

Chapter 1

Introduction

CHAPTER 1

INTRODUCTION

1.1 PROJECT IDENTIFICATION AND PURPOSE

The purpose of the Comprehensive Wastewater Management Planning (CWMP) Project is to provide an environmentally and economically sound plan for wastewater treatment and recharge, and nitrogen management in Chatham for the next 20 years and to serve as the foundation for the Town to build upon beyond that. The Project (a) evaluates the Town's existing wastewater treatment facility and collection system, (b) addresses nitrogen loading impacts to the Town's coastal embayments, (c) identifies and evaluates wastewater problems for all areas of the Town, and (d) provides a plan to address these wastewater and nitrogen-loading problems.

The Town of Chatham faces unusual challenges in wastewater and nitrogen management. The Town is surrounded on three sides by water and possesses natural beauty and fishing resources that attract thousands of vacationers each year. These vacationers and the year-round fishing industries strongly support the economy on which the Town depends. Nitrogen discharged to groundwater from septic systems and other sources is impacting the Town's numerous sensitive coastal embayments and could threaten the natural beauty of this area, the year-round fishing industry, and the local economy. The 1999 Needs Assessment Report (NAR) identified several watersheds as impacted by excessive nitrogen loadings, and additional study since 1999 has shown that the nitrogen impacts extend to all of the Town's estuaries and coastal embayments.

The Project began in 1998 with the first of three phases completed in the form of the 1999 NAR. After completion of the NAR, there was a long delay as the Massachusetts Estuaries Project (MEP) came into existence and developed more detailed nitrogen loading thresholds and limits for the Town's major coastal embayments. These limits are summarized in several technical reports and technical memoranda that identify the nitrogen concentrations that should be maintained in these water bodies to restore eelgrass beds and restore a more natural habitat to the

estuaries. These reports and memoranda also identify the nitrogen loadings (the actual mass of nitrogen per day) that would be allowed from the watershed to the waterbody. These watershed nitrogen loading values have been developed into regulatory limits called Total Maximum Daily Loads (TMDLs) by Massachusetts Department of Environmental Protection (MassDEP).

The purpose of this Comprehensive Wastewater Management Plan and Final Environmental Impact Report (CWMP/FEIR) Document is to summarize the significant body of work completed to evaluate the wastewater and nitrogen related problems in the Town of Chatham and present a recommended plan to implement a Town-wide solution to address these problems.

This CWMP/FEIR will receive final environmental review through the Commonwealth's Massachusetts Environmental Policy Act (MEPA) procedure. A Draft Comprehensive Wastewater Management Plan and Draft Environmental Impact Report (DCWMP/DEIR) was submitted for MEPA review in April 2008 and received broad support by the regulatory agencies as well as the Town citizens and agencies. The comments received from the April 2008 MEPA reviews have been addressed in this CWMP/FEIR document. A discussion of the MEPA review process and the comments received from the April 2008 review of the Draft CWMP/DEIR is provided in a following section of this chapter.

This CWMP/FEIR provides a Recommended Plan for wastewater and nitrogen management in the Town of Chatham for the foreseeable build-out time period in Chatham. A CWMP is typically prepared for a 20-year planning period which was originally established for the time period of 2000 to 2020 (when the project was started in 1998). A revised planning period of 2010 to 2030 has now been established due to the long time required to define the nitrogen limits and complete the plan. The year 2012 is projected to be the approximate first year of operation of improved wastewater treatment facilities in Chatham and 2012 is projected to be the completion date for the first major sewer extension in Chatham as part of the Phase 1 sewerage plan.

1.2 PROJECT LOCATION

The Town of Chatham is located at the elbow of Cape Cod (southeastern corner) as shown on Figure 1-1. The Town is surrounded on three sides by water; Nantucket Sound to the south,

Chatham Harbor and the Atlantic Ocean to the East, Pleasant Bay and Muddy Creek to the North.

1.3 COMPREHENSIVE WASTEWATER MANAGEMENT PLANNING PROJECT SCOPE

The Chatham Comprehensive Wastewater Management Planning Project has been divided into five phases. A brief listing of the major tasks associated with each phase follows:

A. Phase 100: Project Administration and Support.

- Provide project administration throughout the project.
- Coordinate wastewater planning activities with other Town planning activities.
- Provide public participation support.

B. Phase 200: Project Scoping and Environmental Documents Preparation and Filing.

- Collect and review available data pertinent to the project.
- Develop the Detailed Scope of Services and involve the necessary regional, State and national regulatory agencies in the scoping and review process.
- Prepare and file the Environmental Notification Form (ENF) and the Development of Regional Impact (DRI) documents.

C. Phase 300: Needs Assessment.

- Review and evaluate the existing conditions in Chatham including land use, population growth patterns, wastewater collection and disposal, groundwater conditions, nitrogen loading in water supply and coastal embayment zones of contribution, environmentally sensitive areas, water supplies, regulatory issues, Chatham Wastewater Treatment Facility (WWTF) and the existing centralized wastewater collection system.
- Develop and describe future conditions in the Town including projected population, water consumption and wastewater disposal volumes, including seasonal fluctuations.

- Identify areas of Town that experience problems related to wastewater treatment and disposal.
- Identify the No Action Alternative.
- Summarize Phase 300 work in a Needs Assessment Report.

D. Phase 400: Development and Screening of Alternatives.

- Identify and develop alternative technologies (both conventional and innovative), solutions, and plans to meet the Town’s wastewater needs.
- Identify and develop decentralized treatment and recharge alternatives.
- Identify and develop centralized treatment and recharge alternatives.
- Identify and develop collection system alternatives.
- Identify and develop residual management and disposal alternatives.
- Identify and develop flow and loading reduction alternatives including water and wastewater pricing policies, low flush and composting toilets, and water reuse.
- Identify potential sites for potential wastewater facilities.
- Screen the alternative technologies, solutions, and plans to select alternatives that will receive a detailed evaluation.
- Summarize the Phase 400 work in the Screening Analysis Report.

E. Phase 500: Detailed Evaluation of Recommended Plan.

- Further develop the alternative solutions and plans for detailed evaluation.
- Perform a cost effectiveness analysis.
- Perform an evaluation of non-monetary factors and an environmental impact evaluation.
- Prepare a recommended plan and a schedule for its implementation.
- Summarize Phase 500 work in a Comprehensive Wastewater Management Plan and Draft and Final Environmental Impact Reports.

The full Project Scope was included in the Environmental Notification Form and Development of Regional Impact documents, which are available at the Town Library.

1.4 ENVIRONMENTAL REVIEW PROCESS

The CWMP Project is undergoing a joint review process with the Massachusetts Executive Office of Energy and Environmental Affairs MEPA Unit and the Cape Cod Commission. On September 8, 1999 the Final Needs Assessment Report was submitted to these two regulatory agencies for their review and comment. A public hearing was held on September 23, 1999 to discuss the findings of this report and receive public comment. This review resulted in the issuance of the October 29, 1999 Certificate of the Secretary of the Executive Office of Environmental Affairs (now the Executive Office of Energy and Environmental Affairs), which is attached as Appendix A-1.

Due to the elapse of over eight years since the submittal of the 1999 NAR and the release of the EOEEA Secretary's Certificate, the Town filed its first NPC on February 27, 2004 to restart the Project and modify the environmental review process. This first NPC requested that the review process be modified to combine Phase 400 and 500 (Alternative Screening and Detailed Evaluation Phases respectively) to streamline the review process. It also requested that a Supplemental Needs Assessment be prepared to address several issues that were raised after review of the Needs Assessment Report. The environmental review Certificate for this NPC was issued on April 9, 2004 and is attached in Appendix A-2.

The DCWMP/DEIR was submitted for environmental review at the end of April 2008 and was noticed in the Environmental Monitor on May 7, 2009. A second NPC was submitted as part of the DCWMP/DEIR due to the long time period since the last environmental certificate. This combined DCWMP/DEIR and NPC received broad support by the regulatory agencies as well as the town citizens and agencies; and the environmental review certificate was issued on June 13, 2008 and is attached in Appendix A-3. A few comments were received from the regulatory agencies and the public and the DCWMP/DEIR was revised into the CWMP/FEIR to address the comments. The following section describes the additional evaluations completed since the DCWMP/DEIR to address the comments.

1.5 EVALUATIONS COMPLETED SINCE REVIEW OF THE DCWMP/DEIR AND SUMMARY OF REVISIONS TO PRODUCE THE CWMP/FEIR

The environmental review certificate was released on June 13, 2008 (contained in Appendix A-3) and identified a few issues that needed clarification or additional evaluation. The certificate and written comments were reviewed by Stearns & Wheler, and a written comment-response memorandum was prepared as contained in Appendix B. The following text summarizes the key issues (in **bold** print) and how these issues were clarified and/or resolved (in *italics*).

1. **It was noted that the proposed Chatham WWTF upgrade will include additional treatment capacity to accommodate future wastewater flows from Harwich.**

A clarification was made that space at the WWTF site will be set aside for additional treatment capacity for Harwich, and that Chatham would strongly support hosting a regional facility because it would reduce costs to both Towns.

2. **MassDEP indicated that a disinfection process is needed for the treated water.**

There were several discussions with MassDEP on the scientific need for disinfection at this site. Much of the science is summarized in Section 7.7C. MassDEP reiterated that State regulations require all treated waters infiltrated through open sand beds to be disinfected because there is a possibility, however remote, that a person or animal could become exposed to a pathogen in the treated water. MassDEP was very firm with the requirement that the design include disinfection as described in Chapters 9 and 11.

3. **MassDEP indicated that their new regulations on discharges in Zone II areas require the WWTF to meet a Total Organic Carbon (TOC) limit of less than 3 mg/L and that the WWTF should be designed to meet that limit.**

Stearns & Wheler completed a detailed evaluation on the need and costs to treat for a TOC limit of 3 mg/L as summarized in a technical memorandum in Appendix Y-1. The main findings of the evaluation are listed below:

- *A portion of the WWTF site is located in the Zone II for the Indian Hill Well; and due to the existence of the Zone II area, the WWTF may need to meet the TOC limit.*
 - *The Indian Hill Well has not been in operation for over 10 years due to trace amounts of tetrachloroethylene (PCE) that has been detected in the well (unrelated to the Chatham WWTF) and has caused the Chatham Water Department to take the well out of production. The Water Department has since developed additional (redundant) water supplies to cover the loss of the Indian Hill Well water supply capacity; but wants to keep this productive well as an emergency backup.*
 - *Costs were developed for the following three alternatives to address MassDEP's regulatory issues:*
 - *Alternative 1: Abandon Indian Hill Well and its Zone II, and site and construct another well to replace it.*
 - *Alternative 2: Install treatment on Indian Hill Well that would protect it from any TOC from the WWTF (as well as any TOC introduced from other portions of the Zone II area, i.e. from septic systems) and remove the PCE contamination so that the well could be put back into production.*
 - *Alternative 3: Upgrade the WWTF with a membrane bioreactor (MBR) and granular activated carbon (GAC) adsorption to meet the TOC limit.*
- Alternative 2 was the lowest cost alternative and it provided the best protection for human health.*

The technical memorandum was reviewed by MassDEP, and a meeting was convened with MassDEP and CCC staff on March, 20, 2009 (meeting notes attached in Appendix Y-2). At that meeting it was determined that MassDEP will not require a discharge limit of 3 mg/L TOC for the WWTF because the Indian Hill Well is inactive and its use as a production well is not anticipated in the short term. However, if the Town wants to put the Indian Hill Well back into production in the future, the Town and MassDEP agreed on the need to reconsider this decision. Space should be maintained at the WWTF site for additional facilities if they were needed to meet a future TOC limit.

Additional space is provided at the site as shown on Figure 9-4.

4. **MassDEP requested that the Town develop a feasible water quality and habitat water quality compliance measure to track changes in water quality and habitat quality during implementation of each phase of project construction to verify the effectiveness of the Town’s CWMP over time.**

The Town has met with MassDEP (August 13, 2008) to discuss this issue and it was agreed that the Town would continue to work with the MassDEP Pilot Project (through the Pleasant Bay Alliance) to develop a standard protocol for documenting these compliance items. MassDEP continues to coordinate with UMass Dartmouth SMAST for the needed technical input. This coordination is summarized in Section 12.5B

5. **CCC recommended that the Town develop an Adaptive Management Plan (AMP) to guide the implementation of the plan and monitor the success of the plan.**

The Town met with CCC staff (August 13, 2008) to discuss the details of an appropriate AMP. The AMP has since been outlined (as summarized in Section 12.5B) to allow modifications or “mid-course corrections” based on the following key factors:

- *Implementation of the CWMP.*
- *Documentation of capital expenditures.*
- *Compliance with the groundwater discharge permit.*
- *Reporting on estuarine water quality monitoring.*
- *Reporting on groundwater evaluation and quality monitoring.*
- *Summary of habitat assessments that may be completed by the Town, MassDEP, regional organizations, or others.*
- *Continued coordination with the Pleasant Bay Alliance who is coordinating MEP model runs for the Pleasant Bay estuary.*
- *Potential evaluations and changes as needed.*

6. The Massachusetts Division of Marine Fisheries (DMF) requested that the Town consult with them to assess potential impacts of the proposed Muddy Creek basin restoration project on diadromous fish species.

The Town has had the following activity/consultations on the Muddy Creek basin restoration project:

- *Several consultations have been completed with DMF and other agencies.*
- *The PBA completed an assessment on the wetlands in this area and held a public meeting on the findings. At the meeting, strong opposition was voiced on the concept of restoring a dike to promote natural nitrogen attenuation above the dike where the Creek would be converted to a freshwater system.*
- *The PBA is now pursuing grant funds for additional evaluations to maximize tidal exchange.*

7. The MEPA office requested that the CWMP/FEIR should include a separate chapter on mitigation measures and include Draft Section 61 Findings for all State Agency Action.

A new Chapter 12 has been added compiling the information on mitigation measures previously provided in Chapter 11 of the Draft CWMP/DEIR and providing additional required information as called for in the “Draft Section 61” Document.

8. The MEPA office requested that the CWMP/FEIR should include a response to comments.

That response is attached as Appendix B.

9. The CCC requested that the CWMP/FEIR should provide additional detail, to the extent possible, about protocol and procedures to evaluate regional solutions to achieving the TMDLs.

The main protocols and/or procedures for discussing these types of regional activities/evaluations is through the Pleasant Bay Alliance and through direct requests from neighboring towns. These protocols/procedures include:

- Pleasant Bay Alliance continuing work with MassDEP on the Pilot Program to develop standardized water-quality and habitat-health monitoring protocols to verify that the estuarine health is improving.*
- Pleasant Bay Alliance continuing work on the development of watershed wide fertilizer management as funded by the Cape Cod Water Protection Collaborative.*
- Pleasant Bay Alliance continuing work with evaluations on the Muddy Creek Basin Restoration Project as funded by the Cape Cod Water Protection Collaborative and with additional grant opportunities with CZM.*
- Direct request from the Town of Harwich on the possibility of treatment (and possible recharge) of Harwich's wastewater at the upgraded Chatham WWTF. Based on this request, additional space at the treatment site has been set aside for additional treatment capacity, and funding has been for the technical evaluations needed to determine if the site has additional discharge capacity.*

The Town of Chatham and the CWMP Project is very open to assisting with regional solutions.

10. MassDEP requested a more detailed Phase 1 implementation schedule.

Several discussions have been convened with MassDEP on this issue and all agreed that the best way to state milestones for the plans implementation would be the commitment of Town capital funds during the implementation period. This commitment has been stated in Section 11.5 Financial Plan. This type of implementation schedule is believed to be the most appropriate for the following reasons:

- The ability of the implementation to proceed will depend on the planned capital expenditure.*
- The exact location of any specific implementation phase will depend on several factors including the ability of combining sewer projects with roadway improvements, other Town improvement projects, and environmental need.*

- *Implementation details will change due to the Town's response to the Adaptive Management.*

It is noted that the Town has accelerated its implementation plans with the initiation of 3 years of implementation in its very first year as detailed in Section 1.7.

11. MassDEP requested that additional water quality modeling be completed to demonstrate that the threshold nitrogen concentrations are being met in the Taylors Pond system and in the Sulphur Springs system at the end of the Phase 1 and Phase 2 planning periods.

Several water quality modeling runs have been completed for these two estuarine systems as documented in Appendix Z. The Taylors Pond system model runs indicated that this system meets the threshold concentration at the end of the Phase 1 and Phase 2 periods.

The Sulphur Springs model runs were completed with very conservative inputs as requested by SMAST staff and resulted in the threshold concentration being exceeded by 0.02 mg/L at the end of Phase 1 and 0.04 mg/L at the end of Phase 2. The conservative model inputs and slight exceedances were discussed with MassDEP in the March 20, 2009 progress meeting (meeting notes contained in Appendix Y-1). The following items were discussed/decided at that meeting:

- *The Town should proceed with the CWMP and FEIR with the current Phase 1 and 2 plans.*
- *MassDEP will convene a meeting with SMAST and USGS on the best way to gain clarification or to interpret the groundwater models relative to underflow and the most realistic inputs for the estuarine water quality models.*
- *The Town will submit an additional Sulphur Springs water quality scenario to SMAST with a more realistic nitrogen loading based on:*
 - *The 3-dimensional sub-regional groundwater model output.*
 - *Quantities of under flow (flow directly to Nantucket Sound) predicted by the groundwater model.*
 - *Estimated nitrogen attenuation through the freshwater wetlands and cranberry bogs.*

This modeling request was submitted to SMAST on April 23, 2009 (contained in Appendix Z) and is being considered by SMAST.

12. USEPA reminded the Town that stormwater management permits are needed for large construction projects.

The Town and its contractors will comply with the need for these permits, controls, and mitigation efforts.

13. MassDEP reminded the Town that if hazardous materials are found during excavations/construction, specific MassDEP notification is required.

The Town and its contractors will comply with the need for these permits, controls, and mitigation efforts.

14. Massachusetts CZM stated its understanding of how this project will remediate current water quality impacts on the estuarine/coastal environments. It also reminded the Town that pump stations should be located outside 100-year flood zones when possible; and if they cannot be relocated, they need to be adequately protected and designed with check valves.

The Town appreciates the past and ongoing coordination with Massachusetts CZM and will comply with these requests.

15. Massachusetts DFW reminded the Town that NHESP must be consulted for compliance on the Massachusetts Endangered Species Act.

These filings have been completed for the WWTF upgrade and the Town will continue to coordinate with NHESP for the sewer expansion components of the upgrade.

16. The Pleasant Bay Alliance (PBA) thanked the Town and CWMP project for its past and ongoing coordination.

The Town is committed to continuing this coordination for regional solutions.

17. The PBA requested that portions of the Pleasant Bay watershed be sewered as soon as possible.

The Town is flexible in its implementation plan and understands that Pleasant Bay is changing significantly with the new breach(2007). Chatham's south coastal estuaries are the most impacted and the Town needs to initiate its implementation in that area but will remain flexible as the implementation proceeds.

18. The PBA requested that Chatham identify their septage handling needs to possibly allow neighboring Towns to coordinate septage management.

The Towns septage facility capacities are well documented in the Needs Assessment Report and the Draft CWMP Report. If a neighboring Town wants to evaluate using available septage receiving capacity at the Chatham WWTF, they should request that the Town consider it. Wright Pierce has initiated such a request for the Orleans CWMP project.

1.6 IDENTIFICATION OF PREVIOUS PROJECT DOCUMENTS AND EVALUATIONS

A. Final Needs Assessment Report for Comprehensive Wastewater Management Planning Study, August 1999. The Needs Assessment Report was the first report prepared as part of the CWMP process and predated the work of the Massachusetts Estuaries Project (MEP). The report summarized information on the Town's existing and future conditions including natural resources, land use, populations, water usage, estimated wastewater flows and loadings, and seasonal variations. This information was then used to identify areas of needs within the Town including impacts to coastal embayments and freshwater systems in addition to identifying other areas of needs including improvements at the existing WWTF, collection system, and effluent recharge facilities; water supply needs; impacts from on-site septic systems; and

industrial areas. This report can be viewed and obtained at the Town of Chatham's website of: http://www.chatham-ma.gov/public_documents/ChathamMa_CWMPPlan/CWMP.

B. Action Plan for the Town of Chatham Ponds, November 2003. This report summarizes the water quality and aquatic habitat conditions of the freshwater ponds of Chatham, and recommends measures to protect and restore these waters. Twenty inland ponds were evaluated as part of this report. The report defines options for protection and improvement of the freshwater ponds, develops a set of specific recommendations (both short and long-term), and presents an implementation strategy for the Town. This report is attached as Appendix C and can be viewed and obtained at the Town of Chatham's website of:

http://www.chatham-ma.gov/public_documents/ChathamMa_CWMPPlan/CWMP.

C. NPC Dated February 27, 2004. This first NPC was prepared and submitted for environmental review because more than three years had passed since the last environmental review document, and because the Town requested a change in Scope as stated in the previously issued Certificate. The proposed Scope change was the combination of the Phase 400 (Identification and Screening of Alternatives) and Phase 500 (Detailed Evaluation and Recommended Plan) into one document. The Secretary's Certificate for the April 9, 2004 NPC is contained in Appendix A-2.

D. Technical Memorandum on findings of USGS Modeling for Effluent Recharge Alternatives and Effects on the Landfill Plume, July 2005. This Technical Memorandum summarized evaluations completed by United States Geologic Survey (USGS) to investigate possible effects of increased recharge of treated water at the WWTF site to the groundwater under the capped landfill which is adjacent to the WWTF site. It is noted that groundwater evaluations performed as part of the landfill capping project did not find any contamination that exceeded State standards but there was concern that a possible plume might exist, and its movement could be influenced by increased hydraulic recharge at the WWTF site. The evaluations summarized in the Technical Memorandum found that increased recharge at the site *would not relocate a potential landfill plume to the Indian Hill Well Public Water Supply and would not cause a resulting public health problem.* This was a major finding because previous concerns by the Massachusetts Department of Environmental Protection (MassDEP) of such a ground water relocation had limited the treatment and recharge capacity at the site to 0.15 million gallons per day (mgd). MassDEP has since agreed to the findings of the Technical

Memorandum and is planning to remove the past treatment and recharge capacity limit. A copy of the Technical Memorandum is attached in Appendix D.

E. Infiltration Loading Test, July 2006. This report describes the testing that was completed to determine the WWTF site's suitability for receiving and infiltrating treated water. The report reviewed the site conditions, testing procedures and the findings of the testing. Findings of the report identified the infiltration capacity of the site at 30 gallons per day (gpd/sf) which is greater than typically allowed for treated water recharge facilities. MassDEP was receptive to the infiltration capacity estimate; however MassDEP requested additional localized groundwater modeling in the area. This report is attached as Appendix E and can be viewed and obtained at the Town of Chatham's website of:

http://www.chatham-ma.gov/public_documents/ChathamMa_CWMPPlan/CWMP.

F. Treated Water Recharge Site Evaluations, Drafted in June 2004 and Finalized in June 2007. This final report summarizes the findings of these evaluations performed between 2003 and 2006, and incorporated some of the findings developed as part of the Preliminary Design developed in April 2006. The report summarizes the site investigations and soil conditions found at six sites evaluated around Town. Sites included the existing WWTF, Town owned golf course, airport, high school, Volunteer Park, and a piece of Town owned land located in the northeast part of Chatham. Estimated treated water (effluent) recharge capacities were presented based on various recharge technologies. A copy of this report is included in Appendix F.

G. Technical Memorandum on Findings of Groundwater Modeling for Treated Water Recharge at Existing WWTF Site and Site No. 1, June 2007. This memorandum summarized the groundwater modeling evaluations requested to answer remaining questions on treated water recharge at the existing WWTF and Site No. 1 which is located to the north of the WWTF site. The findings indicated:

- There would be no mounding impacts from a recharge of treated water at these sites associated with sewer extension to all properties in the Town (a maximum-month recharge of 3.1 mgd at historic high groundwater conditions).
- The design loading rate of 30 gpd/sf identified in the July 2006 Loading Test Report was identified to be feasible.

- The modeled transport of treated water was identified.

This Technical Memoranda is attached in Appendix G.

H. Collection System and Wastewater Treatment Facilities Preliminary Designs, April 2006. Two three-ring binders were prepared in 2006 to provide summaries of the findings and evaluations used in development of preliminary design plans for a potential Town-wide collection system and a phased approach for improvements for the existing WWTF. The improvements to the WWTF would provide a facility that would achieve 3 mg/L total nitrogen.

The preliminary design was prepared to illustrate how a Town-wide wastewater collection, treatment and recharge system could be planned and designed for the Town's build-out condition. The preliminary design is developed to potentially accommodate the complete sewerage of Chatham under the build-out condition. It is also developed in a flexible manner to accommodate the possibility that the entire Town may never become sewerage in the future, or to allow expansion over several phases. This preliminary design is summarized as part of the Recommended Plan of this document.

I. Draft Comprehensive Wastewater Management Plan and Draft Environmental Impact Report (DCWMP/DEIR) and Notice of Project Change, April 2008. The DCWMP/DEIR and NPC Document was the draft version of this CWMP/FEIR. As discussed in other portions of this chapter, it was submitted for MEPA review; it received support from the regulatory agencies and Town citizens and agencies, and received a few comments and questions that were incorporated into this Final CWMP/FEIR. The majority of this Final CWMP/FEIR is identical to the DCWMP/DEIR.

J. Evaluations of Alternative Methods to Address MassDEP's Proposed Regulations for Total Organic Carbon (TOC) Limits for the Chatham WWTF, February 11, 2009. This technical memorandum (discussed in greater detail in Section 1.5) was completed to address MassDEP regulations that would require additional treatment at the WWTF. The technical memorandum is attached in Appendix Y-1 and meetings have been held with MassDEP and meeting notes are attached in Appendix Y-2. MassDEP has decided that it will not require the Chatham WWTF to meet this limit at the current time.

K. Additional Estuarine Water Quality Model Runs for the Sulphur Springs and Taylors Pond Systems, February 20, 2009. These modeling requests and reports were discussed in detail in Section 1.5, and these items are contained in Appendix Z. The Taylors Pond system evaluations indicated that the Phase 1 and 2 plans meet the threshold concentrations. The Sulphur Springs system evaluations indicated that the Phase 1 and 2 plans exceed the threshold concentrations by 0.02 mg/L and 0.04 mg/L respectively. A subsequent modeling request has been sent to SMAST.

1.7 FEDERAL STIMULUS FUNDING AND TOWN DECISION TO PROCEED WITH INITIAL IMPLEMENTATION

The Town has been proactive to develop funding opportunities for wastewater facilities implementation, and to proceed as far as possible with system design as evidenced by the following:

- United States Department of Agriculture (USDA) Rural Utilities funding application and grant/loan award of \$2,500,000 for system implementation.
- MassDEP State Revolving Fund (SRF) low interest loan application and award (Listing on 2009 IUP) of low interest construction loans of up to \$55,575,000 over a 3-year period.
- Preliminary design (30 percent design) of the Phase 1 WWTF upgrade and town-wide sewer system (Master Plan).
- Value Engineering Review (by third party review team) of the 30 percent design of the WWTF upgrade.

In early March 2009, the Town was informed that federal stimulus funds from the American Recovery and Reinvestment Act were available to the Town as provided in the IUP listing if the system design could be completed for MassDEP review by August 1, 2009 and if construction could be implemented by February 17, 2010. The additional funding would be in the form of grants and low interest loans. After review of this additional funding opportunity, the Town proceeded with the following decisions and actions:

- Informed MassDEP that they will pursue the funding and could meet the program requirements.

- Received local appropriations for the funds at May 2009 Annual Town Meeting and Ballot with nearly unanimous support at Town Meeting and from the Board of Selectmen and Financial Committee.
- Initiated surveying and engineering services for the design.

The design is proceeding for the initial implementation comprised of the following components:

- Phase 1 WWTF upgrade.
- Sewer extensions along the Route 28 corridor to construct the “backbone” of the new collection system. This backbone will include:
 - 7 new pump stations
 - Over 10 miles of sewer pipe

The extent of the initial implementation sewer extension is illustrated in Figure 1-2.

1.8 RELATED REGIONAL PROJECTS

The following regional projects have been completed or are ongoing on Cape Cod to develop information that has been incorporated into the wastewater facilities planning project. The Town of Chatham has been very active in participating in these various regional efforts.

A. **Massachusetts Estuaries Project (MEP).** This project is a collaborative effort between MassDEP, University of Massachusetts (UMass) School of Marine Science and Technology (SMAST), the United States Geological Survey (USGS), and the Cape Cod Commission (CCC) to develop nitrogen loading limits for a group of 89 coastal embayments in Southeastern Massachusetts. Full details on this project can be viewed at www.state.mass.gov/dep/smerp/smerp.htm. The main components of this effort include:

1. Watershed delineation by USGS staff.
2. Nitrogen loading assessment for the watershed by the CCC Water Resources staff.
3. Tidal flushing evaluations and hydrodynamic model development by Applied Coastal Research and Engineering, Inc. (ACRE).

4. Specialized coastal surveys, monitoring, and analysis by SMAST staff and development of water quality models.

5. Nitrogen concentration threshold and loading limit development by SMAST, MassDEP, and ACRE staffs.

6. Technical guidance information.

The MEP has recently developed nitrogen limits for the Pleasant Bay, Stage Harbor, Sulphur Springs, Taylors Pond, Bassing Harbor, and Muddy Creek systems. In addition, the MEP project has developed the Cockle Cove Creek Salt Marsh Nitrogen Concentration Threshold.

B. Cape Cod Commission and Barnstable County Regional Efforts. The CCC has initiated several regional efforts that are ongoing or recently completed as briefly discussed below:

1. Formation and coordination of the Cape Cod Water Protection Collaborative, which meets regularly to discuss wastewater initiatives. This is an effort by the county to follow up on recommendations of the Association to Preserve Cape Cod (APCC) and the Barnstable County Business Round Table to develop a Cape Cod regional entity to assist Town efforts to implement wastewater facilities. A primary purpose for the Collaborative is to assist in obtaining grants and low interest loans for these projects. The Town of Chatham is represented on the main Collaborative Committee by Robert Duncanson, Ph.D., and on the Collaborative Technical Advisory Committee by Robert Duncanson, Ph.D.

2. Funding and development of several regional wastewater planning and coordination effort and reports.

3. Coordination with USGS and Cape Cod towns to provide groundwater modeling services. This effort is an offshoot of USGS efforts to delineate coastal and pond watershed areas and contributing areas to public water supplies. This project has become an efficient method to investigate potential effects of treated water recharges using the USGS regional

groundwater model. The results of this modeling activity for Chatham are presented in Chapter 7.

1.9 ORGANIZATION OF THIS CWMP/FEIR

The Comprehensive Wastewater Management Plan/Final Environmental Impact Report is written to provide an update of the planning process since the 1999 NAR report's distribution and summarize the findings of tasks identified in Phases 400 and 500 of the Project Scope and address the comments on the Draft CWMP/DEIR submitted in April 2008.

The report text is all contained in Volume 1 of this document. Volume 2 contains the report figures and tables to make reference to these items as easy as possible. Volumes 3 and 4 contain the appendices.

This Report is divided into twelve chapters:

- Chapter 1 presents general introductory information about the CWMP Project.
- Chapter 2 summarizes the main findings of previous documents prepared for the CWMP.
- Chapter 3 identifies the public participation program implemented as part of the CWMP to gain public understanding and support of Project efforts to find the best solution for the Town's wastewater and nitrogen problems.
- Chapter 4 describes the MEP project reports for Chatham and summarizes their findings.
- Chapter 5 presents the evaluation of centralized wastewater treatment alternatives including residuals management and collection systems.
- Chapter 6 presents the evaluation of decentralized wastewater treatment as it applies to Chatham.
- Chapter 7 summarizes the findings of the treated water recharge technologies and site evaluations, and reviews additional reuse technologies.
- Chapter 8 presents the non-wastewater nitrogen mitigation alternatives.
- Chapter 9 identifies and summarizes the various alternative management plans developed as part of the CWMP.

- Chapter 10 presents a summary of the environmental impact analysis of these alternative management plans.
- Chapter 11 presents the recommended plan, and identifies the implementation schedule, financial considerations and additional evaluations.
- Chapter 12 presents the “Draft Section 61 Findings for all State Agencies”.