor does it identify stormwater management systems for proposed facilities. Based on the conceptual plans, the majority of the collection system is proposed within existing roadways and disturbed areas. New WWTFs are proposed on sites that, while adjacent to existing municipal facilities, have not been developed. Based on review of the conceptual plans, it does not appear that the sites include wetland resource areas or, they are, they are well outside of the buffer zone. The proposed WWTFs are located within *Estimated* and *Priority Habitat*. The expansion of shellfish aquaculture will occur within wetland resource areas and will require Orders of Conditions from the Conservation Commission and may require State Permits (c.91, 401 WQC, Superseding Orders of Conditions).

#### *Greenhouse Gas Emissions (GHG)*

The project is subject to the MEPA Greenhouse Gas Emissions Policy and Protocol ("the Policy"). The Policy requires projects to quantify carbon dioxide (CO<sub>2</sub>) emissions and identify measures to avoid, minimize or mitigate such emissions. Unlike many projects reviewed under the Policy, wastewater treatment process energy loads and subsequent CO<sub>2</sub> emissions are the primary source of GHG emissions, rather than the buildings that contain the facilities. 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 wastewater management systems and facilities or a readily available energy use model (such

as eQUEST) to estimate the projected energy use of wastewater processing energy loads. The DEIR indicates that the Town is considering the use of EPA's Energy Star Portfolio Manager (ESPM). The ESPM modeling program can quantify the energy usage associated with wastewater treatment technologies and compare it to similar facilities using a rating index. However, the DEIR notes that the program is designed for larger facilities (0.61 mgd) and may not be scalable to the smaller proposed facilities (0.27 – 0.39 mgd). The DEIR indicates that the Town will consider how to improve the efficiency of proposed facilities to achieve an acceptable index score; however, analysis of efficiency and performance will be deferred to preliminary or detailed design.

The DEIR identifies measures that could be employed to improve energy efficiency and reduce GHG emissions including: energy recovery, biosolids management, energy management and sub-metering, optimized lighting, reduced ventilation and heating requirements, use of variable frequency drives (VFDs), process optimization, and additional investment in the removal of I/I from municipal systems. No specific commitments are identified in the DEIR and further consideration is deferred to preliminary and final design.

The DEIR also identifies the potential incorporation of on-site renewable energy (e.g., solar (photovoltaic (PV)), wind, geothermal) and identifies loan, grant and tax credit programs that could defray associated costs. The DEIR does not include a feasibility analysis of solar PV installations. Installation of PV systems on municipal buildings or on municipal properties may achieve cost-savings beneficial to the community and offset ongoing operational costs as well as support the Commonwealth's related renewable energy goals.

#### *Climate Change Adaptation and Coastal Hazards*

The DEIR includes a general assessment of the Plan's consistency with Executive Order 181 and CZM Coastal Hazards Policy #3 to ensure that the Plan does not promote growth and development in high hazard areas designated in Flood Insurance Rate Maps (FIRMs) as V zones, AO zones and specific A zones that are accompanied by moderate wave action capable of structural damage (MoWa). It notes that the Town is developing a Multi-Hazard Mitigation Plan which includes research on climate change and identification of risks, impacts, and mitigation efforts. It provides the following general commitments to address potential impacts from climate change and minimize risks to facilities and infrastructure: expansion of collection systems will be designed to withstand reasonable expected coastal flood hazards; pumping stations will be designed to withstand a 100-year storm, and all pipes and equipment will be protected from wave action. In addition, pumping stations will be located outside of flood zones when possible and protected with a system of check valves in critical areas consistent with the Town's Multi-Hazard Mitigation Plan.

The DEIR identifies flood zones (100-year flood, 100-year flood with velocity hazard, and 500-year flood) within the PPA based on 1997 data obtained from MassGIS (Figure 8-1). Based on the information provided and a review of conceptual facilities and infrastructure plans, it appears that the majority of infrastructure is not proposed within existing flood zones or high hazard areas. New facilities are sited well outside of potential flood zones and high hazard areas (Site 4, Site 6, JBCC and Back Road Sites) and the DEIR indicates that pumping stations will be located outside of flood zones wherever possible. Additional analysis of facility, collection

system and recharge area expansion is warranted based on the conceptual information provided in the DEIR and the availability of new floodplain mapping (effective July 2014). The plans suggest that some areas which are currently outside of the 100 and 500-year flood zones, could be located within them based on revised floodplain mapping and accounting for sea level rise projections (over the design life of the structures).

The DEIR does not address the potential increase in groundwater levels associated with sea level rise; however, this issue is identified in comment letters and warrants consideration. Specifically, the results of the model could be used to evaluate the long-term (20, 40, 60-year) viability of new and existing wastewater discharge sites and to plan for and acquire any necessary additional discharge sites.

### *Historic and Archaeological Resources*

The DEIR identifies potential impacts to historic and archaeological resources, provides an update on completed or ongoing investigations and identifies measures to avoid and minimize, or mitigate impacts to cultural resources. An archaeological reconnaissance survey was conducted for the entire Town and was used to identify historic districts and potentially sensitive archaeological areas (Figure 7-6) within the PPA and in relation to proposed facilities and recharge beds. The majority of the projects included in the Plan are unlikely to impact historic or archaeological resources because ground disturbance is limited and/or they are located in previously disturbed areas (e.g. roadways, golf courses).

The DEIR indicates that an intensive (locational) archaeological survey was conducted for Site 4. Based on the results of the survey, no impacts are anticipated at Site 4. Locational archaeological surveys will be required at Site 2 and Site 6, but have not been conducted. Additional analysis of Site 7 (a previously disturbed site) is not required; however, a qualified archaeologist will monitor construction.

### *Construction Period Impacts*

The DEIR includes measures to address construction period impacts. Stormwater runoff will be controlled by proper site grading and by providing temporary berms, drains, silt fencing, hay bales, detention basins and other means to prevent soil erosion. Existing and new catch basins will be protected from siltation using hay bales, siltation fence, and catch basin inserts. Temporary seeding and mulching may be used to minimize soil erosion and provide soil stabilization on slopes. Dust control measures including street sweeping or watering trucks will be used to minimize dust. Police details and other traffic controls, including detours, will be required during construction of utilities. If soil contaminated with oil and/or hazardous material is identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan will be made to MassDEP.

### Conclusion

Based on a review of the DEIR, the Scope for the DEIR, consultation with public agencies and comment letters, I have determined that the DEIR adequately and properly complies with MEPA and its implementing regulations.

### Scope for the FEIR

This Scope identifies the additional information and analysis necessary to complete MEPA review and ensure that impacts and issues are analyzed to a degree commensurate with this planning document. The Town should prepare a FEIR in accordance with this Scope. The FEIR should build on the Recommended Plan provided in the DEIR and supplement it with more detailed information, preliminary design and refined environmental impact estimates, in particular for elements proposed in the early phases of the Plan. In particular, the FEIR should better characterize the incremental nitrogen reduction of various phases of the plan and support assignment of priorities and demonstrate that, if necessary, the contingency plan can meet the nitrogen reduction targets. It should address how the NPC process will be used in the context of Adaptive Management to provide additional information and analysis of Plan components and opportunities for public comment.

### Project Description

The FEIR should provide a Final Recommended Plan and a detailed description of its elements. It should describe how transition of responsibility for the planning and implementation of the CWMP will be addressed between the Sewer Commission and the Mashpee Water and Sewer District. It should provide an update on public participation activities and consultation with CCC, State Agencies and adjacent communities. It should include a revised schedule for phases of the Plan that addresses benchmarks for planning, design, environmental permitting and review, and construction. It should provide an update on project permitting and specifically address how elements of the project are designed to meet applicable performance standards, including the Wetlands Regulations and associated Stormwater Management Standards, the Waterways Regulations and 401 Water Quality Certification requirements.

### Draft 208 Water Quality Plan and Regional Management

The FEIR should include a summary of the Draft 208 Water Quality Plan and how its development and recommendations have influenced the Final Recommended Plan. In particular, it should consider use of watershed tools to better account for nitrogen load reductions, assign and select priorities and take advantage of additional regional efforts. Comments from the CCC indicate that the traditional components of the Recommended Plan identified as contingencies for underperformance of shellfish aquaculture are appropriate; however, subsequent phases may benefit through use and evaluation of the modeling tool. In addition, the work emerging from the 208 planning process may support the development of a Targeted Watershed Management Plan for Waquoit Bay.

The FEIR should provide an update on consultation with municipalities regarding coordination of nitrogen reduction efforts and identify any progress towards development of the JBCC as a regional facility. To the extent possible, it should identify development of MOUs between municipalities and any regional commitments.

### Wastewater Treatment

The FEIR should provide a more detailed evaluation of proposed wastewater facilities, recharge locations and expansion of collections systems and associated environmental impacts. It should demonstrate progress on developing and securing agreements with private facilities. It should indicate whether incorporation of private facilities into the District is being proposed.

It is unclear if the contingency measures included in the plan, on their own, could meet the removal targets necessary for TMDL compliance and what the incremental nitrogen reduction is for each phase of the plan. The FEIR should clarify nitrogen reduction associated with each phase of the Plan and describe what elements are necessary to achieve TMDLs. For instance, part of the Plan includes phasing in upgrades to achieve higher levels of treatment (i.e. 3 mg/L TN compared to 6 to 10 mg/L of TN). It is unclear whether that level of treatment is assumed to achieve the TMDL or if a certain level of treatment would be targeted as a contingency measure.

### Shellfish Propagation

The FEIR should include a revised and more detailed shellfish propagation plan to address comments on the DEIR. The FEIR should identify permitting and review requirements associated with the shellfish propagation program. It should describe associated infrastructure, management and maintenance requirements. It should include plans at a reasonable scale that include infrastructure, identify resource areas and demonstrate that sufficient bottom habitat is available to support identified densities. It should confirm that amount of shellfish seed can be obtained within the proposed timeframes. The FEIR should identify measures to avoid, minimize and mitigate impacts, including impacts to recreation and navigation.

Because of the significant reliance on this program to reach targets, close consultation with MassDEP, CCC and DMF is warranted prior to the filing of the FEIR. The FEIR should include a detailed protocol to ensure that the sampling and monitoring program yields appropriate verifiable data that will be accepted by MassDEP and DMF for evaluation, and will support the Town's evaluation of the effectiveness of the program. In addition, the triggers for implementing contingency plans should be more explicitly stated in the FEIR, including identification of thresholds and amount/duration of data required.

### Non-Wastewater Nutrient Management Projects and Programs

The Recommended Plan will be strengthened through additional consideration of other non-wastewater nutrient management strategies and assessment of the potential effectiveness of such strategies. The FEIR should provide more discussion regarding other non-traditional projects and programs identified in the DEIR, including the growth neutral/flow neutral policy, stormwater management, conversion of abandoned cranberry bogs and shallow ponds including Santuit Pond, open space acquisition and additional public drinking water supply well locations, and fertilizer management. In addition, it should indicate when such elements would be incorporated into the Recommended Plan. In particular, it should provide more specificity regarding the framework of a growth neutral/flow neutral bylaw and, if available, provide a draft bylaw for review. If certain elements or analysis of elements will be deferred to later phases or subsequent NPCs, the Plan should clearly identify this.

### Water Quality Monitoring and Adaptive Management

The Recommended Plan is based on Adaptive Management to provide incremental and targeted reductions in nitrogen with regular evaluation and re-evaluation of Plan components based upon a robust water quality monitoring program and associated modeling. As noted previously, the Proponent has committed to provide TMDL compliance reports to MassDEP, DMF, CZM, and other agencies/organizations. The FEIR should clarify that the reports will be provided to the CCC as well. The DEIR identifies regulatory requirements for monitoring and identifies parameters that will be monitored; however, it does not provide a specific monitoring protocol for evaluation. The FEIR must include a detailed protocol for evaluation by MassDEP, DMF and CZM. I strongly encourage the Proponent to consult with State Agencies and CCC regarding the development of this protocol prior to filing the FEIR.

### Wetlands and Rare Species

The Recommended Plan will impact inland and coastal wetland resources. Overall, the Plan should improve water quality with related improvements in estuary health and habitat. The DEIR provides conceptual plans for proposed facilities and collection systems and identifies on-and off-site resources including wetlands, floodplains, vernal pools, water supply protection areas, and rare species habitat. The Town has sited facilities to avoid significant impacts. The FEIR should provide an assessment of wetlands impacts associated with the shellfish propagation project and, to the extent feasible with projects proposed in early phases of the Recommended Plan, which may be limited to the expansion of sewer service areas. The DEIR should describe measures that will be implemented to avoid and minimize, or mitigate, adverse impacts to wetlands and buffer zones.

The FEIR should describe how the proposed stormwater management systems for new and/or expanded facilities will be designed and constructed consistent with MassDEP's stormwater management regulations and standards. The FEIR should describe proposed best management practice (BMP) measures to manage stormwater during project construction.

The sites for new facilities, and many of the expansions, are located within *Estimated* and *Priority Habitat* for rare species. The FEIR should consult with NHESP regarding the design of facilities and identify construction and post-construction commitments to avoid adversely impacting habitats of state-listed rare species.

### Climate Change

The FEIR must demonstrate that the Town will take meaningful steps to reduce GHG emissions and is well positioned to address impacts of climate change, including sea level rise and more frequent and severe storms. The Recommended Plan represents a significant investment of State and local resources and is the basis for design and construction of long-term infrastructure. As a coastal community, it is critical that these resources are sited, designed and constructed to adapt to sea level rise and associated impacts so that the targeted benefits and investments will be protected over the long-term. Planning for energy efficiency, long-term water quality improvements and infrastructure should be addressed in the FEIR and subsequent NPCs, to the extent reasonable and feasible, rather than deferring these considerations to

permitting.

### *Greenhouse Gas Emissions*

The Town should present a GHG analysis that clearly demonstrates what measures will be adopted to achieve a high level of energy efficiency for proposed facilities and treatment processes and to quantify potential GHG emissions reductions (in tons per year (tpy) of CO<sub>2</sub>) associated with the measures. Staff from the MEPA Office, MassDEP and the Department of Energy Resources (DOER) are available to provide guidance and technical assistance for this effort.

In addition, the FEIR should evaluate the feasibility of incorporating solar PV into the Recommended Plan. Installation of PV systems on municipal buildings or on municipal properties may achieve cost-savings beneficial to the community and can offset ongoing operational costs. The DEIR should consider ground-mounted and building-mounted systems and ownership structures, including third-party ownership/lease scenarios. MassDEP, DOER and the Clean Energy Center (CEC) can provide resources to assist with the analysis, including a DOER spreadsheet to calculate potential project cost, payback periods and returns on investment. The DEIR should state assumptions with regard to available area for PV equipment, efficiencies, etc.

Upon completion of the construction of proposed improvements and upgrades and new wastewater management systems and facilities, 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 all of the GHG mitigation measures committed to by the Town as described in the DEIR, or as modified as part of the MassDEP permitting process, have been incorporated into the projects. This certification should be supported by project 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 DEIR should include this self-certification requirement.

### *Adaptation, Resiliency and Coastal Hazards*

Current rates of sea level rise, as well as projections for accelerated rates of sea level rise, pose significant threats to coastal development and resource areas by increasing storm surge heights and coastal flooding events. The DEIR provided sufficient information to identify many elements of the project that are clearly outside of flood zones and unlikely to be affected. Other areas warrant further analysis as revised floodplain mapping (July 16, 2014) and incorporation of sea level rise projections may identify project elements that will be located within flood zones. The FEIR should include revised flood zone maps that incorporate effects of sea level rise and identify vulnerable facilities or infrastructure. The FEIR should identify specific measures that can be incorporated into the design or operation to facilitate adaptation and create resiliency. In addition, the Town should consider model results produced by USGS and modeling being conducted by APCC to assess potential changes to groundwater elevations associated with sea level rise and address any potential impacts to project elements.

Comments provide a list of resources to support these efforts. In addition, State Agencies and CCC have offered to provide technical assistance to support these efforts. The Town should refer to the CZM report, *Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning*, to guide selection of appropriate sea level rise scenarios.

Additional resources include:

- FIRM maps through the National Oceanic and Atmospheric Administration viewer
- the CCC Sea Level Rise Viewer available on the Commission website
- dynamic models created by the Woods Hole Group
- StormSmart Coasts – Visualizing Sea Level Rise on the CZM website

### Construction Period Impacts

The FEIR should identify any changes to construction management and potential construction period impacts (including but not limited to land disturbance, noise, vibration, dust, odor, nuisance, vehicle emissions, construction and demolition debris, impacts on trees and other vegetation, and construction-related traffic). The Town should identify any changes or addition of measures to avoid, minimize and mitigate impacts.

### Mitigation and Section 61 Findings

The DEIR includes a separate chapter on mitigation measures and Section 61 Findings; however, it consists of general commitments and deferral of specific commitments to subsequent design and permitting. It does not include a specific draft Section 61 Finding for each agency action. As a long-term planning document, it is not feasible to identify specific commitments for every project element; however, the Town should revise and update the mitigation section to provide a summary of all mitigation commitments and to identify specific commitments where feasible and appropriate, in particular for early phases of the Plan (e.g. shellfish propagation program, construction of Site 4 WWTF).

In addition, draft Section 61 Findings must be developed for each State Permit (e.g. Groundwater Discharge Permit, c.91 Permit, 401 Water Quality Certification). Draft Section 61 Findings will serve as the primary template for subsequent permitting conditions and should address specific regulatory program standards and requirements. The Section 61 Findings should describe proposed mitigation measures, contain clear commitments to mitigation and a schedule for implementation based on the construction phases of the project, estimate the individual cost of each proposed measure, and identify parties responsible for funding and implementing the mitigation measures. The draft Section 61 Findings will serve as the primary template for permit conditions.



Responses to Comments

The FEIR should include a copy of this Certificate and a copy of each comment letter received. In order to ensure that the issues raised by commenters are addressed, the FEIR should include a response to comments received on the DEIR to the extent that the subject matter of the comment is within the Scope. The FEIR should include either an indexed response to comment format, or direct narrative response. The FEIR should present any additional narrative or quantitative analysis necessary to respond to the comments received. This directive is not intended to, and shall not be construed to enlarge the scope of the DEIR beyond what has been expressly identified in this Certificate.

Circulation

The FEIR should be circulated in compliance with Section 11.16 of the MEPA regulations and copies should also be sent to the list of "comments received" below and to town officials in Barnstable, Falmouth and Sandwich. A copy of the FEIR should be made available for public review at the public libraries in the Towns of Mashpee, Barnstable, Falmouth and Sandwich.

September 12, 2014

Date



Maeve Valley Bartlett

Comments Received:

9/8/14 Coastal Zone Management  
9/5/14 Massachusetts Department of Environmental Protection  
9/5/14 Department of Fish and Game/Division of Marine Fisheries  
9/5/14 Cape Cod Commission  
9/5/14 Association to Preserve Cape Cod

MVB/CDB/cdb



**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: Maeve Valery Bartlett, Secretary, EEA  
ATTN: Deirdre Buckley, MEPA Unit  
FROM: Bruce Carlisle, Director, CZM  
DATE: September 5, 2014  
RE: EEA-12615, Comprehensive Watershed Nitrogen Management Plan; Mashpee

The Massachusetts Office of Coastal Zone Management (CZM) has completed its review of the above-referenced Draft Recommended Plan/Draft Environmental Impact Report, noticed in the *Environmental Monitor* dated July 9, 2014, and offers the following comments.

**Project Description**

The purpose of the Draft Recommended Plan/Draft Environmental Impact Report (DRP/DEIR) is to present the recommendations of Mashpee's wastewater management planning process to address the nitrogen Total Maximum Daily Loads (TMDLs) established for Popponesset Bay and Waquoit Bay's eastern basin, and to present the mitigation measures and implementation approach for the Town of Mashpee. These recommendations will be managed and implemented through the Mashpee Water and Sewer District and the Town of Mashpee. The DRP/DEIR is the most recent document submitted as part of the joint MEPA/Cape Cod Commission Joint Review Process, which began in 2001.

These previously submitted reports include: Needs Assessment Report; Technology Screening Report; Draft Alternative Scenarios Analysis and Site Evaluation Report; Two (2) Notices of Project Change; and the Alternatives Screening Report, issued in August 2013. Following the Alternatives Screening Report, the Draft Recommended Plan proposes a variety of management actions including shellfish aquaculture for nitrogen removal, expansion of wastewater treatment at existing facilities, and at new facilities, and the implementation of future Demonstration Projects. The latter projects include permeable reactive barrier options, wetland restorations projects, and a feasibility study for the Quashnet/Moonakis River.

**Project Comments**

CZM recognizes that the impact caused by the discharge of nitrogen through both private septic and municipal sewer systems to surrounding water bodies is a significant issue for the towns on Cape Cod. These impacts have both environmental and economic consequences. CZM supports the comprehensive planning for wastewater management and applauds the effort that has gone into the development of this plan. CZM is committed to working with the Town and assisting with the development of the final Plan and offers the following comments.

*Flood Zone Mapping*

Figure 8-1 in the DEIR depicts flood zones in the planning area including the 100-year flood, the 100-year flood with velocity hazard, and the 500-year flood. A note on the figure states that "Digital Q3 Flood data was obtained through MassGIS (1997)". Updated FEMA Flood Hazard Layers are currently not available for this area." As of July 16, 2014, new data and maps are now available. The Town can access these data via the National Oceanic and Atmospheric Administration's viewer or can contact CZM. These maps should be consulted to ensure that the

