CAPE COD
COMMISSION

Cape Cod 208 Plan Implementation

2020 REPORT TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

JULY 2020

Prepared by the Cape Cod Commission

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CONTENTS

CAPE COD COMMISSION

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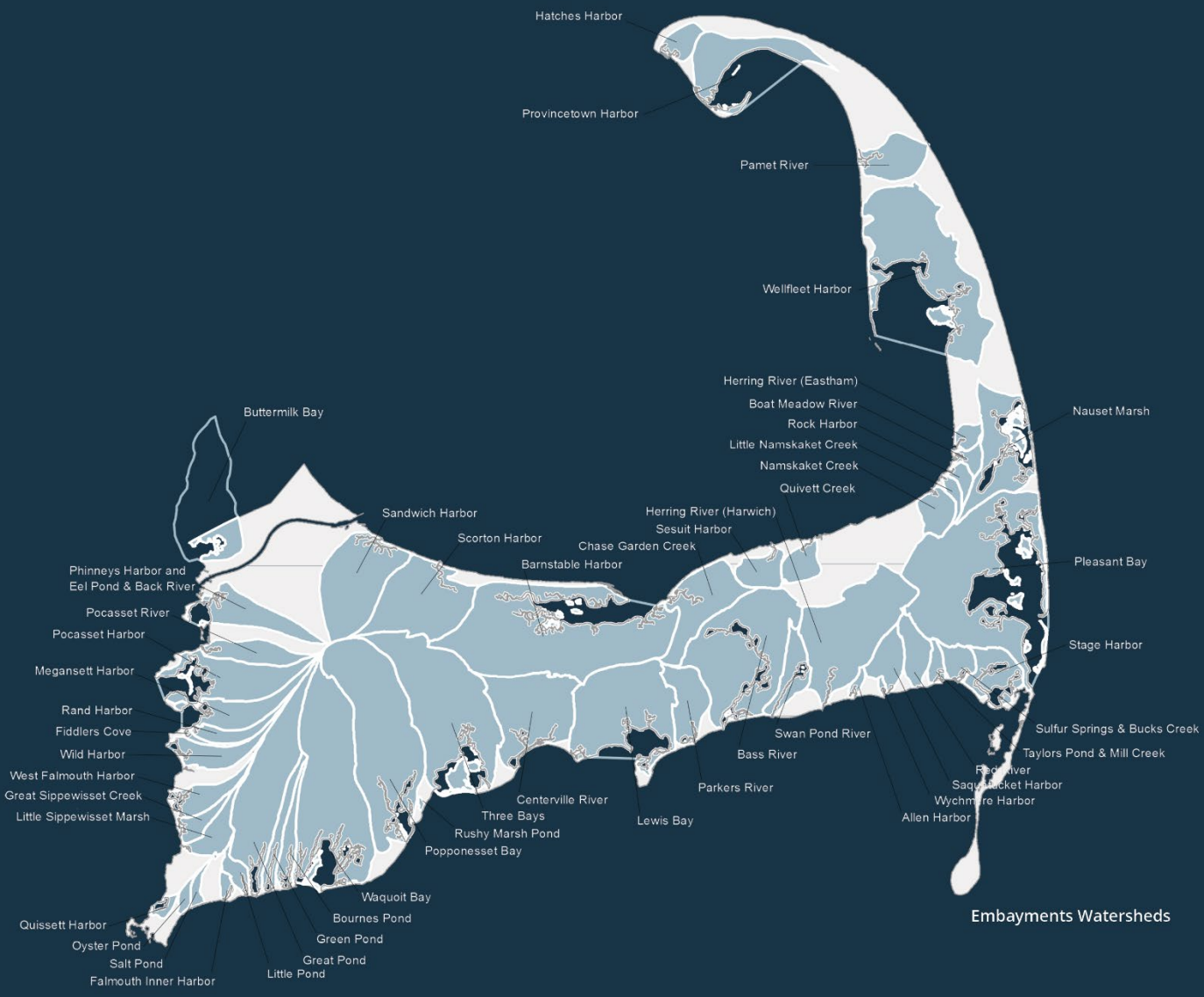

Hatches Harbor
Provincetown Harbor
Pamet River
Wellfleet Harbor
Herring River (Eastham)
Boat Meadow River
Rock Harbor
Little Namskaket Creek
Namskaket Creek
Quivett Creek
Nauset Marsh
Buttermilk Bay
Sandwich Harbor
Herring River (Harwich)
Sesuit Harbor
Scorton Harbor
Chase Garden Creek
Barnstable Harbor
Pleasant Bay
Phinneys Harbor and
Eel Pond & Back River
Pocasset River
Pocasset Harbor
Megansett Harbor
Stage Harbor
Rand Harbor
Fiddlers Cove
Wild Harbor
West Falmouth Harbor
Great Sippewisset Creek
Little Sippewisset Marsh
Swan Pond River
Bass River
Sulfur Springs & Bucks Creek
Taylors Pond & Mill Creek
Parkers River
Centerville River
Three Bays
Rushy Marsh Pond
Popponesset Bay
Lewis Bay
Allen Harbor
Waquoit Bay
Bournes Pond
Green Pond
Great Pond
Little Pond
Quissett Harbor
Oyster Pond
Salt Pond
Falmouth Inner Harbor
Embayments Watersheds

Introduction

Since submission of the April 2019 progress report and town compliance reports to the United States Environmental Protection Agency (US EPA) Cape Cod communities, the Cape Cod Commission (Commission), Barnstable County (County), and other regional partners have been engaged on actions to better address nitrogen pollution in coastal waters.

The COVID-19 pandemic has presented some local and regional challenges. It resulted in some communities transitioning actions intended for spring 2020 town meeting to fall town meeting and impacts on revenue generated by short-term rentals for the Cape Cod and Islands Water Protection Fund (CCIWPF) are anticipated.

The fundamental issues of monitoring and financing remain the highest regional priorities. Progress has been made on availability, accessibility, and analysis of water quality monitoring data and development of an interface to allow for future updates and analysis of this data is underway. In the coming months, the Commission will work with partners to pilot the effectiveness of this monitoring database, analysis, and user interface to inform local planning, infrastructure implementation, and adaptive management. Cape Cod communities continue to seek State Revolving Fund (SRF) loans and a management board was established to oversee the CCIWPF. Work must continue to ensure infrastructure investments are cost effective and communities have access to the financial resources needed to implement plans and projects.

This progress report serves as an update on both local and regional progress to implement 208 Plan Update recommendations since the April 2019 progress report. This report was requested by the US EPA in their April 15, 2020 letter to the Massachusetts Department of Environmental Protection (MassDEP) in response to MassDEP's 2019 implementation update for the Cape Cod Area Wide Water Quality Management Plan Update. It provides information by which US EPA may assess actions taken to implement the 208 Plan Update.

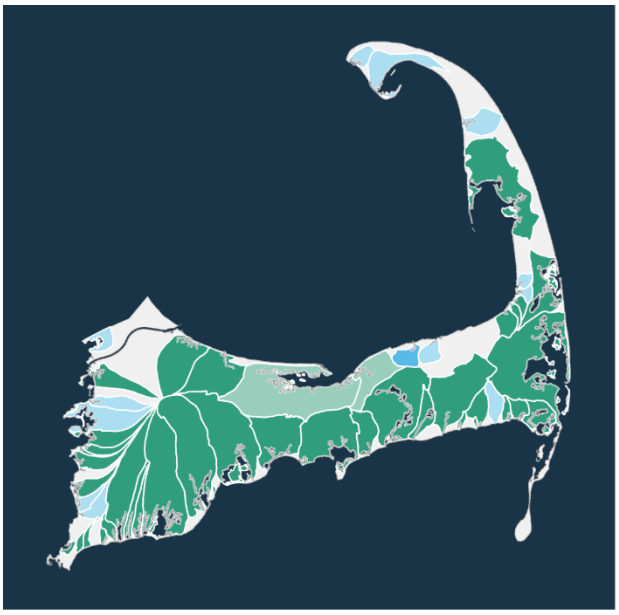
The Path Defined through the Cape Cod 208 Plan

The Cape Cod 208 Plan Update, certified and approved by the Governor of the Commonwealth of Massachusetts and US EPA in 2015, provides a path forward and an opportunity to implement watershed management plans for the restoration of the coastal waters that define Cape Cod, many of which are severely impacted by excess nitrogen from on-site septic systems.

Development of the 208 Plan Update followed a decades-long process to define the coastal water quality problems on a water body by water body basis (through the Massachusetts Estuaries Project, or MEP). Of the 53 Cape Cod embayments with physical characteristics that make them susceptible to nitrogen impacts, 34 require nitrogen reduction to achieve healthy ecosystem function, and 30 have established Total Maximum Daily Loads (TMDLs) for nitrogen (see Figures 1 through 4 and Table 1). Since the 2019 progress report no new MEP technical reports have been issued, however three new TMDLs have been issued, including Falmouth Inner Harbor, Megansett-Squeteague Harbor and Waquoit Bay.

53 Embayments Watersheds
Figure 1

46 Embayments Watersheds Originally Identified by MEP for Study
Figure 2



Status of MEP Technical Reports by Watershed (April 2019)

Figure 3

Status of TMDLs by Watershed (April 2019)

Figure 4

Table 1: Status of MEP Technical Reports and TMDLs (as of July 2020)

Watershed	Status of MEP Report	Status of TMDL
Allen Harbor	Final Technical Report	Final TMDL Established
Barnstable Harbor	Draft Technical Report	
Bass River	Final Technical Report	Final TMDL Established
Boat Meadow River	Not Studied	
Bournes Pond	Final Technical Report	Final TMDL Established
Buttermilk Bay	Not Studied	
Centerville River	Final Technical Report	Final TMDL Established
Chase Garden Creek	Draft Technical Report	
Falmouth Inner Harbor	Final Technical Report	Final TMDL Established
Fiddlers Cove	Final Technical Report	Final TMDL Established
Great Pond	Final Technical Report	Final TMDL Established
Great Sippewissett Creek	Not Studied	
Green Pond	Final Technical Report	Final TMDL Established

Hatches Harbor	Not Studied	
Herring River (Eastham)	Not Studied	
Herring River (Harwich)	Final Technical Report	Final TMDL Established
Lewis Bay	Final Technical Report	Final TMDL Established
Little Namskaket Creek	Final Technical Report	TMDL Not Required
Little Pond	Final Technical Report	Final TMDL Established
Little Sippewissett Marsh	Not Studied	
Megansett Harbor	Final Technical Report	Final TMDL Established
Namskaket Creek	Final Technical Report	TMDL Not Required
Nauset Marsh	Final Technical Report	
Oyster Pond	Final Technical Report	Final TMDL Established
Pamet River	Not Studied	
Parkers River	Final Technical Report	Final TMDL established
Phinney's Harbor	Final Technical Report	Final TMDL Established
Pleasant Bay	Final Technical Report	Final TMDL Established
Pocasset Harbor	Not Studied	
Pocasset River	Not Studied	
Popponesset Bay	Final Technical Report	Final TMDL Established
Provincetown Harbor	Not Studied	
Quissett Harbor	Final Technical Report	Final TMDL Established
Quivett Creek	Not Studied	
Rands Canal	Final Technical Report	Final TMDL Established
Red River	Not Studied	
Rock Harbor	Final Technical Report	
Rushy Marsh Pond	Final Technical Report	Final TMDL Established
Salt Pond	Final Technical Report	TMDL Not Required
Sandwich Harbor	Final Technical Report	TMDL Not Required
Saquatucket Harbor	Final Technical Report	Final TMDL Established
Scorton Harbor	Final Technical Report	TMDL Not Required
Sesuit Harbor	Data Collection Phase	
Stage Harbor	Final Technical Report	Final TMDL Established
Sulfur Springs/Bucks Creek	Final Technical Report	Final TMDL Established
Swan Pond River	Final Technical Report	Final TMDL Established
Taylors Pond/Mill Creek	Final Technical Report	Final TMDL Established
Three Bays	Final Technical Report	Final TMDL Established
Waquoit Bay	Final Technical Report	Final TMDL established for the Eel Pond, Quashnet River, Hamblin Pond, Jehu River
Wellfleet Harbor	Final Technical Report	

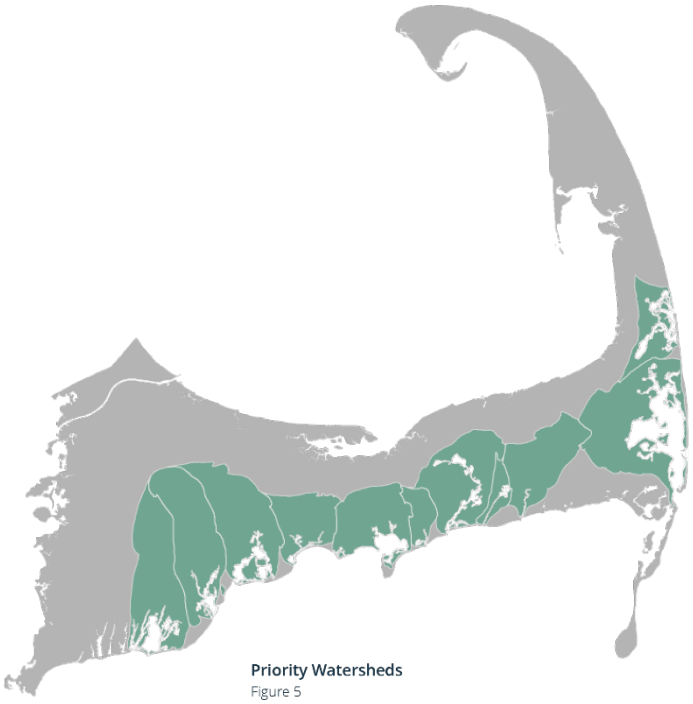
West Falmouth Harbor	Final Technical Report	Final TMDL Established
Wild Harbor	Final Technical Report	Final TMDL Established
Wychmere Harbor	Final Technical Report	Final TMDL Established

Consistent with the requirements of Section 208 of the Clean Water Act and with the historical approach to wastewater and water quality planning and implementation, Governor Charlie Baker and the US EPA, in conjunction with certification and approval of the 208 Plan Update in 2015, designated the 15 Cape Cod towns as Waste Treatment Management Agencies (WMAs), responsible for development and implementation of water quality management plans.

As recommended in the 208 Plan, WMAs developed watershed reports that outline potential watershed-based scenarios to meet water quality goals in each of the 53 embayments. The watershed reports take advantage of the framework established in the 208 Plan and incorporate a range of traditional and non-traditional technologies that reduce nitrogen at the source, intercept it in groundwater, and address it in the embayments. The final watershed reports were included as an appendix to the 2017 Implementation Report.

The 2017 Implementation Report also identified 11 priority watersheds (Figure 5), a two-year schedule for development of intermunicipal agreements and more detailed watershed plans in priority watersheds, and recommendations to increase capacity at the regional level to support local plan development and implementation. The following are the priority watersheds:

- Popponesset Bay
- Parkers River
- Three Bays
- Bass River
- Lewis Bay
- Centerville River
- Swan Pond River
- Pleasant Bay
- Nauset Marsh
- Waquoit Bay
- Herring River



Priority Watersheds
Figure 5

Given data updates and local action that has occurred over the last three years, the existing watershed reports are out of date. **Commission staff recommends updating the watershed report details, including but not limited to data documenting the problem, information from MEP technical reports, status of TMDLs, and estuary and watershed characteristics, in a timeframe consistent with release of final 2020 town compliance reports (Recommendation I2020.1)**. Commission staff intend to release final 2020 compliance reports in October 2020. These sections of the watershed reports serve as an informational resource for communities and other stakeholders and the Commission proposes making the updated information available via a web interface. **Commission staff further recommends that the Commission work with MassDEP and US EPA in FY21 to evaluate the need for potential updates to the traditional and non-traditional watershed report scenarios for watersheds where action is deemed inadequate (Recommendation I2020.2)**. This evaluation will include consideration of progress toward development of intermunicipal agreements and watershed plans, ongoing pilot projects, local funding, and other criteria identified in collaboration with MassDEP and US EPA.

Details about local and regional implementation efforts for the period of May 2019 through June 2020 are described in the following sections.

Local Progress

PRIORITY WATERSHEDS

The 2017 Implementation Report specifically recommended that, within one year of adoption of the Implementation Report by MassDEP and US EPA, communities contributing to priority watersheds develop agreed upon nitrogen allocations and adopt an intermunicipal agreement that, at a minimum, establishes nitrogen load responsibility (**S2017.1***).* Within two years of adoption of the Implementation Report, it was recommended that contributing communities in priority watersheds outline a plan and schedule for hybrid watershed scenario development and develop hybrid watershed scenarios consistent with the 208 Plan Update (**S2017.2**).

Of the 11 priority watersheds, three are located within a single town (Centerville River, Parkers River and Swan Pond River) and, therefore, do not require intermunicipal agreements. The remaining eight watersheds are shared. Since submission of the Implementation Report, two intermunicipal agreements have been executed relative to priority watersheds and other collaborative efforts are underway. These agreements were executed during the last reporting period. No new agreements have been executed during the May 2019 through June 2020 reporting period.

The 2019 progress report documented actions taken since identification of priority watersheds, including:

- execution of the Popponesset Bay intermunicipal agreement by the towns of Barnstable, Mashpee, and Sandwich;
- initiation of a discussion on a Waquoit Bay intermunicipal agreement between the towns of Mashpee, Sandwich, and Barnstable;
- coordination between the towns of Bourne, Mashpee, Sandwich, Falmouth, and Barnstable and military leadership at Joint Base Cape Cod (JBCC) around the use of the JBCC wastewater treatment facility and disposal areas;
- execution of the Pleasant Bay intermunicipal agreement by the towns of Brewster, Chatham, Harwich, and Orleans and issuance of the Pleasant Bay watershed permit by MassDEP; and
- filing of legislation to establish the Dennis, Harwich, Yarmouth Community Partnership.

The following provides details on progress in priority watersheds from May 2019 through June 2020.

The Town of Barnstable released its Draft Comprehensive Wastewater Management Plan (CWMP) in October 2019, which includes the town's proposed plans to address the required nitrogen removal in the Centerville River watershed, and Barnstable's portion of the required removal in the watersheds to Popponesset Bay, Three Bays and Lewis Bay. The town plans to use a phased traditional sewer approach as the primary means to meet nitrogen reductions in all of its coastal embayments, with concurrent upgrades to existing facilities at the Barnstable Water Pollution Control Facility (WPCF). The town continues to engage with the Barnstable Clean Water Coalition (BCWC) and other partners (US Geological Survey, US EPA) to pursue a number of non-traditional pilot projects around the Three Bays watershed. These non-traditional projects are located in a watershed scheduled to be addressed in the medium to long term sewer phase of CWMP implementation. If successful, the projects may provide more immediate nutrient reductions ahead of planned sewering, and may also reduce the extent of sewering required in latter phases of the CWMP. As part of its plan to address nitrogen in Lewis Bay, the Town of Barnstable is engaged in ongoing discussions with the Town of Yarmouth regarding the usage of the Barnstable WPCF to treat wastewater from both towns while sending treated effluent to Yarmouth for discharge.

Discussion between the towns of Bourne, Mashpee, Sandwich, Falmouth, and Barnstable, and military leadership at JBCC has continued regarding the use and possible transfer of ownership of the JBCC wastewater treatment facility and disposal areas. Representatives from each of the towns, military leadership, regulatory agencies, and other interested parties met at Joint Base Cape Cod in May 2019 to explore possible effluent disposal techniques and locations that would support future expansion of the wastewater treatment facilities at the base. In June 2019, the Town of Barnstable submitted a letter of interest to Joint Base Cape Cod to take over operation of its wastewater treatment and drinking water facilities. In September 2019 Barnstable partnered with Converge LLC, which also previously submitted a letter of interest, to submit a joint proposal to assume control and operation of the Base facilities. Discussions with military leadership regarding the joint proposal are continuing in 2020.

The towns of Brewster, Chatham, Harwich, and Orleans have continued to advance their respective nutrient reduction plans as laid out in the Pleasant Bay Watershed Permit, which were detailed in the first Watershed Permit Annual Report (August 2019). Under a grant received from the US EPA Southeast New England Program (SNEP), the Pleasant Bay Alliance is conducting several pilot studies including a feasibility study for the use of on-site denitrifying septic systems in Brewster, a demonstration of shellfish harvesting for nitrogen removal at Lonnie's Pond in Orleans, and a demonstration project for nitrogen trading among the four towns. In addition, the towns are continuing to proceed with their respective plans outlined in the Targeted Watershed Management Plan for Pleasant Bay. Progress has continued on the permeable reactive barrier (PRB) pilot installation and screening of additional PRB locations (Orleans), sewer system design (Orleans), and sewer collection system expansion (Chatham, Harwich). In April 2020, the Pleasant Bay Alliance received a Technical Assistance Award for watershed level stormwater management through the SNEP Network's Call for Participants, which officially kicks off in July 2020. The towns continue to coordinate their activities through monthly meetings of the Pleasant Bay Alliance watershed workgroup. In June 2020, as a result of the COVID-19 pandemic, the Pleasant Bay Alliance requested that MassDEP and the Commission extend the deadline for the 2020 Watershed Permit Annual Report and annual report regarding 208 consistency from August 3, 2020 to October 3, 2020. The Commission granted the extension of the annual report documenting progress and ongoing consistency with the 208 Plan Update.

The towns of Dennis, Harwich, and Yarmouth have been working, through a working group of town administrators, selectmen, and staff created in March 2017, to establish the DHY Community Partnership with the purpose of implementing a regional wastewater treatment system to serve all three communities. The approach is modeled after the existing Mansfield, Foxborough, Norton agreement. An Act establishing the DHY Clean Waters Community Partnership for the towns of Dennis, Harwich, and Yarmouth was passed and signed by Governor Baker on October 11, 2019. Over the last year, the DHY working group has been drafting an agreement between the three communities. The draft agreement was presented in each community and includes input from various boards and committees. The agreement will be before Town Meeting in each community in the fall of 2020. When the Community Partnership is formed, the three towns propose to work together to implement the previously developed DHY Community Partnership Plan, which is estimated to save over $100 million in capital costs and $6.5 million in annual operations and maintenance costs, compared to the individual town plans. The plan addresses the portions of five priority watersheds (Parkers River, Bass River, Swan Pond, Herring River, and Pleasant Bay) within the three participating towns.

The above describes some of the major ongoing efforts in priority watersheds. Additional details on progress in each community and the region as a whole are included in subsequent sections.

COMPLIANCE REPORTS

The Commission tracks implementation of the 208 Plan Update and issues compliance reports to document progress by each WMA. The first compliance reports were issued in September 2019. Compliance reports provide details on town planning and permitting, project implementation, funding, collection of data and information, regional data sharing, and compliance with the Municipal Separate Storm Sewer (MS4) permit.

An updated draft compliance report for each WMA is included in **Appendix A**. The draft compliance reports will be shared with each community in August 2020 with a request for review. The Commission will accept feedback and edits on the draft compliance reports through September 2020, following which the Commission will make necessary amendments, with the intent of issuing final updated reports in October 2020. This schedule will allow for actions taken at fall 2020 town meetings to be included in the 2020 compliance reports.

Regional Progress

Both the 208 Plan Update and the 2017 Implementation Report grouped recommendations into four categories:

- Information (I)
- Support (S)
- Regulatory Reform (R)
- Cost (C)

These four categories encompass the efforts necessary to support local implementation of the 208 Plan Update and achievement of water quality goals. Since April 2019 progress has been made by WMAs, the Cape Cod Commission, Barnstable County, MassDEP and other state agencies, and US EPA in implementing each category of recommendations from both the 208 Plan Update and Implementation Report.

INFORMATION

Access to information remains an important issue, as communities identify and implement responsible watershed plans that impact residents, businesses, and visitors. The collection of data, the development of decision-support tools that make data easier to use, and the analysis of water quality and wastewater technologies and policies remain central to the Cape Cod Commission's role in supporting 208 Plan implementation. Since 2017, the Commission has focused on information related to embayment water quality monitoring and maintaining the Technologies Matrix. As communities move from planning to implementation, baseline water quality and trends in water

quality improvement and/or degradation will provide the basis for evaluating investments in infrastructure. As those investments are made, performance monitoring will allow communities to understand their effectiveness. Both water quality monitoring and technology performance information can and should be accessible and shared amongst Cape Cod communities and others so that the region can collectively make more effective and efficient decisions moving forward. Since April 2019, significant progress has been made on this effort, including engaging end users to define data analysis and user interface needs to ensure that accessible monitoring data is used and integrated into decision-making.

Water Quality Monitoring

The 208 Plan Update and Implementation Report call for a regional water quality monitoring database and program to ensure the public is afforded the highest level of transparency regarding the information used as a basis for water quality policy and associated capital planning (**WQ Data Center I4.10; I2017.6**).

To ensure consistent data collection at sentinel monitoring stations in each coastal embayment subject to the 208 Plan Update, the state provided $250,000 annually in fiscal years 2016, 2017, 2018, and 2019. This funding was matched in equal amounts by Barnstable County to expand water quality monitoring data collected by the Center for Coastal Studies and to support a regional water quality monitoring program. The regional water quality monitoring program must continue to support local planning, implementation, and adaptive management.

Under its 2018 SNEP Watershed Grant, the Cape Cod Commission continues to work with its project partners - the Center for Coastal Studies, the Waquoit Bay National Estuarine Research Reserve, the Association to Preserve Cape Cod, and the Woods Hole Oceanographic Institution - to build out the regional water quality database through the primary tasks of data import, analysis script development, and design of a web-based user interface to provide access to the data. Import of available data has been completed through the 2018 sampling season and the database currently includes over 30 years of monitoring data from sources including the Cape Cod communities, the School for Marine Science and Technology at the University of Massachusetts-Dartmouth (SMAST), the Buzzards Bay Coalition, the Center for Coastal Studies, and the Waquoit Bay National Estuarine Research Reserve (WBNERR). The overall dataset consists of over 50,000 unique sampling events from more than 500 sampling stations throughout Cape Cod's coastal waters, that are all catalogued in a single consistent format which allows any or all data to be easily compared or analyzed.

As a component of the analysis toolbox, project partners prepared a Quality Assurance Project Plan (QAPP) for data management and analysis tool development which was approved by US EPA in January 2020. The project team has facilitated six meetings between July 2019 and July 2020 with potential end users of the database and interface; a group that includes representatives from Cape

Cod municipalities, MassDEP, US EPA, water quality monitoring organizations, and local non-profit and advocacy groups. Feedback from those meetings and the ongoing collaborative process have been used to shape the analysis tools, data outputs, and interactions/functionality that will be available through the web interface currently under development.

Several discussions with the end user group centered around data quality and how the status of a monitoring program's QAPP impacts the use of that data for local and state regulatory decision making. These conversations highlighted the need for a clearer understanding of the role of an approved QAPP for data collection, as well as the need for a process to review and certify data that, while not collected under a US EPA-approved QAPP, used equally rigorous and well documented protocols. A sizeable fraction of the data in the Regional Water Quality Database was not collected under a US EPA-approved QAPP, including pre-2019 data from WBNERR, and data from SMAST (or Massachusetts Estuaries Program) prior to 2003 and post-2008. These data will be classified as non-QAPP under current database guidelines, which limits their ability to be used for local decisions or regulatory determinations. **Commission staff recommend that the Commission, US EPA, and MassDEP coordinate to establish a process and criteria for determining "QAPP equivalent" data (Recommendation I2020.3)**.

Technology Performance Monitoring

Equally important to local decision-making is performance monitoring. The 2017 Implementation Report included guidance for piloting, monitoring and evaluating eight non-traditional technologies. (**Monitoring Protocols I4.8**). The technologies included in this guidance were those that held the most promise for addressing nitrogen in coastal waters on Cape Cod and continue to be the approaches that are being considered in various communities. The Implementation Report recommended reconvening the Monitoring Committee (**Monitoring Committee I4.9**) and adopting protocols for other non-traditional technologies (**I2017.5**); however, the demand for protocols beyond those already developed is not yet apparent. Based on local projects, such as those being undertaken by the Pleasant Bay Alliance, or progress on MS4 permit requirements by Cape Cod communities' amendments to the existing protocols may be appropriate. Amendments to the existing guidance document should be considered in the future, as time and resources allow. **Commission staff recommends evaluating the need for amendments to the monitoring guidance as updates to the Technologies Matrix are made (Recommendation I2020.4).**

Technologies Matrix

It is critical to gather performance monitoring data and make it publicly accessible, so as to inform efforts of other Cape Cod communities. Through the annual OneCape Summit, the Commission seeks to make the latest information more widely available (**Annual Technologies Symposium I4.2**). Presentations and information at the Summit include new research on nutrient management

technologies and approaches and local experiences piloting non-traditional technologies. The information presented coincides with the regular updates to the Technologies Matrix.

The Commission hosted the annual OneCape Summit in July 2019, at the Wequassett Resort in Harwich, MA. More information on the topics covered at the Summit along with presentation materials can be accessed at http://onecape.capecodcommission.org/.

The Technologies Matrix stormwater advisory committee was convened in April 2019 to discuss new studies and information available to support updates to the stormwater section of the Technologies Matrix. Subsequent meetings were held in June 2019 and March 2020, ultimately making refinements and updates to four categories of stormwater management practices and adding two new practices to the Matrix. Future research funding needs and opportunities for Technologies Matrix related outreach were also identified through the review process. Commission staff will continue to obtain information from ongoing implementation of local projects on an annual basis, and when sufficient new information is available to warrant convening the Technologies Matrix committee subsequent formal updates will be completed.

The 2020 Technologies Matrix can be found at https://capecodcommission.org/our-work/technologies-matrix/. The Technologies Matrix viewer (http://www.cch2o.org/Matrix/) is in the process of being updated. The infrastructure that supports the viewer has been upgraded to increase database information storage capacity, allow for information download, and create a more detailed viewer.

Data and Decision-Support Tools

The decision-support tools created by the Commission to make data and information more accessible and aid local planning rely on the monitoring data and research described above, in addition to other underlying regional data layers that require regular maintenance and updates. The 2017 Implementation Report recommended the Commission pursue an update to the parcel and water use data used in WatershedMVP (www.watershedmvp.org) and other decision support tools (**I2017.19**), update WatershedMVP and other decision support tools based on newly acquired data (**I2017.20**), and revisit functionality available in these tools regularly to ensure they remain effective for planning purposes (**I2017.21**).

Commission staff continues to update and maintain WatershedMVP. The regional planimetrics data, which was created in 2016 from a 2014 aerial flyover, allowed staff to develop more accurate lawn, impervious surface, structure, and canopy layers. As a result, WatershedMVP can provide more accurate wastewater, fertilizer, stormwater, and atmospheric nitrogen loads on a parcel-specific basis than previously available. The Commission is currently working on behalf of the 15 Cape Cod towns to capture and produce high resolution aerial photography for the entire region. A regional aerial flyover was conducted in March and April 2020. The aerial photography captured by this

flyover will support an update to the planimetrics database later this year, which will inform future updates to WatershedMVP.

To provide more accurate wastewater nitrogen loads, the Commission has requested information on innovative/alternative septic system installations region-wide from the Barnstable County Department of Health and Environment. Once obtained, WatershedMVP will provide more accurate nitrogen loading information from those parcels utilizing innovative/alternative systems.

Efforts are ongoing to increase the resiliency of WatershedMVP and other applications. Recent updates included transitioning the application to the cloud, upgrading the application architecture to accommodate development, user acceptance and testing, and production sites. This allows for better debugging capabilities and easier upgrades in the future. Based on feedback from communities and consultants, near term revisions will focus on finely tuning functionality, upgrading user experience graphics. Commission staff are also coordinating with staff from the Martha's Vineyard Commission to expand WatershedMVP to include Martha's Vineyard data allow for scenario development in Martha's Vineyard watersheds.

SUPPORT

Direct support of local water quality planning efforts, including the provision of expertise and technical assistance, access to decision-support tools, and development of guidance, was a key recommendation in the 208 Plan Update and remains a priority.

Since the April 2019 progress report, the Commission has provided the following support to communities, either through technical assistance or by directing discretionary funds, such as District Local Technical Assistance (DLTA), to 208-related work.

The following provides a summary of the assistance provided since the April 2019 progress report.

Barnstable

Pursuant to the Commission re-authorizing the Downtown Hyannis Growth Incentive Zone (GIZ) in 2018, updating the Design and Infrastructure Plan (DIP) became a priority action. The Commission staff worked with town staff to identify priority design and infrastructure issues for each GIZ neighborhood including parcels that are constrained by limited water main pressure and uncertain wastewater flow allocation, among other key concerns. An excerpt from the Hyannis Design and Infrastructure Plan, completed in February 2020, illustrates priority wastewater and stormwater infrastructure issues (see **Appendix B**).

In the fall/early winter, Commission staff also completed an informal review of the draft Barnstable CWMP for consistency with the 208 Plan Update. Commission staff met with town staff to discuss

feedback and attended community meetings where the plan was presented and discussed with community members. A formal review is anticipated in 2020.

Bourne

The Commission directed DLTA funds to support a parking feasibility/conceptual design assessment of the downtown Buzzards Bay area. The town contracted with Green Seal Environmental to conduct the study design. Although the primary purpose of this project is not nitrogen reduction, the concept designs incorporate low impact design (LID) of stormwater features, including rain gardens, vegetated swales and permeable pavement, which are innovative systems designed to promote infiltration and filter nutrients and pollutants from stormwater runoff. These LID stormwater treatment systems will alleviate the impact of nitrogen in some off-Cape estuaries and provide much needed parking spaces in an area critical to supporting the local and regional economy.

Brewster, Chatham, Harwich, Orleans (Pleasant Bay)

Commission staff continue to attend monthly meetings of the Pleasant Bay Alliance Watershed Working Group; and helped to facilitate the Alliance's engagement with the SNEP Technical Assistance Network. Funding provided through a 2020 SNEP Technical Assistance Network subaward (July 2020 contract start date) will support Commission staff review of the stormwater management bylaws with a focus on identifying opportunities to promote regional consistency in the institutionalization of LID and nature-based solutions (NBS) in future development and redevelopment projects.

Eastham

Commission staff engaged with the Town of Eastham and their consultant (GHD, Inc) to discuss water use records with the goal of establishing a more accurate average water use for the town. Determining water use for residential, commercial, and industrial areas will inform the town as it moves forward with the new municipal water supply service and in planning for potential wastewater and water quality infrastructure. Commission staff also assisted the Town of Eastham in engaging their neighboring community of Orleans in exploring options for managing nutrients in the Nauset Harbor priority watershed. Commission staff, the town, and GHD staff prepared a memo detailing the opportunities for joint projects and collaboration within the watershed. Town of Orleans staff and boards are currently focused on other relevant wastewater planning efforts elsewhere in Orleans, with limited capacity to focus on this collaborative effort at this time. The Town of Eastham will pursue opportunities for collaboration in the future.

Falmouth

Woods Hole Oceanographic Institution (WHOI) partnered with the Town of Falmouth to obtain a SNEP Watershed Grant in 2019 for pilot installation of a permeable reactive barrier. The pilot installation builds upon previous PRB siting work done by US EPA, US Geological Survey, and the Cape Cod Commission; and consists of further site evaluation, bench scale testing, and installation of a 120-foot long PRB. The site is located within the impaired Great Pond watershed, in an area with high measured nitrate flux, and is expected to provide critical information regarding the dosing and lifespan of the injected carbon source, while also removing upwards of 530 kilograms of nitrogen per year from the Great Pond watershed. Design, bench scale testing, and baseline monitoring have already been completed, and at the time of this report PRB installation (injection of emulsified vegetable oil) is ongoing. Commission staff have worked with WHOI, the town, and project partners throughout the project and will continue to serve on the advisory group through project completion.

Sandwich

The Commission directed funding from both 2019 DLTA and a Massachusetts Executive office of Energy and Environmental Affairs Planning Assistance Grant to develop models and a form-based framework for compact development. The project is titled Community Resilience by Design. Commission staff worked with town staff and Union Studios to develop the "South Sandwich Community Design and Regulatory Framework," to determine the appropriate forms and density for mixed-use and multi-family residential development in South Sandwich to facilitate desired development types and density using the available wastewater treatment capacity. **Appendix C** includes the final report for this project.

Wellfleet

Commission staff worked with town staff and their consultant (Scott Horsley) to determine options for wastewater management in the Wellfleet Harbor watershed and assess potential locations for a wastewater treatment facility. Engineering information, planning and infrastructure data, and numerous GIS layers including surficial geology, elevation contours, and groundwater contours were analyzed, and graphics produced to help with this process. The Town is working with GHD to conduct a hydrogeologic investigation of a potential disposal location at the existing transfer station.

Additionally, the Town of Wellfleet is planning to develop affordable/community housing on six acres of town-owned land to address the serious shortage of housing for year-round residents in their community. As part of this project, the Commission directed 2020 DLTA funds for a study to determine options for wastewater management and the best option for locating a system on site. This will be critical to address the need to reduce the nitrogen load and potentially remove the flow

of nitrogen toward Wellfleet Harbor and its estuaries. The Commission anticipates continuing coordination, technical assistance, and planning with the town and others in Wellfleet over the course of the year.

Region-wide

Commission staff directed 2020 DLTA funds to capture and produce high resolution orthoimagery for the region, which will lead to updated planimetric data. The geospatial data resulting from the project enables municipal leaders to make informed decisions about major infrastructure projects and a variety of planning efforts including municipal stormwater design and modeling, engineering studies, and pervious and impervious estimations. This data is also integrated into decision-support tools, such as WatershedMVP.

Region-wide Stormwater Management

In 2019, the Commission directed DLTA funds to assist all 15 Cape Cod towns with stormwater-related work and with meeting the ongoing requirements of the Massachusetts small MS4 permit. Commission staff held several planning meetings to review the MS4 permit, permit status of Cape Cod towns, and, in particular, the requirements of Years 2 and 3 of the permit to determine tasks that would benefit the community of stormwater managers on Cape Cod. In addition, DLTA funds were used to contract with Horsley Witten Group for engineering services to benefit municipal stormwater programs throughout the region. Commission staff facilitated the final Technologies Matrix Review Stormwater Advisory Group meeting, created a prototype web application for viewing updated Massachusetts Department of Transportation (MassDOT) drainage plans, updated the Cape Cod stormwater BMPedia (https://arcg.is/1PzvWa) and other educational materials, and continued to provide technical assistance to towns, including but not limited to developing tools and resources, and coordinating with state and federal agencies.

At the Technologies Matrix Review Stormwater Advisory group meeting on March 4, 2020, updates were approved and added to the Technologies Matrix including stormwater best management practices to reflect new and updated data and a “Stormwater Details” tab that provides guidance and context for the stormwater section of the spreadsheet. The Technologies Matrix viewer can be accessed at http://www.cch2o.org/matrix/. For the MassDOT drainage plans project, using updated MassDOT drainage plans and roadway layouts with intact georeferencing, Commission staff created a prototype web application in ArcGIS Online for viewing the updated plans. Additionally, Commission staff mapped the geolocated layouts, and generated unique identification codes to facilitate linking of project information and layout images.

The Commission will continue to support communities as they develop and implement water quality improvement plans and projects, through direct technical assistance and by providing funding, as available.

REGULATORY REFORM

The process to update the 208 Plan clearly identified that the state and regional regulatory framework for wastewater and water quality plans and projects was inadequate to address the challenges of diffuse, non-point sources of pollution. Per the 2018 revisions to the Cape Cod Commission's regulations, the Commission continues to review municipal water quality plans and projects for consistency with the 208 Plan, rather than through Development of Regional Impact review. 208 consistency determinations are made upon request from a town or MassDEP for the purposes of obtaining a watershed permit and/or SRF funds, as well as upon completion of Massachusetts Environmental Policy Act (MEPA) review, which triggers Cape Cod Commission review.

Regional Regulatory Review

Since May 2019, the Commission issued consistency determinations for projects in Barnstable and Chatham on the 2020 Intended Use Plan for Clean Water State Revolving Loan Funds. **Appendix D** includes the consistency determinations issued to date.

COST

This issue of cost continues to be one of the primary considerations when developing water quality plans and projects. A principle of the 208 Plan Update is that the burden of cost should not fall solely on the backs of year-round residents, but should be distributed among all those benefiting from this iconic region. State, Federal, and regional initiatives that save towns money continue to be necessary to move the region forward. At the same time, the passage of the short-term rental legislation created an opportunity for towns to consider dedicating the additional local option tax revenue to wastewater and water quality improvement efforts.

While significant progress has been made in implementing 208 Plan recommendations in this category, work remains at all scales to ensure funds are available and utilized on appropriate wastewater and water quality projects.

Federal Support

The Commission remains active with SNEP, participating on the Steering Committee, as well as Policy, Monitoring, and Ecosystem Services Subcommittees. Since April 2019, SNEP funds and technical assistance have continued to support the regional water quality monitoring program,

implementation of the Pleasant Bay Watershed Permit, and development of the State of the Waters: Cape Cod report, among others. SNEP also created the Southeast New England Network, which is a collaborative network of partners with expertise in stormwater management, financing, water quality and habitat restoration, green infrastructure, low impact development, and watershed-scale conservation and restoration. The Commission is a Network partner and details on our participation are included below (see Partnerships). The Commission will continue to encourage the expansion of SNEP and its associated resources to better address Cape-wide water quality and wastewater issues (**SNECWRP C7.4**).

State Support

Consistent with fiscal years 2016-2018, the Commonwealth provided $250,000 in fiscal year 2019 to support collection of embayment water quality monitoring data (**Monitoring and Pilot Projects C6.2**). This funding was matched, in equal amount, by Barnstable County.

The 208 Plan recommended that local targeted watershed management plans consistent with the Section 208 Plan Update qualify for existing and potential revenue sources (**Access to Funds C5.4**). As defined by State Revolving Fund (SRF) Loan Regulations (310 CMR 44.00), all nutrient removal projects deemed consistent with any regional water resources management plan, including but not limited to a 208 Plan, are eligible for SRF loans and other forms of financial assistance at the financial equivalent of a loan made at a 0% interest rate. Efforts to increase access to potential revenue sources are ongoing and must continue.

Creation of the Cape Cod and Islands Water Protection Fund (CCIWPF) provided a dedicated revenue source to subsidize SRF funded projects in member communities (**Cape Cod Capital Trust Fund C6.5**). Since collection of revenue began in July 2019, the Fund has generated $9,131,353.88 (through May 2020). The impacts of the COVID-19 pandemic on the short-term rental market resulted in less than anticipated revenues in the June 2020 disbursement to the Fund.

The CCIWPF is a critical new funding source for local implementation of water quality projects, as well as for the monitoring and modeling that support communities as they evaluate and adapt their plans to ensure success. **Recognizing the critical need to continue to support a robust monitoring program, among other efforts, Commission staff recommends consideration be given to allocation of CCIWPF funds to support monitoring, modeling, and other work in the coming year (Recommendation C2020.5).**

The Commission is charged with providing administrative and technical support to the CCIWPF Management Board. The Commission convened the Management Board in May 2019. Over the last 14 months, the Commission has facilitated discussions between the Board and the Massachusetts Department of Revenue, MassDEP, and the Massachusetts Clean Water Trust; worked with the Board's Bylaws and Regulations Committee to develop draft bylaws, adopted by the Board in

September 2019 (see **Appendix E**); and worked with the Bylaws and Regulations Committee to draft regulations for equitable distribution of the funds. It is anticipated that this Committee will forward draft regulations for consideration by the Management Board in August 2020.

In addition to the 2.75% dedicated to the CCIWPF, the short-term rental legislation provided for a local option of up to 6% and a community impact fee of up to 3%, also assessed locally, on professionally managed properties. Consistent with the 2017 Implementation Report recommendation, communities have an opportunity to earmark this new revenue source for wastewater and water quality projects (**C2017.12**). To date, the only towns to dedicate a portion of this revenue to water quality related infrastructure are Dennis and Mashpee, in addition to Barnstable, which had elected to dedicate local option meals and rooms tax revenue to wastewater infrastructure prior to completion of the 208 Plan Update. The towns of Mashpee and Dennis also voted to support creation of a Water Infrastructure Investment Fund (WIIF) at their respective spring 2020 town meetings. The WIIF will be used for municipal drinking, wastewater and storm water infrastructure assets. Other Cape Cod communities should also consider doing so.

In addition, pursuant to the Massachusetts Water Infrastructure Bill and 208 Plan recommendations, MassDEP should exercise its discretion in providing principal forgiveness up to 25% for Cape Cod communities with a watershed permit (**Principal Forgiveness C6.1**) and consider expanding this opportunity to communities with a 208 consistency determination. Even if done solely through the CCIWPF, the impact on Cape Cod communities could be significant.

Regional Initiatives

In response to Cape-wide interest in freshwater water quality planning and management, which resulted in an identified future action in the 208 Plan, Commission staff have been working to find funding sources for pond and lake water quality monitoring and updating the Cape Cod Pond and Lakes Atlas. Region-wide pond monitoring has an episodic history, with many different efforts and agents, and varying and inconsistent monitoring criteria and protocols. Over the past year, Commission staff has worked with partners to locate funding to establish a centralized, region-wide program to ensure consistent training of volunteers, sampling protocols, and collection of data. This effort is intended to build on the SNEP Watershed Grant to develop the monitoring database, analysis, and user interface, which also includes development of a ponds monitoring QAPP. Commission staff has sought support and/or funding for a pond and lake monitoring program from the SNEP watershed grant program, the Massachusetts Environmental Trust, and AmeriCorps Cape Cod. Commission staff is also working to identify a longer-term sustainable funding source for this proposed program.

Partnerships

Cooperation between local, regional, state and federal agencies, among other partners, remains important to improving the flow of information and the consistent feedback loops necessary to create informed and successful implementation plans.

The 208 Plan Update suggests continued cooperation and coordination with both the MassDOT and JBCC, as key partners in alleviating the impacts of nitrogen on coastal waters.

In 2019, the Cape Cod Commission, as part of a thirteen partner collaboration led by the New England Environmental Finance Center at University of Southern Maine, was awarded a SNEP grant to establish a regional Technical Assistance Network for communities, tribes, and organizations in Southeastern Massachusetts and throughout Rhode Island. The network brings together regional experts from government agencies, non-profits, academia, and the private sector; and offers assistance in a variety of subject areas including stormwater management, financing, habitat restoration, and low impact development. The Technical Assistance Network released a Call for Participants in March 2020, and made Technical Assistance awards to the Town of Bourne and the Pleasant Bay Alliance.

Kickoff meetings for both Technical Assistance awards were held in July 2020, bringing together representatives from the SNEP Network and key participants from the town(s). The Network is providing the Town of Bourne with assistance developing a Coastal Resilience Action Strategy to prioritize climate projects and actions, and a set of customized sustainable financing options for long-term project implementation to accompany that plan. With the Pleasant Bay Alliance, the Network has committed to perform a watershed level bylaw review and analysis to identify and outline sustainable financing options for long-term stormwater management in Pleasant Bay, and to facilitate discussions with MassDEP and US EPA regarding methods for quantifying stormwater pollutant removal as it relates to requirements under the 2016 MS4 permit, MassDEP watershed permit, and other applicable regulatory frameworks.

Regarding JBCC, the 208 Plan recommended ongoing discussions with JBCC and MassDevelopment regarding wastewater allocation policies for the base (**JBCC S7.1**). In 2018, MassDevelopment determined they were no longer interested in taking ownership of the facility. The four upper Cape towns continue conversations with military leadership and have maintained interest in utilizing the JBCC treatment facility. The Town of Barnstable has also recently engaged in conversations to utilize the JBCC treatment facility. The discussion of wastewater allocation is dependent, in part, on the ultimate ownership of the JBCC wastewater treatment facility. Conversations between the five communities and military leadership should continue. Commission staff continue to participate in quarterly meetings of the Military Civilian Community Council and other meetings regarding the facility, as requested and appropriate. Upon the transfer of ownership of the treatment facility,

Commission staff can, as appropriate, discuss with the owner a reasonable allocation policy that ensures local wastewater needs can be met (**S2017.16**).

Relative to MassDOT, the 208 Plan Update suggests continued cooperation and coordination with MassDOT in part to develop methodologies to assess stormwater contributions from state roadways, identify opportunities to improve tidal flushing in coastal areas and use rights-of-way for water quality improvement projects (**MassDOT I7.3**)**.** It is anticipated that US EPA Region 1 will release a draft MassDOT Municipal Separate Storm Sewer (MS4) permit for public review and comment. As recommended by US EPA staff in May 2016, the Commission will provide input on assessment methodologies during the public comment process. The Commission continues to suggest US EPA prioritize issuance of this permit, with special consideration for discharges in nitrogen sensitive.

Conclusion

Partnerships between WMAs in priority watersheds are continuing and, in some cases, increasingly successful. Support from the federal, state, and regional governments continues to strengthen the ability of communities to take action. The individual communities, and the region as a whole, have an opportunity to utilize new sources of revenue to reduce the cost burden and expedite action. These communities will also soon have access to analyses of all available water quality monitoring data to inform decision-making.

The tools and resources needed to plan, collaborate on, and implement wastewater and water quality plans and projects are becoming increasingly available and Cape Cod communities should take advantage of them to solve this problem in the most cost-effective way, while maintaining their unique character and way of life.

Commission staff acknowledge US EPA's concerns that progress has been uneven across the region and that, in some cases, communities are failing to keep pace with the Commission's 2017 Implementation Report timelines for intermunicipal agreements and watershed plans. Per US EPA's April 15, 2020 letter to MassDEP, the Commission staff understands that Region 1 staff want to engage more directly with Cape Cod communities. Commission staff welcomes the opportunity to help facilitate conversations between US EPA Region 1 staff and town staff and continuing to support Cape Cod communities as they plan for and implement water quality and wastewater projects.

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