GHD CLIENTS | PEOPLE | PERFORMANCE

July 26, 2011

Mr Thomas Cambareri
Cape Cod Commission
3225 Main Street
P.O. Box 226
Barnstable, MA 02630

RE: Adaptive Management Plan for Chatham CWMP

Dear Mr. Cambareri,

Attached is the Adaptive Management Plan for the Town of Chatham Comprehensive Wastewater Management Plan (CWMP) in accordance with DRI Decision Condition WR13.

Please review this document and call or email with any questions or comments.

Sincerely,

GHD Inc.

Nathan C. Weeks, P.E., BCEE
Senior Project Manager

NCW/lm

cc: Robert A. Duncanson, Ph.D., Town of Chatham
Brian Dudley, MassDEP
Brian Howes, Ph.D., SMAST
Donald Walter, USGS

GHD Inc. 1545 Iyannough Road Hyannis MA 02601 USA
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Adaptive Management Plan for Comprehensive Wastewater Management Plan (CWMP) Compliance

Town of Chatham, Massachusetts

July 2011

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1 Introduction and Purpose

The Town of Chatham (Town) completed a Comprehensive Wastewater Management Plan (CWMP) in May 2009 and received regulatory approval from the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) on July 17, 2009 and Cape Cod Commission (CCC) on October 29, 2009. The EOEEA approval certificate is attached in Appendix A and the CCC approval decision is attached in Appendix B. The CCC approval decision required the development of an Adaptive Management Plan (AMP) for CWMP Compliance as described in Appendix B.

The purpose of this AMP is to document the steps that will be taken by the Town to implement the CWMP, and demonstrate compliance with the CWMP and the Nitrogen Total Maximum Daily Loads (TMDLs) that have been established for the coastal estuaries that surround Chatham. Implementation of the CWMP and compliance with the Nitrogen TMDL's is projected to restore the impaired marine water quality and habitat in the estuaries.

2 Summary of the CWMP Recommended Plan

The goals of the CWMP recommended plan are to achieve the estuarine nitrogen TMDLs for the Town, address other Areas of Concern (AOCs) within Town, and provide an adaptive management approach to implementation such that as the plan is executed it can be adjusted based on the environmental and economic impacts that may result during its implementation.

The TMDL wastewater nitrogen removals as well as other AOCs are illustrated in Figure 1.

The CWMP recommended plan for Chatham involves the following major components:

- Two-phased implementation of WWTF expansion at the existing WWTF site. Phase 1 would treat approximately 1.3 mgd on an average annual basis to meet total nitrogen TMDL requirements in Stage Harbor, Pleasant Bay, Sulphur Springs, and Taylor's Pond watershed areas. Phase 2 would expand this facility to 1.9 mgd on an average annual basis to serve the remaining areas of the Town of Chatham. The Preliminary Design for these WWTF expansions is illustrated in Figure 2.
- Expansion of the existing collection system to match the two Phases of the WWTF expansion with the possibility of sewering all of the 94 sewersheds identified. Sixty-one (61) of the 94 sewersheds identified would need to be sewered in order to address the TMDL requirements. These sewersheds are illustrated in Figure 3.
- Further evaluation of the freshwater restoration of the upper reaches of Muddy Creek which could provide a quicker remediation of the nitrogen impacts to this waterbody and to Pleasant Bay as a whole.
- Continuation of a modified coastal embayment water quality monitoring program for TMDL compliance and continued groundwater monitoring at the WWTF site.
- Continued public education on fertilizer use and management of other controllable sources of nitrogen within the Town.

- Continued enforcement of the Town of Chatham's Board of Health Nitrogen Loading Regulation in those areas not designated for immediate (next five to ten years) connection to the WWTF as part of addressing the TMDLs.
- Implementation of Article 2 of the Rules and Regulations of the Sewer Department regarding growth-neutral requirements, and the new sewer use regulations.
- Continued implementation of storm water improvements and management.

The components of the wastewater collection and treatment systems expansion are summarized below.

WWTF Expansion. The following wastewater treatment processes comprise the core technologies of the new WWTF's.

Preliminary Treatment:

- Pre-engineered system for screening and grit removal.

Secondary Treatment:

- Orbal® process constructed in a modular design to allow Phase 2 expansion as the flow increases.
- Three secondary clarifiers (2 for Phase 1, third for Phase 2).

Filtration:

- Continuous backwash denitrification sand filters.

Disinfection:

- Ultraviolet disinfection.

Sludge Processing:

- System expansion with a 1.0 m Belt Filter Press.

Odor Control:

- Activated Carbon.

Support Facilities:

- Return activated sludge (RAS) and waste activated sludge (WAS) pumping (centrifugal pumps).
- Plant water (pumps and hydropneumatic tank).
- Sodium hypochlorite for nocardia control – chemical tank and pumps.
- Sodium hydroxide for alkalinity addition – chemical tank and pumps.
- Methanol – for supplemental carbon.

Other considerations for flexible future site operations:

- Provide space for a physical/chemical phosphorus removal system, and a possible additional anaerobic zone for phosphorus removal.
- Provide space for return activated sludge (RAS) processing for the possible consideration of a Cannibal® sludge minimization process.
- Provide space for additional expansion to accommodate possible flows from portions of the Town of Harwich.

Collection System. The collection system will be phased in over 30 or more years. The first 20 years will target the expansion of the collection system to achieve the total nitrogen TMDLs. The ten years following the Phase 1 implementation is planned to extend sewers to the rest of the Town. The total length of the proposed sewer is approximately 106 miles, 88 miles of which are proposed gravity and 18 miles of which are proposed low pressure.

Sewersheds along the border of Chatham and Harwich, namely 1, 2, 7, and 58 include provisions to sewer Harwich properties that can be reached by gravity collection systems.

3 Basis of Adaptive Management Plan

A basis of the AMP was provided in the CWMP in the Summary of Recommended Plan, Section 11.5.D: TMDL Compliance and Adaptive Management Plan as attached in Appendix C.

A second basis for the AMP was also provided in the Adaptive Management Plan Scope (Exhibit A) of the CCC Approval Decision as attached in Appendix B.

These two “basis” documents and concepts have been synthesized into this AMP as detailed in the following sections.

4 Chatham CWMP Technical Review Committee

The Chatham Technical Review Committee is comprised of the following individuals and agencies:

- Robert A. Duncanson, Ph.D., Town of Chatham (508.945.5165)
- Thomas Cambareri, CCC (508.744.1234)
- Brian Dudley, MassDEP (508.771.6047)
- Brian Howes, Ph.D., SMAST (508.910.6316)
- Donald Walter, USGS (508.490.5050)
- Nathan Weeks, P.E., BCEE, GHD (774.470.1633)

This group will be assisted by others as needed.

This group will meet as needed as determined by Robert Duncanson and Thomas Cambareri.

The purpose of this group and the meetings include:

- Review and maintain familiarity on the implementation of the CWMP and the monitoring results.

- Address issues that arise.
- Consider the following items:
  - Implementation of the CWMP
  - Documentation of Capital Expenditures
  - Compliance with groundwater monitoring
  - Reporting on estuarine water quality monitoring
  - Summary of habitat assessments
  - Continued coordination with the Pleasant Bay Alliance
  - Potential evaluations and changes as needed
- Provide input to the Town's decisions for the next steps.

5 CWMP Compliance Reporting

The compliance reporting will include the following items:

a). **Capital Expenditure Reporting.** This reporting will be made through the State Revolving Fund (SRF) Project Evaluation Form (PEF) application process, and CCC will be copied on these applications. This process is expected to include the following items:

- Application to the SRF program for a series of multi-year projects.
- Summary of capital expenditures to date.
- Application will typically be in the range of $7.5M to $10M per year.
- Summary of amount sewered, percent of wastewater nitrogen removed from the Phase 1 watersheds, and comparison to TMDL target amounts.
- Summary of planned capital expenditures as developed for the town's long term Capital Improvement Plan (CIP).
- Planned sewer extension areas for the next SRF application period.
- Status of regional watershed management opportunities.

b). **Groundwater Discharge Permit Reporting.** This reporting is made on a monthly basis to MassDEP as described in Appendix D. CCC will be copied on these reports to MassDEP with discussion at Technical Review Committee meetings

c). **Groundwater Elevation and Water-Quality Evaluations.** Groundwater elevations and water quality will be monitored and reported as identified in item b above. Starting in 2015 one time per year the following items will be evaluated (plotted) to obtain an annual perspective on groundwater elevations and concentrations:

- Average monthly recharge flows with monthly groundwater elevations.
- Groundwater contour maps for July and December.

- Groundwater quality trends.

This information will be submitted for CCC review and will be discussed with the Technical Review Committee.

d). **Estuarine Water Quality Reporting.** Marine water quality monitoring of Chatham's estuaries will continue as detailed in Appendix D. Results will be copied to the CCC and discussed with the Technical Review Committee.

e). **Habitat Assessment Reporting.** These assessments will be periodically conducted by one or more of the following groups:

- Town of Chatham, Pleasant Bay Alliance, Barnstable County and/or MassDEP for benthic habitat surveys.
- MassDEP for eel grass surveys and mapping (as allowed by state funding).

The details of these assessments have not been finalized.

These reports will be copied to the CCC and will be discussed with the Technical Review Committee.

f). **Coordination with the Neighboring Towns and Pleasant Bay Alliance.** Robert Duncanson is an active participant in the Pleasant Bay Alliance and will continue to coordinate with water quality monitoring, benthic surveys, water quality model runs, evaluations for the shared Muddy Creek surface water and watershed, and fertilizer reduction evaluations. Thomas Cambareri and the CCC also participate in these meetings; and all reports produced by these efforts will be copied to the CCC.

The Town continues to have discussions with the Town of Harwich as Harwich continues with their CWMP project. Harwich is still evaluating regional solutions, and findings on this effort will be reported to the CCC as they are decided by the two towns.

g). **Progress on Non-Structural Nitrogen Management Items.** The Town is working on Nitrogen mitigation measures involving the following approaches:

- Stormwater management.
- Freshwater pond management including watershed sewering benefits, in-pond remediation, and monitoring.
- Enhanced natural attenuation and/or tidal flushing improvements.

A summary of these mitigation measures will be reported to the CCC and discussed with the Technical Review Committee.

h). **Periodic Watershed Assessments and Other Evaluations.** Watershed assessments will be completed periodically (every 5 to 10 years) to tabulate water consumption, estimated septic system discharges, WWTF recharge and treatment performance, and nitrogen loadings from the non-wastewater sources to summarize changes of nitrogen loads to the estuaries over time. These nitrogen loading summaries will be compared to the water quality monitoring trends to

investigate possible correlations between water quality and nitrogen loading. Other evaluations of nitrogen and/or phosphorus loading will be completed as needed.

i). **Annual Statistical Reports (ASR) from the Water Dept.** Copies of the ASR sent to MassDEP will be copied to the CCC and discussed with the Technical Review Committee.

j). **Additional Groundwater Monitoring Reporting.** Additional groundwater samples will be collected from 2 wells that are directly inline between the sand infiltration beds and the headwaters of Cockle Cove Creek. The 2 wells are SW-12 (or its replacement) and MW 2 as illustrated on the plan titled "Groundwater Monitoring Wells for Adaptive Management Planning, Chatham MA" adapted from the figure entitled "Groundwater Discharge Monitoring Wells, Chatham MA", dated December 15, 2009, attached in Appendix E. Samples will be collected at the same frequency as the other groundwater monitoring wells identified in the groundwater discharge permit. Samples will be analyzed for fecal coliform and enterococci and the same general water quality parameters as the other wells.

6 Possible Changes to this Plan as Part of Adaptive Management

This AMP is a living and evolving document. Changes will occur as the Town moves forward with its wastewater implementation program. The WWTF Discharge Permit needs to be renewed every 5 years (by regulatory statute) and will provide a formal opportunity for permitted change. The CCC Approval Decision needs to be renewed every 7 years (by regulatory statute) and will provide an additional opportunity for change.

It is understood that environmental monitoring activities may document environmental changes and that mid-course corrections to the plan implementation may be needed. It is understood that this plan will be updated as time proceeds in the spirit of Adaptive Management.

7 Gantt Chart Illustrating Proposed AMP Events During the Seven Year CCC Approval

The attached Gantt chart (Figure 4) illustrates proposed events during the 20-year Phase 1 planning period.

8 Summary of Progress to Date

Significant progress has been made on CWMP Recommended Plan implementation as briefly discussed below.

8.1 Chatham CWMP Technical Review Committee

- Robert Duncanson and Thomas Cambareri have met to review progress and ensure that proper coordination has occurred.

8.2 Capital Expenditures

- May 2009 Town Meeting authorized $59.5M for the Initial Implementation which includes:
  - Phase 1 WWTF upgrade and expansion.

- Sewer Extension along Route 28, Barn Hill Road, portion of George Ryder Road, portion of Vineyard Ave., Meadow View Road, Meadow View Road South, Meadow View Road Extension, Summer Hill Lane, Marcus Lane, and Plum Daffy Lane as illustrated in Figure 5.
- Five pump stations.

- SRF application was approved for the $59.5M multi-year project Initial Implementation.
- SRF funding was later modified to cover the sewer extensions and pump stations as more favorable funding was obtained from the United States Department of Agriculture (USDA) Rural Utilities Program for the WWTF.
- Four construction contracts are currently underway to complete the Initial Implementation.
- In 2007 Town Meeting appropriated $500,000 for the re-construction of the municipal parking lot off Main St. that is a major source of stormwater to the Oyster Pond. The re-constructed parking lot will incorporate rain gardens and other forms of stormwater mitigation.
- The Town continues to address other sources of stormwater runoff to resource areas through the town's Phase II Stormwater Program with annual and special appropriations.

8.3 Groundwater Discharge Permit Reporting

- The discharge permit was finalized on December 17, 2009 (attached as Appendix C).
- Groundwater discharge permit reports have been completed and copied to the CCC.

8.4 Groundwater Elevation Evaluations

- Since 1988 groundwater elevations have been collected from a network of approximately 45 monitoring wells around the WWTF under the Administrative Consent Order between MassDEP and the Town. In addition, water samples are collected from 8 of those wells. In 2005 the frequency of monitoring was reduced to 3X per year (April, late August/early September and December and a reduction in some of the parameters analyzed for.

8.5 Estuarine Water Quality Reporting

- The Town or Pleasant Bay Alliance provided the following estuarine monitoring reports that have been copied to the CCC:
  - Chatham Coastal Water Quality Nutrient Monitoring Program Summary Report 1998-2009, in preparation.
  - Pleasant Bay Citizen Water Quality Monitoring Program Interim Report 2000-2008, December 2009.
  - Pleasant Bay Alliance Water Quality Monitoring Program: Statistical Analysis of Multi-year Water Quality Monitoring Data, October 2010.

8.6 Coordination with the Neighboring Towns and Pleasant Bay Alliance

- This coordination is ongoing.

- A variety of studies have been advanced to evaluate various alternatives for the shared Muddy Creek watershed, including SMAST completed additional model runs and evaluations for the Muddy Creek surface water and subwatershed:
  - Resource Assessment to Evaluate Ecological & Hydrodynamic Responses to Reinstalling a Water Control Structure in the Muddy Creek Dike, SMAST & ACRE, November 2008.
  - Muddy Creek Culvert Scenarios, Memorandum to MDFG Division of Ecological Restoration and Chatham Dept. of Health & Environment, ACRE, December 2009.
  - Updated Water Use and Muddy Creek Nitrogen Attenuation and Nitrogen Loading to Pleasant Bay, Technical Memorandum to the Harwich CWMP Project, SMAST, June 2010 (copied to the CCC).
  - MEP Scenarios to Evaluate Water Quality Impacts of the Addition of a 24 ft Culvert in Muddy Creek Inlet, Technical Memorandum to Pleasant Bay Alliance, SMAST, October 5, 2010.
- The Pleasant Bay Alliance continues to coordinate combined town model runs and evaluations to be completed by SMAST.

8.7 Non-Structural Nutrient Management

- The Pleasant Bay Alliance continues to undertake an evaluation of methods to control fertilizer nitrogen. A report, Pleasant Bay Fertilizer Management Plan, Horsley & Witten, is in final review.
- The Town completed the alum treatment of Lovers Lake and Stillwater Pond in October 2010 to mitigate the eutrophication resulting from internal phosphorus recycling.

GHD Inc.

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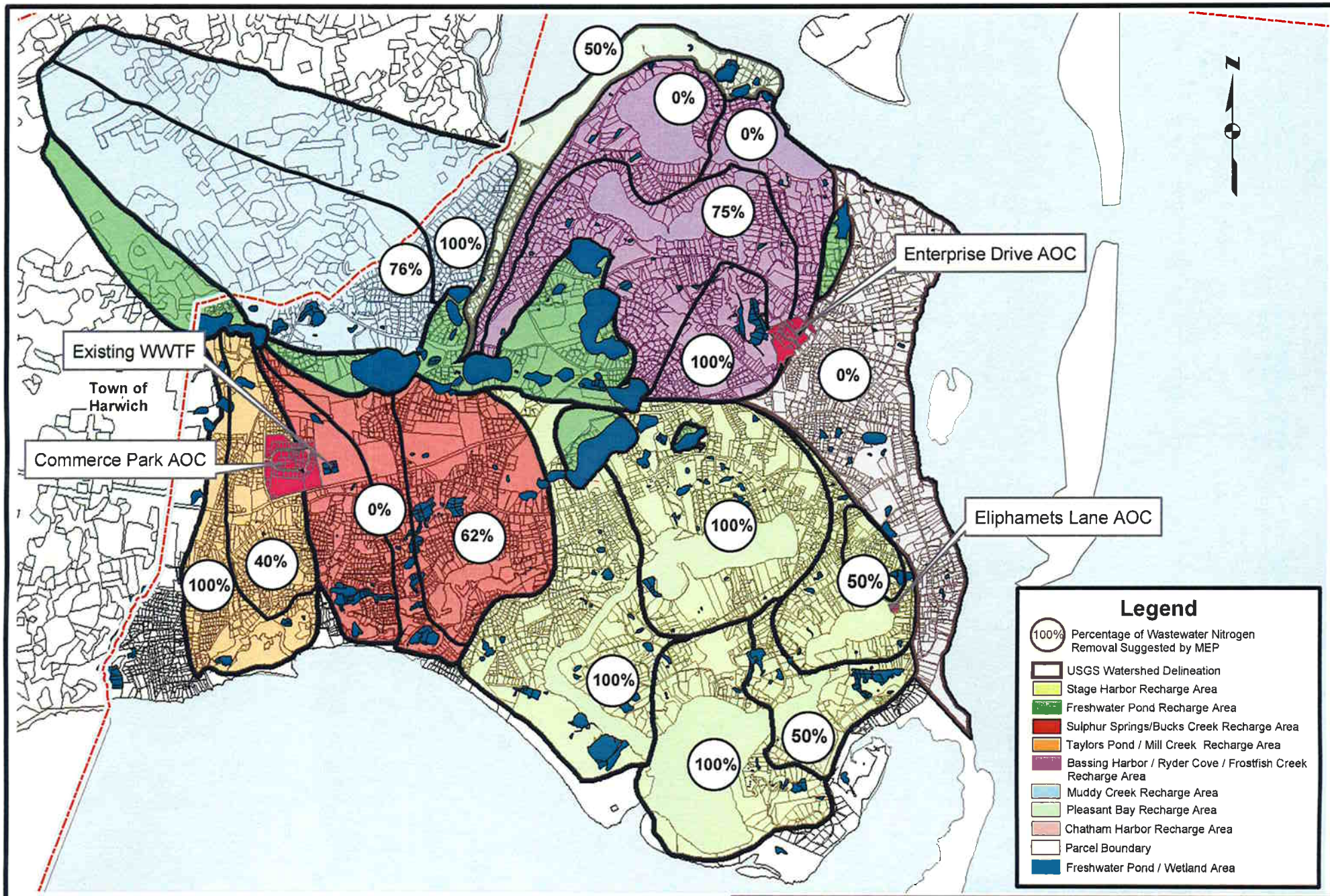
Hyannis, MA 02601
T: 774-470-1630 F: 774-470-1631 E: hyamail@ghd.com

Figures



Data Source: Mass GIS / Town of Chatham

0 0.2 0.4 0.8 Miles

NOTE: The percent removals indicated are only one scenario that could meet the TMDL - This scenario is suggested by MEP & MassDEP
An "AOC" is a wastewater area of concern.

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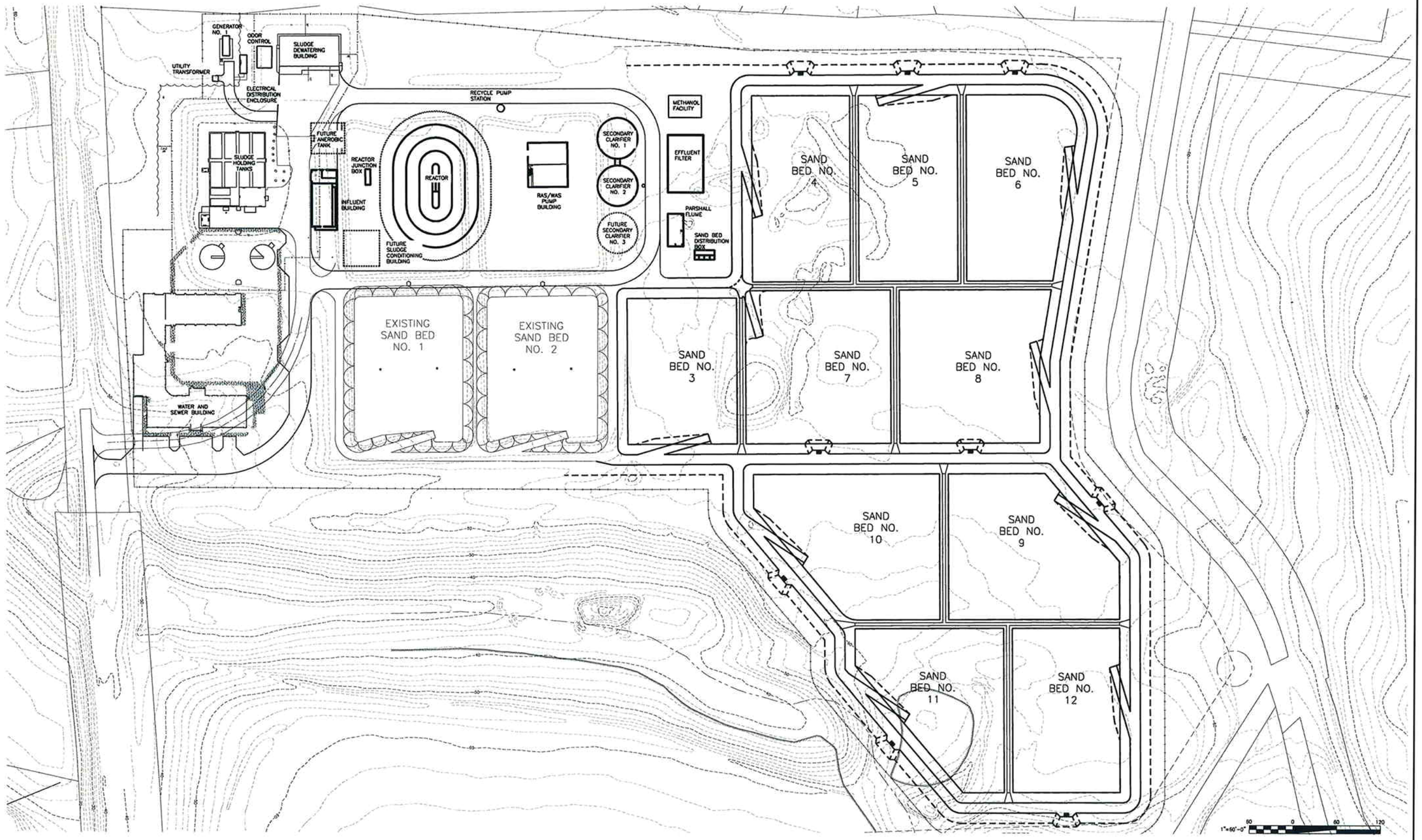
HYANNIS, MASSACHUSETTS

DATE: 10/15/2010

TOWN OF CHATHAM, MASSACHUSETTS

CWMP ADAPTIVE MANAGEMENT PLAN

SUMMARY OF NEEDS
FIGURE 1



SITE PLAN – OVERALL
SCALE: 1"= 60'-0"

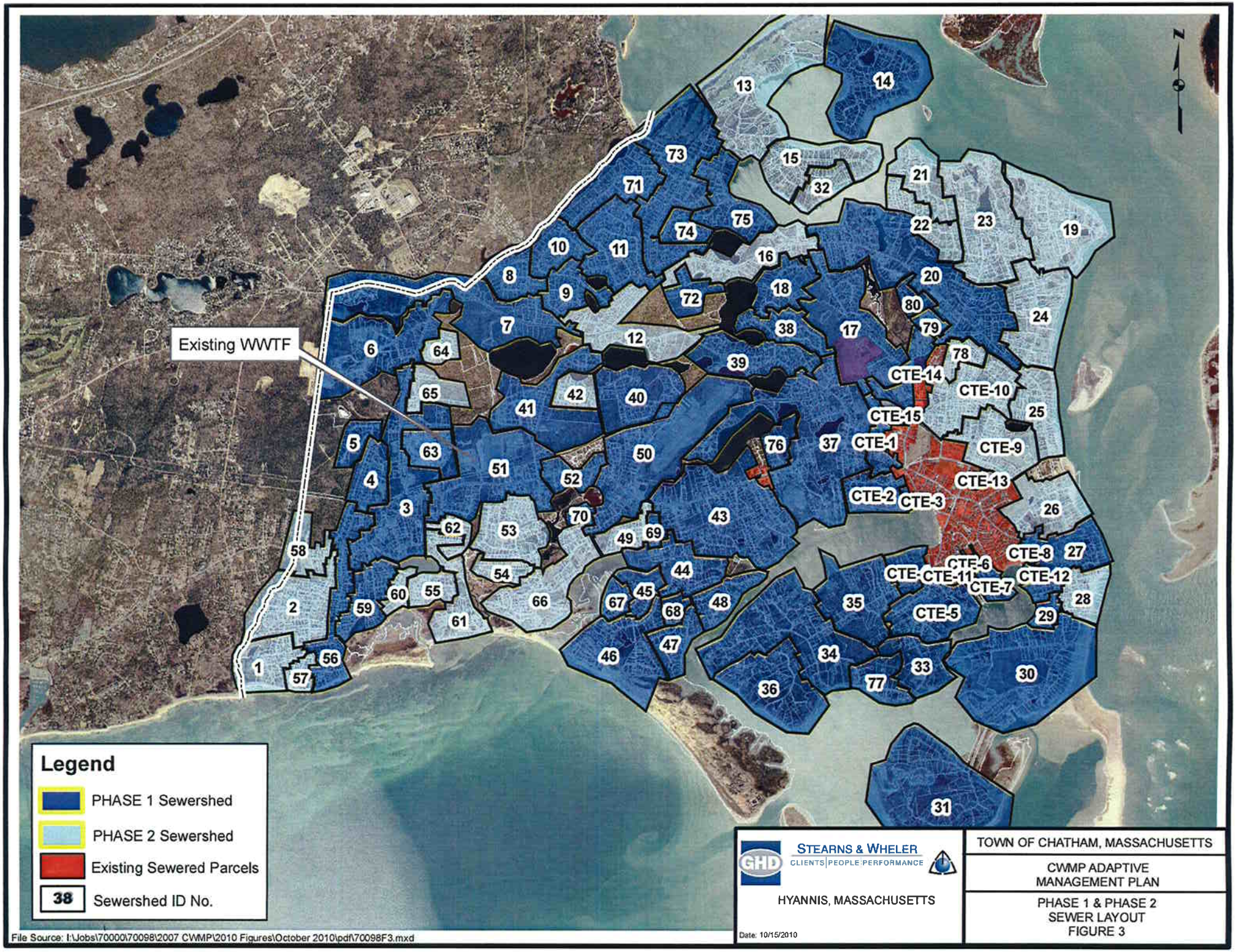
STEARNS & WHELER
GHD
DATA PEOPLE PERFORMANCE

DATE: 10/18/2010

TOWN OF CHATHAM, MASSACHUSETTS

CWMP ADAPTIVE MANAGEMENT PLAN

WWTF PRELIMINARY DESIGN WITH POTENTIAL TREATED WATER RECHARGE AREA
FIGURE 2


Existing WWTF
Legend
PHASE 1 Sewershed
PHASE 2 Sewershed
Existing Sewered Parcels
38 Sewershed ID No.
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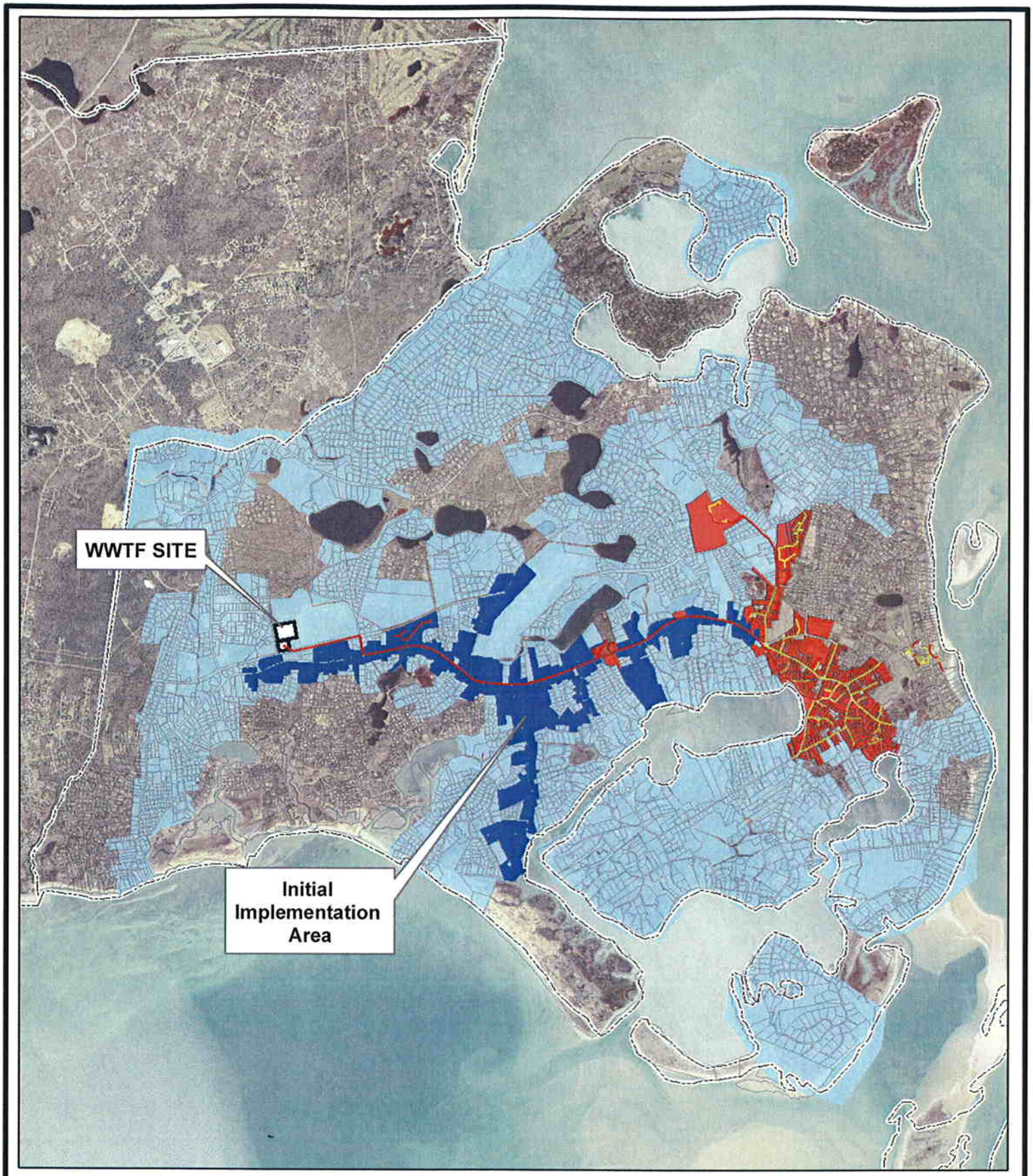
STEARNS & WHELER
CLIENTS|PEOPLE|PERFORMANCE
HYANNIS, MASSACHUSETTS
Date: 10/15/2010
TOWN OF CHATHAM, MASSACHUSETTS
CWMP ADAPTIVE MANAGEMENT PLAN
PHASE 1 & PHASE 2 SEWER LAYOUT
FIGURE 3

Figure 4

Chatham CWMP Adaptive Management Plan Gantt Chart

Event/Action Item	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Committee completes review																						
Technical Review Committee Meetings																						
Capital Expenditure and SRF Loan Committements	X		X		X		X		X		X		X		X		X		X		X	
Groundwater Discharge Permit Reporting																						
Groundwater Elevation Evaluations			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Estuarine Water Quality Reporting			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Habitat Assessment Reports				X																		
MassDEP Eel Grass Surveys								To Be Determined														
Benthic Habitat Surveys								To Be Determined														
Coordination with Neighboring Towns and PBA																						
Periodic watershed assessments and Other Evaluations								To Be Determined														
Discharge Permit Renewal		X				X						X				X					X	
CCC DRI Approval Renewal		X						X							X							X



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HYANNIS, MASSACHUSETTS

Job No. 70098 Date: 10/18/2010

Town of Chatham, Massachusetts

CWMP ADAPTIVE MANAGEMENT PLAN

Initial Implementation Area

FIGURE 5

Appendix A

Chatham CWMP Approval Certificate by Massachusetts Executive Office of Energy and Environmental Affairs Dated July 17, 2009

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

Timothy P. Murray
LIEUTENANT GOVERNOR

Ian A. Bowles
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

July 17, 2009

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
PHASE III - FINAL EIR/COMPREHENSIVE WASTEWATER MANAGEMENT PLAN

PROJECT NAME	: Chatham Comprehensive Wastewater Management Plan
PROJECT MUNICIPALITY	: Chatham
PROJECT WATERSHED	: Cape Cod
EOEA NUMBER	: 11510
PROJECT PROPONENT	: Town of Chatham
DATE NOTICED IN MONITOR	: June 10, 2009

As Secretary of Energy and Environmental Affairs, I hereby determine that the Phase III - Final Environmental Impact Report (FEIR) submitted on the above project **adequately and properly complies** with the Massachusetts Environmental Policy Act (M.G.L. c. 30, ss. 61-62I) and with its implementing regulations (301 CMR 11.00).

Project Overview

The Town of Chatham's comprehensive wastewater management planning process has been undertaken for the purposes of:

1) Evaluating and planning for the impacts to the Town's marine and freshwater resources from existing development and anticipated future residential and commercial growth in the Town of Chatham over the 20-year project planning period (ending in 2030);

2) Evaluating and quantifying the Town of Chatham's existing and future contributions to nitrogen loading of coastal embayments and freshwater ponds from on-site septic systems over the project planning period;

3) Evaluating the feasibility of centralized and decentralized wastewater treatment options, including the upgrade and expansion of the Chatham Wastewater Treatment Facility (Chatham WWTF) to meet the estimated 2030 nitrogen control needs and Total Maximum Daily Loads (TMDLs) established for the marine embayments surrounding Chatham;

4) Evaluating alternative methods for the disposal of treated wastewater including on-site and off-site groundwater disposal and wastewater reuse for landscape spray irrigation, with the intent of reducing groundwater discharges from the Chatham WWTF;

5) Evaluating the feasibility of non-structural and non-traditional nutrient management techniques to further reduce nutrient loading to the marine embayments surrounding Chatham; and,

6) Reviewing the long-term effectiveness of regional wastewater treatment and disposal options involving the Towns of Chatham and Harwich.

As presented in the Phase III – FEIR, the Town's comprehensive wastewater management plan (CWMP) has been designed to achieve reductions of nitrogen loading sufficient to meet nutrient TMDLs established for the Town of Chatham's coastal embayments and freshwater ponds including Stag Harbor, Pleasant Bay, Sulphur Springs and Taylor's Pond. I note that the Pleasant Bay watershed area is located within the Towns of Chatham, Harwich and Brewster. Pleasant Bay been designated an Areas of Critical Environmental Concern (ACEC) and an Outstanding Resource Waters (ORW) under the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Extensive areas of Priority and Estimated Habitat of rare wildlife have been mapped by the Natural Heritage and Endangered Species Program (NHESP) within the Pleasant Bay ACEC.

MEPA History

This project involves the development of a comprehensive wastewater management plan/facilities plan for the Town of Chatham. The environmental review of the project under MEPA was defined in a Special Review Procedure established by agreement between the Town of Chatham and the MEPA Office in April 1998. The Special Review Procedure called for the filing of four documents:

- Phase I - Needs Analysis;
- Phase II - Screening of Alternatives;
- Phase III - Draft EIR/Facilities Plan; and
- Phase IV - Final EIR/Facilities Plan.

Phase I– Needs Analysis

The Phase I – Needs Analysis was submitted to the MEPA Office in September 1999 and was found adequate in October of 1999. The Secretary's Certificate on the Phase I - Needs Analysis required the Town to include in the Phase II submittal additional information pertaining to the Town's Needs Analysis, a discussion of the consistency of the CWMP with Executive Order 385, (Planning for Growth), and a discussion of the Town of Chatham's land use and open space goals.

Notice of Project Change

A Notice of Project Change (NPC) was filed with the MEPA Office on March 10, 2004 pursuant to Section 11.10(2) of the MEPA Regulations because more than three years elapsed between the publication of the Secretary's Certificate on the Phase I - Needs Analysis submittal and the Town's filing of the Phase II - Screening of Alternatives document with the MEPA Office. According to the comments received from the Department of Environmental Protection (MassDEP) and Massachusetts Coastal Zone Management (CZM) on the NPC submittal, the Town continued to demonstrate its commitment to the comprehensive wastewater management planning process and continued to work closely with MassDEP, the Cape Cod Commission (CCC), the Marine Estuaries Project (MEP) and others to develop appropriate nitrogen load limits (TMDLs) to be incorporated in the Town's CWMP for coastal embayments surrounding the Town of Chatham.

The NPC included the Town's request to modify the previously established April 1998 Special Review Procedure. The Town proposed to submit for MEPA review a Supplemental Needs Analysis, the Phase II - Screening of Alternatives document and the Phase III - Draft EIR/Facilities Plan document into one MEPA submittal entitled "Alternatives Analysis and Draft Environmental Impact Report (DEIR)/Draft Comprehensive Wastewater Management Plan". The proposed change to the Special Review Procedure allowed the MEPA review of the Town of Chatham's Comprehensive Wastewater Management Plan in three steps:

Phase I – Needs Analysis;
Phase II – Draft Environmental Impact Report/Draft CWMP; and,
Phase III - Final Environmental Impact Report /Final CWMP.

The Secretary's Certificate on the NPC submittal (April 9, 2004) found that the proposed changes to the Special Review Procedure were appropriate and acceptable. The Secretary's Certificate on the NPC required the Town to include in the Phase II document detailed responses to the issues raised in the comment letters previously submitted on the Phase I document and a discussion of the proposed project's consistency with Executive Order 385 (Planning for Growth), and the Town of Chatham's land use and open space goals.

Draft Environmental Impact Report /Draft CWMP- 2nd Notice of Project Change

The Town filed a Draft Environmental Impact Report (DEIR)/Draft CWMP with the MEPA Office on May 7, 2008. On June 13, 2008, I issued a Certificate on the DEIR/Draft CWMP submittal and determined that it adequately and properly complied with the Massachusetts Environmental Policy Act. The Secretary's Certificate required the Phase III - FEIR/Final CWMP submittal provide additional information and a response to comments pertaining to the Town's proposed Adaptive Management Plan, Restoration of Muddy Creek, Growth Management policies, regulations and bylaws and Mitigation.

State Permits and Jurisdiction

The project is undergoing review pursuant to Sections 11.03(5)(a)(3) and (5)(b)(2) of the MEPA regulations, because the project will likely involve the construction of sewer mains ten or more miles in length and the expansion of an existing wastewater treatment facility/disposal facility by more than 1,000,000 gallons per day (gpd). The project will require a Groundwater Discharge Permit and a 401 Water Quality Certificate from MassDEP. The project must be reviewed by the Natural Heritage Endangered Species Program (NHESP) and the Massachusetts Historical Commission (MHC) because portions of the project occur within Priority Habitat and within or adjacent to recorded archaeological sites and archaeologically sensitive areas, respectively. It may require Federal Consistency Review with the Massachusetts Coastal Zone Management (MCZM) Office. It may also require a Construction Access Permit from the Massachusetts Highway Department. The project should comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges from a construction site. It will also require an Order of Conditions from the Chatham Conservation Commission and, on appeal only, a Superseding Order of Conditions from MassDEP.

The Town anticipates applying for State Revolving Fund (SRF) loans for subsequent planning and construction of proposed sewer project. Therefore, MEPA jurisdiction is broad and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

REVIEW OF THE PHASE III - FINAL ENVIRONMENTAL IMAPCT REPORT and FINAL CWMP

The FEIR contains a detailed description of the Town of Chatham's recommended CWMP. Phase 1 of the Chatham CWMP involves the upgrade and expansion of the existing WWTF, located on an 80.2-acres parcel of municipally-owned property on Sam Ryder Road in Chatham, to meet Enhanced Nitrogen Removal (ENR) standards.

The proposed facility upgrades will enable the Chatham WWTF to treat and dispose approximately 1.3 million gallons per day (MGD) of additional wastewater flows. Under Phase 1, the Town also proposes to expand its existing sewer collection and conveyance system to serve 61 Areas of Concern ((AOCs) – areas experiencing high groundwater and failing septic systems, and industrial/commericial areas)) in Chatham located primarily within the watersheds for Stage Harbor, Sulphur Springs and Taylor's Pond. Construction of Phase 1 is expected to be completed in 2030.

Phase 2 sewer construction activities will involve the further expansion of the Town's sewer collection and conveyance system to serve Chatham's remaining 33 AOCs. Phase 2 will include additional upgrades to the Chatham WWTF and the construction of approximately 11 miles of gravity sewers to collect and convey approximately 0.6 MGD of additional wastewater flow (1.9 MGD total wastewater flows) for treatment and on-site disposal at the Chatham WWTF. The Phase 2 sewer construction work is expected to begin in 2030 and be completed by 2040. Proposed upgrades to the Chatham WWTF will also include the construction of a new Sewer and Water Department maintenance and administration building. As noted in the FEIR, the Chatham CWMP incorporates reserved treatment capacity at the Chatham WWTF to also accommodate the potential wastewater flows from portions of the neighboring Town of Harwich.

Chatham's CWMP incorporates an Adaptive Management Plan (AMP) that outlines a process for reporting the results of the Town's ongoing annual groundwater quality and marine habitat monitoring program to identify the need for any adjustments or mid-course corrections to the phased construction of the sewer expansion project to achieve compliance with TMDLs for the coastal embayments surrounding Chatham. The Draft CWMP also includes a number of non-structural elements designed to reduce nutrient loading including proposed programs for controlling the use of fertilizer products on lawns, gardens and agricultural areas, stormwater management and water conservation.

Wastewater Treatment and Water Quality

Chatham Wastewater Treatment Facility

As described in the FEIR, the previously completed (1996) improvements to the Chatham WWTF have enabled the treatment facility to achieve nitrogen effluent concentrations of 5.6 parts per million (ppm).

The existing treatment capacity of the Chatham WWTF (150,000 gpd) was established by MassDEP in a 1996 Administrative Consent Order (ACO). The Chatham CWMP proposes the phased upgrade and expansion of the Chatham WWTF that will include the Phase 1 construction of an Orbal biological nitrogen oxidation removal process system to provide treatment levels capable of achieving nitrogen effluent concentrations of 3 parts per million (ppm). The Chatham WWTF site is located upgradient of the Cockle Cove embayment and the Sulphur Springs and Taylor's Pond watersheds.

As described in the FEIR, the Town conducted a review of hydrogeological studies, hydraulic load testing and other groundwater modeling analyses pertaining to the existing Chatham WWTF site and concluded that the proposed increases to on-site disposal and groundwater recharge of treated effluent from the Chatham WWTF will not impact existing groundwater table mound heights and nutrient loading to the Cockle Cove and Taylor's Pond. Although the Town's modeling indicates that the TMDL threshold for nitrogen loading to Suphur Springs would be minimally exceeded under Phase 1 and Phase 2 of the Town's sewer expansion project, both MassDEP and CCC have agreed that the Town's modeling parameters pertaining to groundwater flows may be conservative. The Town has agreed to work closely with MassDEP, CCC and the University of Massachusetts School of marine Science and Technology (UMass SMAST) to conduct additional hydrogeologic investigations to document groundwater flow and potentially greater nitrogen attenuation of the downgradient Cockle Cove salt marsh system.

In its previous comments on the Draft EIR/Draft CWMP, MassDEP indicated that a portion of the Chatham WWTF's groundwater discharge site is located within the Zone II of the Town's Indian Hill public drinking water supply well. As a result, the facility's effluent discharge will need to include disinfection to meet Total Organic Carbon (TOC) limits of less than 3 mg/L treatment pursuant to MassDEP's Interim Guidelines on Reclaimed Water (Revised), January 3, 2000. As described in the FEIR, the Town has worked closely with MassDEP to identify TOC treatment alternatives. According to the information provided in the FEIR, MassDEP has subsequently agreed not to require the Chatham WWTF to meet MassDEP's TOC limits because the Indian Hill Well was taken out of production by the Chatham Water Department in 1999 due to the presence of trace amounts of contaminant (tetrachloroethylene (PCE)) and is not presently anticipated to be re-activated and reused as a water supply production well. MassDEP will require the Town to re-evaluate disinfection technology alternatives for the facility should the Town elect to re-activate and reuse the Indian Hill Well in the future.

The Town of Chatham's CWMP includes a commitment to conduct groundwater monitoring around the periphery and downgradient of the Chatham WWTF site to identify any impacts on groundwater resources and embayments surrounding the Town of Chatham. This groundwater monitoring program is expected to be incorporated into a MassDEP groundwater discharge permit for the Chatham WWTF. In its comments, the CCC has recommended that Town's groundwater monitoring program include monitoring for water levels, stream flow and water quality. I ask that the Town work closely with MassDEP, CCC and the Pleasant Bay Resource Management Alliance during the final design of its water quality monitoring program.

Marine Embayments

The Town of Chatham continues to participate in the Massachusetts Estuaries Project (MEP) to conduct water quality sampling and identify nutrient loading problems for the Town's coastal embayments. MEP was created by MassDEP, and UMass SMAST to define the nitrogen limits of coastal estuaries in southeastern Massachusetts.

The Technical Reports produced by the MEP, together with the Linked Water Quality Model and citizen water quality monitoring efforts, were used by MassDEP and the US Environmental Protection Agency (EPA) to establish Total Maximum Daily Loads (TMDLs) for nitrogen loading to Chatham's coastal emabyments and their tributaries. According to the comments received from MassDEP, CCC and others, the estimated nitrogen loading reductions resulting from the Town's proposed phased sewer expansion program are consistent with published TMDLs for Chatham's estuaries and salt marsh embayment systems including; the Stage Harbor/Oyster Pond system, the Taylor's Pond/Mill Creek system and the Pleasant Bay/Upper Muddy Creek/Lower Muddy Creek/Bassing Harbor system. According to MassDEP, the Town will need to provide MassDEP with additional information to demonstrate the maximum nitrogen load that can be assimilated in the Sulphur Springs/Bucks Creek/Cockle Cove system. The Town of Chatham's CWMP also includes a commitment to design and implement a long-term embayment monitoring program that will monitor water quality, eel grass coverage and benthic infauna habitat of Chatham's embayments to document the reductions in watershed nitrogen loads achieved from the Town's phased sewer construction program. The Town should work closely with MassDEP during permitting to ensure that the Town's embayment monitoring program includes compliance milestones to measure the CWMP's success in achieving target reductions of nitrogen loading sufficient to meet nutrient TMDLs established for the Town of Chatham's coastal embayments and freshwater ponds.

Muddy Creek Basin Restoration

The Muddy Creek watershed to Pleasant Bay is shared between the Towns of Chatham, Harwich and Brewster. According to the comments from CCC, sixtyfour percent of the nitrogen load to Muddy Creek originates from the Town of Harwich and thirtysix percent from the Town of Chatham. In addition to reserving capacity at the Chatham WWTF to accept a portion of the Town of Harwich's future wastewater flows, the Town of Chatham has identified the restoration of an old dyke located in the Muddy Creek basin to change the habitat of the upper portion of the creek to a freshwater body or the installation of a 8-16 foot wide culvert at the Route 28 crossing as a means of naturally removing a large amount of nitrogen from Muddy Creek and Pleasant Bay. According to the Town, the enhanced restoration of the Muddy Creek to a partial freshwater system could also reduce the extent of needed sewers currently proposed in the Town's recommended CWMP. As indicated in the FEIR, the Pleasant Bay Resource Management Alliance (Pleasant Bay Alliance) has obtained funding for additional evaluations pertaining to the potential impacts to surrounding resource areas associated with the restoration of Muddy Creek.

Freshwater Ponds

The Final CWMP/FEIR includes an evaluation of the impacts of phosphorous groundwater loading from residential land use on the water quality of large freshwater ponds and lakes located in Chatham.

Using water quality monitoring results collected as part of the Cape Cod Ponds and Lakes Stewardship (PALS), the Town has identified the need for restoring and protecting the water quality of two of Chatham's seven Great Ponds; Lovers Lake and Stillwater Pond. According to the Town, the proposed CWMP will significantly reduce phosphorous to groundwater and phosphorous loading to these ponds and will go a long way to meet the nutrient loading thresholds established in the Town of Chatham's *Action Plan for the Town of Chatham Ponds, November 2003*.

Adaptive Management Planning

The Chatham CWMP includes an AMP that will report to MassDEP the results of the Town's annual ground water monitoring of the Chatham WWTF site and embayment monitoring of Chatham's coastal embayments to document the reductions in watershed nitrogen loads achieved from the Town's phased sewer expansion construction program. The AMP will assist the Town to evaluate the Town's compliance with established TDMLs and identify the need for adjustments or mid-course corrections to Phase 2 of the Chatham CWMP. I strongly encourage the Town to consult with the Pleasant Bay Resource Management Alliance in designing the Town's water quality monitoring program and ask that the Town include the CCC and the Pleasant Bay Resource Management Alliance in the distribution of its annual water quality monitoring report.

Wetlands

According to the information provided in the FEIR, the Town's proposed WWTF upgrades and sewer expansion construction activities will be located primarily within existing roadway right-of-ways and will not result in any direct impacts to wetland resource areas subject to protection under the MA Wetlands Protection Act. The Town should submit a Request for a Determination of Applicability (RDA) to the Chatham Conservation Commission regarding the extent and boundaries of any jurisdictional wetland resource areas located within the project's WWTF site and sewer corridors. I am confident that the Chatham Conservation Commission's review will evaluate the Town's phased construction program and its erosion and sedimentation control plans and mitigation commitments to ensure that the project will be constructed in a manner consistent with the MassDEP Stormwater Management regulations and the Wetlands Protection Act performance standards.

Rare Species

The existing Chatham WWTF site is not located within Priority or Estimated Habitat for any state-listed rare plant and wildlife species as indicated in the current 13th Edition of the MA Natural Heritage Atlas.

The FEIR indicates that two rare species; the Pine Barrens Bluet (*Enallagma Recurvatum*) and the New England Bluet (*Enallagma Laterale*), have been located within the vicinity of the northern border of the facility which may require further review and future inclusion in the MA Natural Heritage Atlas. According to NHESP's comments on the FEIR, portions of the Town's sewer expansion project may include mapped Priority Habitat. NHESP anticipates being able to address any potential concerns associated with the Town's proposed sewer expansion project through the MESA review process. Should NHESP subsequently find that the project will require a Conservation and Management Permit pursuant to the Massachusetts Endangered Species Act (MESA), the Town will need to notify the MEPA Office to explain these impacts and discuss the Town's avoidance/mitigation strategies. I ask that the Town continue to work closely with NHESP and the Chatham Conservation Commission to identify those portions of the Town's Phase 1 and Phase 2 construction activities that that may require MESA review and to identify necessary project construction and post-construction conditions and commitments to avoid an adverse impact to the habitats of state-listed species.

Historical/Archeological Resources

In comments submitted on the FEIR, the Massachusetts Historical Commission (MHC) has requested that the Town provide the MHC with a US Geological Survey topographical map that locates the Town's phased project area and scaled project plans showing existing and proposed conditions to enable MHC to determine if pump stations and other sewer project elements are located within and/or adjacent to recorded archeological sites and archaeologically sensitive areas. These plans should be submitted to MHC as early as possible during the design phase corresponding to each project development phase. If MHC deems the project to have an "adverse effect" on historic or archaeological resources, the Town will need to notify the MEPA Office to describe the Town's commitment to work with MHC to implement appropriate avoidance/mitigation strategies.

Sewering and Growth Management

The FEIR/Final CWMP includes a discussion of the potential future build-out of the proposed Phase 1 and Phase 2 sewer areas and the consistency with Executive Order #385 which discourages unintended growth within areas planned for sewering. In May 2005, the Town passed a new section of the Town of Chatham's *Rules and Regulations of the Sewer Department* designed to limit new growth that might occur in newly sewered areas of Chatham. As described in the FEIR, the Town has adopted a 'flow-equivalent 'regulation that would limit the development or redevelopment of existing properties by restricting the number of bedrooms allowed to the number of bedrooms the property is currently allowed under Title 5 and local zoning.

I encourage the Town of Chatham to consider additional growth control by-laws, regulations, and policies and note that the Town of Orleans has recently proposed (EEA #14414, May 6, 2009) to implement a "checkerboard" sewer connection by-law that will enable the Town of Orleans to select specific lots that will be connected to the municipal sewer system and lots that do not need sewering and therefore will not be allowed to connect to the new sewer system. The Town should adopt any proposed growth by-laws, regulations, and policies prior to the construction of any new sewers extensions.

The Town of Chatham's recommended CWMP proposes to extend sewers to areas of Chatham characterized as coastal floodplains and barrier beaches. In its previous comments on the Town's Phase II - Draft CWMP/DEIR submittal, Massachusetts Coastal Zone Management (CZM) indicated that the Town successfully demonstrated that the proposed sewering project has been designed to eliminate or minimize potential storm damage risks associated with sewering barrier beach areas by locating proposed pump stations outside of the 100-year flood zone and protecting this portion of the Town's proposed sewer collection system from potential wave action. As described in the FEIR, the Town has committed to incorporate a system of check valves into the new sewer collection system for barrier beach areas to minimize impacts in the event of a storm-related breach to the collection system.

Costs to Homeowners

As described in the FEIR/Final CWMP, the Town's proposed sewer expansion program will be constructed in two phases over 30 years and will cost an estimated $340 million dollars. The estimated operation and maintenance costs for the proposed sewer expansion program total approximately $38 million dollars. Each property owner connecting to the sewer system will incur a one-time connection cost averaging between $3,000 and $10,000 depending upon the distance of their home/business from the street, and an average monthly sewer utility cost of approximately $30.00 - $40.00. The project's capital costs will be paid through property taxes. Based on an estimated average Chatham property value of $600,000, the estimated property tax increase for Fiscal Year (FY) 2012 is $102.00 and will gradually increase to $210.00 in FY 2017. The Town anticipates smaller tax increases through FY 2033 and a decline in taxes associated with the sewer project from FY 2033 - 2054. I note the comments received from the Chatham Concerned Taxpayers and others pertaining to the project's estimated cost to homeowners. The Town should continue its public participation program to ensure that the Town's residents will continue to be afforded the opportunity to provide input in the final design and cost effectiveness of the Chatham CWMP.

Future Sewer Expansion

The Town's CWMP has been designed to also accommodate potential future additional wastewater flows from portions of the neighboring town Harwich.

I commend the Town for undertaking a study of potential regional approaches to address the wastewater treatment and disposal needs for the Towns of Chatham and Harwich, and the regional issues pertaining to nutrient loading, wastewater treatment and disposal affecting the Pleasant Bay coastal embayment. I ask the Town of Orleans, together with the Town of Harwich to the west to work together with MassDEP, the Cape Cod Commission and others to continue the discussion of possible opportunities to integrate the Town of Chatham's wastewater treatment planning efforts with the planning efforts being undertaken by the Town of Harwich.

Mitigation

The FEIR provides a detailed description of the Town's proposed mitigation plan, and discusses the value of the proposed mitigation in terms of the resources it provides and the opportunities for open space protection, and active and/or passive recreation it affords.

Conclusion

After a thorough consideration of the comments received from MassDEP, the Cape Cod Commission, the Town of Chatham and others, I am satisfied that any outstanding design issues relating to sewer layout and construction phasing will be fully considered and addressed during state and local permitting. As noted elsewhere in this Certificate, the Town should continue to work closely with MassDEP, CCC and the Pleasant Bay Alliance during final project design.

July 17, 2009
DATE

Ian A. Bowles, Secretary

Comments received:

06/22/09	Massachusetts Historical Commission (MHC)
07/02/09	Natural Heritage and Endangered Species Program (NHESP)
07/10/09	Massachusetts Department of Environmental Protection (MassDEP) – SERO
07/06/09	Town of Chatham, Water & Sewer Departments
07/06/09	Cape Cod Commission (CCC)
07/09/09	Town of Chatham, Office of the Town Manager
07/10/09	Chatham Concerned Taxpayers
07/10/09	Pio Lombardo

EEA #11510 FEIR/FINAL CWMP
IAB/NCZ/ncz

Appendix B

Chatham CWMP Approval Decision by Cape Cod Commission Dated October 29, 2009

CAPE COD COMMISSION

3225 MAIN STREET
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BARNSTABLE, MASSACHUSETTS 02630
(508) 362-3828
FAX (508) 362-3136
E-mail: frontdesk@capecodcommission.org

DATE: October 29, 2009

TO: William Hinchey
Town Manager
549 Main Street
Chatham, MA 02633

Robert A. Duncanson, Ph.D.
Director of Health & Environment
Director, Water Quality Laboratory
Program Manager, Comprehensive Wastewater Management Plan
549 Main Street
Chatham, MA 02633

FROM: Cape Cod Commission

RE: Development of Regional Impact
Cape Cod Commission Act, Sections 12 & 13

APPLICANT: Town of Chatham
Town Manager's Office
549 Main Street
Chatham, MA 02633

PROJECT #: ENF98004

PROJECT: Town of Chatham Comprehensive Wastewater Management Plan

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DECISION OF THE CAPE COD COMMISSION

SUMMARY

The Cape Cod Commission (Commission), hereby approves with conditions the application of the Town of Chatham for the Chatham Comprehensive Wastewater Management Plan (CWMP) as a Development of Regional Impact (DRI) in accordance with Sections 12 and 13 of the Cape Cod Commission Act (Act). This decision is rendered pursuant to a vote of the Cape Cod Commission on October 29, 2009.

PROCEDURAL HISTORY

Chatham's CWMP has undergone regulatory review pursuant to section 11.26 (7)(h)(6) of the Massachusetts Environmental Policy Act (MEPA) regulations beginning when the Secretary of Environmental Affairs scoped a Certificate on the initial Environmental Notification Form (ENF) in 1998. The Comprehensive Wastewater Management Plan (CWMP)/Final Environmental Impact Report (FEIR) meets a number of categorical MEPA thresholds that required a mandatory Environmental Impact Report (EIR) for the project. The Town of Chatham filed a joint MEPA/Cape Cod Commission Development of Regional Impact (DRI) Environmental Notification Form (ENF) in March 1998. Over the last 11 years the Commission has received and reviewed 5 major MEPA submittals from the Town of Chatham as indicated in the Table below. For each submittal, the document was reviewed, staff comments were prepared, some involving significant technical data and resource analysis, a joint public hearing was held, and Commission subcommittee comments were sent to the MEPA Office.

Report	Submittal	Public Hearing	Comment Letter
ENF	March 11, 1998	NA	March 27, 1998
Needs Analysis	September 8, 1999	Sept 23, 1999	October 5, 1999
NPC	March 10 1994	NA	March 29, 2004
DEIR	May 7, 2008	May 22, 2008	June 5, 2008
FEIR	June 1, 2009	June 30, 2009	July 6, 2009

The Town opted to exercise a joint MEPA regulatory review with the Cape Cod Commission. The Town completed its Final Environmental Impact Report (FEIR) (EOEEA #11510) on June 1, 2009. The Secretary of the Executive Office of Energy and Environmental Affairs (EOEEA), in his certificate dated July 17, 2009, found that the Town's project adequately and properly complies with the Massachusetts Environmental Policy Act (M.G.L. c. 30, ss. 61-62I) and with its implementing regulations (301 CMR 11.00).

On Tuesday, August 18, 2009 at 7:00 p.m. at the Chatham Community Center, 702 Main Street, Chatham, MA, a Cape Cod Commission hearing officer procedurally opened the DRI public hearing. No testimony was taken and no substantive action was taken and the public hearing was continued to Thursday, September 24, 2009. A public hearing of the Cape Cod Commission subcommittee took place at 7:00 p.m. on September 24, 2009 at 549 Main Street, Chatham Town Hall, in the Selectman's Meeting Room, in Chatham to obtain public comment. The Commission subcommittee reviewing the project held a subcommittee meeting immediately following the September 24, 2009 public hearing. At this meeting, the subcommittee deliberated on the project and voted unanimously to approve the project with conditions and directed staff to draft a decision. On October 15, 2009 a Cape Cod Commission hearing officer procedurally continued the public hearing; no testimony was taken and no substantive action was taken and the public hearing was continued to Thursday, October 22, 2009.

A subsequent public hearing was held on October 22, 2009 at 1:00 p.m. at the Cape Cod Commission office on Route 6A in Barnstable. At this hearing, the subcommittee reviewed the draft decision and voted unanimously to forward the draft decision to the full Commission for consideration. On October 29, 2009, the final public hearing was held before the full Cape Cod Commission. The Commission voted unanimously to approve the project with conditions.

PROJECT DESCRIPTION

The Comprehensive Wastewater Management Plan (CWMP)/Final Environmental Impact Report (FEIR) provides a strategy for wastewater management and reductions of nitrogen loading to restore and protect Chatham's marine embayments, addresses other Areas of Concern (areas experiencing: high groundwater, failing systems, industrial/commercial areas) and includes a topical Adaptive Management Plan for its implementation. The CWMP/FEIR proposes a 20 year implementation schedule for Phase 1 to construct wastewater facilities for the immediate wastewater and nitrogen management needs of the Town. The extension of sewers to the remaining part of the Town will take another 10 years with an estimated completion date of 2040. The estimated Phase 1 costs are $210 million dollars (in 2007 dollars) over the initial 20 years. The Town has adopted a number of innovative approaches for funding the project. The Town set-up has established a Capital Facilities Plan with the goal of not having to raise the tax-rate as major capital needs are addressed. However, it is acknowledged that modest tax increases will be necessary to meet the costs of the proposed plan. Expected homeowner charges are estimated at $3,000 to $10,000 for hook-up and $400 for annual operation and maintenance.

The four volume CWMP/FEIR is a significant document that articulates Chatham's wastewater needs and proposes a comprehensive facilities management program to address those needs. The Chatham CWMP has been underway since 1996, in response to an Administrative Consent Order from the Massachusetts Department of Environmental Protection (DEP) in 1987 as revised in 1998. A Needs Assessment Report was completed and reviewed by a Commission subcommittee on September 23, 1999. As part of the joint Massachusetts Environmental Policy Act (MEPA)/DRI review process, the Draft CWMP/ Draft Environmental Impact Report (DEIR) was reviewed by a Commission subcommittee in May of 2008. The Final Environmental Impact Report (FEIR)is substantially the same as the DEIR with responses to comments and updated implementation status and was reviewed by a Commission subcommittee in June of 2009.

The CWMP/FEIR details a two phased implementation program to meet nitrogen Total Maximum Daily Loads (TMDLs) in the Stage Harbor, Pleasant Bay, Sulphur Springs and Taylors Pond systems. Phase 1 actual wastewater flows are projected to be an average annual of 0.94 million gallons per day (mgd) at buildout. The actual Phase 2 wastewater flows will be 38% more than Phase 1, for an annual average flow of 1.3 mgd over thirty years at buildout. The 30-year Phase 2 design average annual flow, including Infiltration and Inflow, is 1.9 mgd, which accounts for approximately 32% of the flow.

The no-action alternative (#1) described in the CWMP/FEIR predicts that the present level of nitrogen loading would further impair coastal water quality as new development contributes additional nitrogen to these systems. Alternative (#2), which is a combination decentralized/centralized plan, was shown to be inefficient due to treatment levels, costs and necessary oversight. Alternative (3#) is centralized treatment with sewer extensions to meet nitrogen Total Maximum Daily Loads (TMDLs). Alternative (#4) is Alternative (3#) with sewer extensions to the remainder of the town. Commission staff concurs with the Town of Chatham that the CWMP/FEIR preferred Alternative (#4) of phased sewering will more cost-effectively remove nitrogen to restore coastal water quality and meet the objectives of the town.

The CWMP/FEIR describes a technology screening process leading to the selection of infrastructure that includes: the estimated length of sewer lines (110 miles), number of grinder pumps (1200), lift stations (80), and an Orbal oxidation ditch treatment system that is proposed as a major and modular component of the wastewater facility.

The CWMP/FEIR also provides a comprehensive account of mitigation measures that will be required during the construction phase, including a description of the Plan's implementation timetable, reasonable financial options for handling the significant infrastructure cost, and institutional considerations to implement the plan over the duration.

JURISDICTION

This project comes under the jurisdiction of the Cape Cod Commission pursuant to Section 2(d)(i) of the Cape Cod Commission Enabling Regulations Governing Review of Developments of Regional Impact, which requires proposed development for which an EIR is required to be prepared under the provisions of MEPA to undergo DRI review.

MATERIALS SUBMITTED FOR THE RECORD

From the Applicant

- Memorandum from Nathan Weeks to Sarah Korjeff, Re:Town of Chatham, Comprehensive Wastewater Management Planning Study, Regulatory Kick-off Meeting dated February 24, 1998
- DRI Joint Review Process Application Form dated February 27, 1998
- Environmental Notification Form dated March 2, 1998
- Memorandum from Nathan Weeks to Sarah Korjeff, Re:Town of Chatham, Comprehensive Wastewater Management Planning Study, dated May 11, 1998
- Memorandum from Nathan Weeks to Sarah Korjeff, Re:Town of Chatham, Comprehensive Wastewater Management Planning Study, Regulatory Progress Meeting on June 23, 1998 dated June 15, 1998
- Executive Summary of the Draft Needs Assessment Report dated July 19, 1999
- Letter to Mr. Robert A. Durand, Secretary, Executive Office of Environmental Affairs from William G. Redfield, P.E., Re: Town of Chatham, Comprehensive Wastewater Management Planning Study, Needs Assessment Report, Requested MEPA Review Extension, EOEA No. 11510 dated September 3,

1999

- Memorandum from Nathan Weeks Re:Town of Chatham, Comprehensive Wastewater Management Planning Study, Regulatory Progress Meeting on September 14, 1999 at 1:30 p.m. dated August 27, 1999
- Letter to Mr. Robert A. Durand, Secretary, Executive Office of Environmental Affairs from Fred Jensen, Chairman for the Citizen's Advisory Committee, Re: Comprehensive Wastewater Management Planning Study, Town of Chatham, Phase I Report: Needs Assessment, EOEA #11501, CCC #ENF98004 dated October 20, 1999
- Letter to Mr. Robert A. Durand, Secretary, Executive Office of Environmental Affairs from Glenn Haas, Director, Division of Watershed Management, Re: Chatham Comprehensive Wastewater Management Plan – Phase I Needs Assessment Report dated October 29, 1999
- Letter to Seth Wilkinson, Project Planner from William G. Redfield , P.E., Manager, Re: Chatham Wastewater Management Planning Study (#ENF98004) dated May 16, 2001
- Letter to Mr. David Ansel, Chair, Regulatory Committee from Robert A. Duncanson, Ph.D., Director of Health and the Environment, Re: Chatham Wastewater Management Planning Study, Chatham, MA (#ENF08004) dated November 12, 2002
- Letter to Chair, Regulatory Committee from Robert A. Duncanson, Director of Health & Environment Re: Chatham Wastewater Management Planning study, Chatham, MA (#ENF98004), Re: Development of Regional Impact Review Extension Request, Chatham Wastewater Management Planning Study, Chatham, MA, #ENF98004 dated September 23, 2004
- Letter to Chair, Regulatory Committee from Robert A. Duncanson, Ph.D., Director of Health & Environment, Director, Water Quality Laboratory, Re: Development of Regional Impact Review Extension Request, Chatham Wastewater Management Planning Study, Chatham, MA, #ENF98004 dated October 6,2006
- Executive Summary, Draft Comprehensive Wastewater Management Plan / Draft Environmental Impact Report and Notice of Project Change dated April 2008
- Draft Comprehensive Wastewater Management Plan and Draft Environmental Impact Report and Notice of Project Change Report: Volumes 1 and 2; Bound copies of the Executive Summary with CD of all 4 volumes; CD of Report all 4 volumes dated May 5, 2008
- Email to Tom Cambareri from Robert Duncanson, Re: Chatham CWMP/DEIR Staff Report dated May 21, 2008
- Letter to Chair, Regulatory Committee from Robert A. Duncanson, Ph.D., Director of Health & Environment, Director, Water Quality Laboratory, Re: Development of Regional Impact Review Extension Request, Chatham Wastewater Management Planning Study, Chatham, MA, ENF #98004 dated May 27, 2008
- Letter to Secretary Ian A. Bowles, Executive Office of Energy and Environmental Affairs from Robert A. Duncanson, Ph.D., Director of Health & Environment, Re: Town of Chatham, Environmental Impact Report for Comprehensive Wastewater

Management Planning Project (EOEA # 11510) dated June 3, 2009

- Letter to Secretary Ian A. Bowles, Executive Office of Energy and Environmental Affairs from Robert A. Duncanson, Ph.D., Director of Health & Environment, Re: Town of Chatham, Environmental Impact Report for Comprehensive Wastewater Management Planning Project (EOEA # 11510) dated June 8, 2009
- Letter to Cape Cod Commission from William G. Redfield, P.E. Re: Town of Chatham's CWMP/FEIR, Project #11510 dated July 6, 2009

From Federal, State and Local Officials and Members of the Public

- Letter to Secretary Trudy Coxe, Executive Office of Environmental Affairs from Brona Simon, State Archaeologist, Deputy State Historic Preservation Officer, Massachusetts Historical Commission, Re: Comprehensive Wastewater Management Planning Study, Chatham, EOEA# 11510, MHC #RC21171 dated March 23, 1998
- Memorandum to R.J. Lyman, Director, MEPA Unit from Margaret M. Brady, Director, MCZM, Re: EOEA # 11510 Comprehensive Wastewater Management Planning Study; Chatham dated March 27, 1998
- Letter to Ms. Trudy Coxe, Secretary, Executive Office of Environmental Affairs from Fred Jensen, Chairman, Wastwater Citizens Advisory Committee, Re: Environmental Notification Form Scope of Work for Chatham Comprehensive Wastewater Management Planning Study dated March 30, 1998
- Letter to Trudy Coxe, Secretary, Exec. Office of Environmental Affairs from Glenn Haas, Director, Division of Watershed Management, Re: Chatham Wastewater Mgmt. Plan, EOEA #11510 dated March 31, 1998
- Memorandum to Fred Jensen, Chairman, Chatham Citizens Advisory Committee, Comprehensive Wastewater Management Planning Study from Deborah Ecker, Re: Questions addressed to the consultants about the "Draft: Needs Assessment Report for Comprehensive Wastewater Management Planning Study," April 1999 dated May 28, 1999
- Letter to Fred Jensen, Chatham Board of Health from Norman H. Howes, regarding concerns about the project dated August 31, 1999
- Letter to Cape Cod Commission from Deborah S. Ecker, Re: Concerns about Buildout Projections in the Final Needs Assessment Report Chatham's Comprehensive Wastewater Management Planning Study dated September 22, 1999
- Letter to Cape Cod Commission from Paul R. Kelley regarding concerns about the project dated September 23, 1999
- Letter to Fred Jensen, Chairman of Citizen's Advisory Committee from M. Stone, Re: Comments on Wastewater Management Study dated September 23, 1999
- Letter to Seth Wilkerson, Project Planner, Cape Cod Commission from Norman Pacun regarding concerns about the project dated September 30, 1999
- Letter to Secretary Bob Durand, Executive Office of Environmental Affairs from Brona Simon, State Archaeologist, Deputy State Historic Preservation Officer, Massachusetts Historical Commission, Re: Comprehensive Wastewater

Management Plan, Chatham, EOEA #11510, MCH #RC.21117 dated October 1, 1999

- Letter to Ed Eichner, Cape Cod Commission from Martha Stone regarding concerns about the project dated October 8,1999
- Letter to Seth Wilkinson, Cape Cod Commission from Paul R. Kelley regarding concerns about the project dated October 8, 1999
- Massachusetts Historical Commission Project Notification Form dated August 3, 2006
- Letter to Secretary Ian A. Bowles, Executive Office of Energy & Environmental Affairs from Brona Simon, State Archaeologist, Deputy State Historic Preservation Officer, Massachusetts Historical Commission, Re: Draft Comprehensive Wastewater Management Plan/Draft Environmental Impact Report and Notice of Project Change, Town of Chatham, MHC #RC 21171. EEA #11510 dated May 21, 2007
- Letter from Stephen Perkins, EPA re: Approval of Pleasant Bay System TMDLs for Total Nitrogen dated October 24, 2007
- Email to Linda Smulligan and William Redfield from Terry Whalen, Re: Chatham CWMP dated May 19, 2008
- Letter to Cape Cod Commission from Fred Jensen, Chairman, Citizen's Advisory Committee in support of the project dated May 22, 2008
- Letter to Cape Cod Commission from Edward Sheehan, Chairman, Board of Health in support of the project dated May 22, 2008
- Letter to the Cape Cod Commission from the Summer Residents Advisory Committee in support of the project dated May 22, 2008
- Email to Heather McElroy from John Payson, Re: My comments on the Draft Chatham CWMP at the Public Hearing on 22 May 2008 dated May 28, 2008
- Letter to Secretary Ian A. Bowles, Executive Office of Energy & Environmental Affairs from Brona Simon, State Historic Preservation Officer, Executive Director, State Archaeologist, Massachusetts Historical Commission, Re: Comprehensive Wastewater Management Plan/ Final Environmental Impact Report, Town of Chatham, MHC #RC21171, EEA #11510 dated June 16, 2009
- Letter from Ken Moraff, EPA re: Approval of Chatham Southern Embayments Total Maximum Daily Load Re-Evaluations for Total Nitrogen, dated June 22, 2009
- Letter to the Cape Cod Commission from Jill Nickerson MacDonald, Chair, Summer Residents Advisory Committee in support of the project dated June 30,2009
- Letter from Ken Moraff, EPA re: Approval of the Pathogen TMDL for Cape Cod Watershed, dated August 28, 2009

<u>From the Cape Cod Commission</u>

- ENF Comment letter to Secretary Trudy Coxe, Massachusetts Executive Office of Environmental Affairs from David Ernst, Subcommittee Chair dated March 27, 1998

- Staff Report dated September 15, 1999
- Letter to Mr. Robert A. Durand, Secretary, Executive Office of Environmental Affairs from David H. Ernst, Chair , EIR Review Subcommittee, Re: Town of Chatham, Chatham Comprehensive Wastewater Management Planning Study, Needs Assessment Report Comment Letter, EOEA #11501, CCC #ENF98004 dated October 5, 1999
- Letter to William Redfield, Chatham Water and Sewer Departments from Seth Wilkinson, Project Planner, Re: Chatham Wastewater Management Planning Study (#ENF98004) dated May 7, 2001
- Letter to Dr. Robert A. Duncanson, Ph.D., Director, Health & Environment from Andrea Adams, Planner, Hazardous Waste Specialist, Re: Chatham Wastewater Management Planning Study, Chatham, MA (#ENF98004) dated November 18, 2002
- Letter to Dr. Robert A. Duncanson, Ph.D., Director, Health & Environment from Andrea Adams, Planner, Hazardous Waste Specialist, Re: Chatham Wastewater Management Planning Study, Chatham, MA (#ENF98004) dated December 31, 2002
- Letter to Secretary Ellen Roy Herzfelder, Executive Office of Environmental Affairs from Margo L. Fenn, Executive Director, Re: Town of Chatham, Notice of Project Change, Comprehensive Wastewater Management Planning Project/EIR, EOEA #11510, MEPA Analyst – Nicholas Zavolas dated March 29, 2004
- Letter to Robert A. Duncanson, Ph.D., Director of Health & Environment from Andrea Adams, Planner, Hazardous Waste Specialist Re: Chatham Wastewater Management Planning Study, Chatham, MA, #ENF98004
- Staff Report dated September 29, 2004
- Email to Robert Duncanson from Andrea Adams, Re: Chatham Wastewater Management Planning Study dated October 4, 2006
- Email to Robert Duncanson from Andrea Adams, Re: Chatham Wastewater Management Planning Study dated October 12, 2006
- Email to Robert Duncanson from Andrea Adams, Re: Chatham's Comprehensive Wastewater Management Plan dated February 20, 2008
- Email to Robert Duncanson from Tom Cambareri, Re: Chatham CWMP/DEIR Staff Report dated May 19, 2008
- Email to Terry Whalen from Heather McElroy, Re: Chatham CWMP dated May 19, 2008
- Staff Report dated May 22, 2008
- Letter to Robert Duncanson, Director of Health & Environment from Heather McElroy, Natural Resources Specialist, Re: Chatham Comprehensive Wastewater Management Plan, Development of Regional Impact Review, Extension Agreement dated June 3, 2008
- Subcommittee Comment Letter to Secretary Ian Bowles, Executive Office of Energy and Environmental Affairs from Ernest Virgilio, Chair, Re: Town of Chatham, Draft Comprehensive Wastewater Management Plan Draft Environmental Impact Report, and Notice of Project Change (EOEEA #11510)

dated June 5, 2008
- Staff Report dated June 25, 2009
- Letter to Secretary Ian A. Bowles, Executive Office of Energy and Environmental Affairs from Elizabeth Taylor, Re: Chatham CWMP, MEPA Project Number EOEEA #11510 dated July 6, 2009
- Staff Report dated September 18, 2009

TESTIMONY

Public Hearing, May 22, 2008
Sean Summers, Chair of the Chatham Board of Selectmen, made some introductory remarks, welcoming the Cape Cod Commission, and noting that Chatham is the first town to prepare a wastewater management plan. He noted the town staff, consultant, and Citizens Advisory Committee (CAC) have been working on the plan over the past 13 years.

Ernest Virgilio opened the hearing at 7:10 p.m. and asked Mark Harding to read the hearing notice. Mr. Harding read the notice.

Mr. Virgilio introduced the Subcommittee, gave an overview of the hearing process, and asked Nathan Weeks, consultant with Stearns & Wheler, LLC, to make the Town's presentation of the plan.

Mr. Weeks reviewed the plan and planning process. He presented an image illustrating nitrogen that must be remediated by percentage for each watershed in town (the total maximum daily loads (TMDLs) as determined by the Massachusetts Estuaries Project (MEP)). He stated that the TMDLs are important regulatory targets. He stated that the CWMP used these targets, and analyzed the Town by watershed, evaluating technologies by watershed to determine the best method for removing nitrogen (N), including; Title 5 septic systems (23% N removal), individual nitrogen removal systems (50% N removal), community and cluster systems (75% N removal) and upgraded treatment plant (93% N removal). Mr. Weeks stated that several key findings resulted from the analysis: several areas in town need to remove more than 50% N to remediate problems in estuaries, that the best technology to address this problem is a cluster or centralized system, and that there is efficiency in upgrading the existing treatment plant because of the large volume of treatment needed.

Mr. Weeks stated that Town goals for the project include N removal, but also cost, fiscal fairness, fewer raised septic systems, and addressing some industrial/commercial properties where there are concerns associated with impacts to groundwater. He stated that sewering the entire town would generate 1.9 million gallons per day (mgd). He said that the team then scaled the project back to address only the TMDL concerns, to 1.3mgd. He said that the team next considered recharge of the treated water, and looked for an appropriate site. He said that the existing treatment plant, and site to the north, is best for recharge, and that the site can accommodate the entire town's 1.9 mgd with no adverse impacts.

He stated that the town looked at other alternatives, including: 1) no action alternative, which does not address the findings of the MEP; 2) address problem with individual nitrogen removal systems; 3) extend sewer to limited parts of town; 4) extend sewer to entire town. He stated that the preferred alternative is the fourth alternative, extending the sewer in phases over 30 years, and that the first phase is to address areas that need to meet the TMDLs.

Mr. Weeks stated that it is important to understand wastewater flows to design the system efficiently. He stated that the average annual flow would start at 1.3 mgd, would ramp up to 1.8 mgd, and in later phases to 2.8 mdg. He stated that the proposed plan would use an innovative process called an Orbal process which facilitates phasing of the project. He noted that the existing treatment plant is located away from residential properties, and otherwise the site minimizes impacts. He stated that part of the project would include a new administrative building. Mr. Weeks provided an overview of the costs of the project, totaling $35 million for Phase 1, and sewering the entire town would cost approximately $295 million. He reviewed the regulatory agencies reviewing the project, and time frames, including the Town's anticipation of submitting the Final EIR in September 2008, and DRI approval by December 2008. Construction would start in 2011 – 14. Mr. Weeks showed a picture of the technology proposed in operation in Wisconsin, and pictures of pump houses that fit into community character. Mr. Weeks observed that the systems to be put in place need to be designed for the long term, as they are community assets.

Mr. Virgilio introduced the Cape Cod Commission staff and asked Tom Cambareri to present the staff report. Mr. Cambareri summarized the staff report and stated that Commission staff has reviewed the CWMP, but has also been a partner in the development of the plan. He said that the plan is a response to an Administrative Consent Order from the DEP, and that staff recommends that the Town should move forward with the preparation of a Final EIR. He stated that action items in the plan include various ways to monitor and manage nitrogen loading to ground and surface waters. Mr. Cambareri noted that the review process to date has included public participation. He described the scope of the project proposed and the mitigation proposed. Mr. Cambareri described the MEP reports for Chatham, and the benefits from remediating the nitrogen problems. He said that the original Administrative Consent Order was based on assumptions that the MEP corrected resulting in a more accurate assessment of the problem. He said that the treatment proposed is 3 ppm, well below the standard set in the RPP. He said that recharge of treated wastewater is less complicated than in Barnstable, and will flow toward the coast. He noted that the draft plan addresses the potential to accept wastewater from neighboring towns, to help address shared resources, like Muddy Creek. He said that the Final EIR should have more detail to address regional solution, and noted that the plan includes an Adaptive Management Plan. He concluded that the town should proceed to preparation of a Final EIR.

Mr. Virgilio asked if the committee had any questions. William Doherty asked whether there was concern about the flow toward the coast, and if that should be attenuated.

Mr. Cambareri said that the recharge site was looked at through MEP, and that treatment level would be protective of downgradient coastal waters. Mr. Doherty asked if Stearns & Wheler was also working with Harwich? Mr. Cambareri stated that he believed Camp Dresser and McKee was working with Harwich.

Mr. Virgilio asked for public comment.

Mr. Brian Dudley, DEP Southeast Regional Office, offered congratulations to Chatham for coming to the end of a long process, and coming up with recommendations for addressing water treatment for all of its citizens. He stated that the town has been very diligent, resulting in a comprehensive plan. He stated that the DEP was glad to look at innovations, which would allow approval of higher loading rates, and may help the rest of the Cape. He stated that from an environmental standpoint, the plan is an achievement, and the DEP will continue to work with the town as diligently as they can.

Charles Bartlett, co-president of Friends of Chatham Waterways (FCW) stated that FCW have been very supportive of efforts to protect estuaries, including Water Watchers. He also sat on the Citizens Advisory Committee as ex-officio member. FCW supports the plan, but has some concern about gathering community support. He noted that technology for analyzing water is not available to the average citizen, and problems may not be apparent to the naked eye. He is also concerned that the cost of implementing the solution is expensive, greater than $45,000 per family, and no offer of assistance is in the plan. He stated that he believes it is important to tackle the biggest problem first, build public support, and move forward in small steps.

Fred Jensen, chair of the Citizens Advisory Committee (CAC), submitted a letter on behalf of the committee, stating that CAC supports the plan. He stated that the CAC was formed in 1997 to provide citizen input to the Selectmen, and met monthly with the public, and the consultant. He stated that the CAC also looked at alternative management plans, and that it supports phasing of the project, and the proposed centralized system. He noted that the phasing of the project over 20 years reduces impacts to daily life. He stated that the CAC also strongly supports ongoing monitoring.

Jill McDonald, vice chair of the Summer Residents Advisory Committee, submitted a letter. She stated that the Committee is very concerned about the health of water bodies in Chatham. She stated that the committee performed a survey of its members, and found near unanimous support of the project.

John Payson, CAC member, stated that he has been tracking data, and trying to evaluate the validity of the conclusions. He stated that his analysis discredited the MEP report, resulting in changes to the draft TMDLs. He stated that during the MEP process, it was determined that a third party was needed for validation of the findings. He stated his concern about the cost of the project, and that MEP projections are too conservative. He stated that relying on the MEP report without peer review is foolhardy.

Carol Ridley, coordinator of the Pleasant Bay Resource Alliance, may submit further comments in writing. She congratulated the Town on the effort, and noted that Town

officials and the consultant have participated in the Alliance workgroup. She noted that the draft plan addresses several regional solutions to nitrogen in Muddy Creek; this is a core issue for the alliance. She noted that the Alliance has received a grant to look at natural attenuation at Muddy Creek. She noted that the Alliance is looking at public education on fertilizer use within the watershed. She wanted to convey the Alliance's support for the project and desire to continue collaborating with the Town.

Public Hearing, June 30, 2009

Mr. Nathan Weeks of Stearns & Wheler, LLC presented on behalf of the Town of Chatham. He stated that he has been working with the Town of Chatham on their CWMP for twelve years. Mr. Weeks presented an alternative evaluation summary, watershed evaluations, hydrogeologic and site evaluations, alternative plan formation and evaluation, the recommended plan, and reviewed next procedural steps. He then reviewed the implementation schedule for the recommended plan, stating that from March 2009 through February 2010 will be the design, Massachusetts Department of Environmental Protection (MassDEP) review, and bidding and award phase. He said that February 2010 through July 2012 will be the construction phase. He said that phase one, which is the collection system expansion, will go from the year 2010 through 2030. He then described the collection system and said that phase two, which is the collection system and the wastewater treatment facility expansion, will take place from the year 2030 through 2040.

Mr. Tom Cambareri then made his presentation. He gave a brief overview of the joint MEPA/Commission review. He said that Commission staff recommends that the CWMP is sufficient and can proceed to the DRI review stage. He presented the Water Resources RPP goals and identified that the CWMP targets nutrient reduction through certain non-structural elements, including stormwater and fertilizer management. Mr. Cambareri reviewed the wellhead protection areas and public supply wells in Chatham and mentioned that seventeen of the 44 freshwater ponds in Chatham were sampled and indicated that the Town will continue to monitor these seventeen ponds. He spoke about marine water quality and the Environmental Protection Agency (EPA) approved TMDLs for nutrients. Mr. Cambareri explained relative nitrogen thresholds and TMDLs and reviewed the percent nitrogen removal needed for several embayments and ponds. He spoke about groundwater modeling and mentioned that groundwater mounding will pose no issues for the Town. He showed a groundwater monitoring particle tracking map and said that the effluent will flow downgradient and will be within acceptable TMDL limits. Mr. Cambareri identified regional wastewater management opportunities and stressed the importance of inter-town cooperation. He concluded by reviewing the adaptive management plan.

Ms. Taylor then asked whether there were any Subcommittee member questions.

Ms. Taylor asked whether the allotted excess flow in the wastewater treatment plant design could be a possible regional hookup for bringing in parts of Harwich.

Mr. Weeks replied that the flows that are estimated are for Chatham at the buildout conditions and that the important aspect that they have tried incorporate into the site is

that they have provided additional space at the site to be able to treat additional flows if the Town of Harwich wants to consider bringing wastewater flow to this site for treatment and possibly recharge there as well. He said that they have provided site space in the planning of the site and that Harwich is in the midst of a comprehensive wastewater management planning project and that once they have received their limits from the Massachusetts Estuaries Project they are going to be proceeding with their alternatives evaluation and that they have let the Town of Harwich know that when they get into that alternatives development to consider bringing in their flow to the Chatham facility because there is a great cost savings to both Chatham and to Harwich when that can happen.

Mr. Duncanson added that they have had almost constant conversations with Harwich, probably going back four or five years. He mentioned that they were hoping to get something more specific in the final plan as to what may happen between Chatham and Harwich, but that the difficulty they had was that there was a disagreement of the Estuaries Project between the State and the University that led to a delay, so Harwich unfortunately hasn't had the information they needed to move forward. He said they were really hoping to nail down that regional cooperation a little bit more, but that unfortunately the timing just hasn't worked out. He said that Chatham continues to have discussions with Harwich and that Chatham is committed to working with Harwich and that, as Nate indicated, they have already identified two potential areas and that it is probably more cost-effective for them to look at joining up with Chatham rather than try to do something on their own. He said that until Harwich gets to that next step and refined their numbers it is difficult to sit down and have a meaningful discussion, but as soon as they are ready to do that, Chatham will be at the table.

Ms. Taylor then said that the subcommittee has heard discussions on nitrogen tonight and relative to stormwater runoff, fertilizer and other non-structural management strategies, including phosphorus issues, where is the Town in that right now? She asked whether there are anticipated reviews of all the ponds and the abutting properties and some zoning changes?

Mr. Duncanson responded by saying that he would address the freshwater ponds aspect of the question first. He said that, as Mr. Cambareri alluded, Chatham has been participating in the PALs program since its inception and that they also had their own freshwater quality monitoring program prior to that as part of the wastewater planning process. He said that they took a look ten years ago at the initial recommendations at the time of the three hundred foot setback for septic systems for freshwater ponds. He said the difficulty they had was that Chatham for all intents and purposes has already been built out and that there isn't a lot of vacant land left. He said that the Town is really looking at relatively small lots where, in most cases, three hundred feet either puts you across the road or on someone else's property, so as part of the wastewater planning process, they took that into account. He said that since their intent is to sewer the entire Town, that is going to deal with the phosphorus issue from a wastewater perspective, no matter where the house is in relation to the freshwater pond. He said that as Mr. Cambareri mentioned, that they have been doing the monitoring and that, for the most part, the freshwater ponds in Chatham are in pretty good shape. He said

that they identified two and have done a fairly extensive feasibility analysis on those two, and that they are pursuing the recommendation, which is alum treatment to mitigate the phosphorus issue in those two ponds. He said that they are committed to doing other things, such as they have been working with a lot of the neighborhood associations on the dishwashing and laundry detergent issue, and luckily there was State legislation passed two years ago that changed that. He said that they are working right now with the Pleasant Bay Alliance, through a grant from the Water Protection Collaborative, on the fertilizer issue. He said that is a very difficult issue to deal with. He said that the Pleasant Bay Alliance just recently issued a request for proposals to look at fertilizer management techniques from around the country. He said that, hopefully, they will be working on a regional basis, through the Pleasant Bay Alliance on the whole fertilizer issue. He said that Chatham was working on stormwater for more than twenty three years. He said they have had an active stormwater management program for many years and now they are a Phase II community, so they are required to do it. He said they have identified twenty five major areas where stormwater needed to be addressed and have addressed close to fifty percent of those so far, and that they will continue to do that for both nutrient and bacteria issues.

Ms. Taylor then said that once most Towns are sewered then that takes away some of the protection that a Title 5 system might have offered in terms of where a person would be able to build. She asked whether the Town is doing any zoning to prevent additional buildout even on individual lots, since Chatham doesn't have many that aren't built on in the first place?

Mr. Duncanson responded by saying that Chatham has been working on a zoning bylaw re-write, but that it is still underway. He said that those kinds of issues are correctly zoning issues. He said it is inappropriate to manage growth in the community through wastewater. He said we've done it for many years in Massachusetts where we have used Title 5 as defacto zoning. He said that is not the way to do it, because that only regulates the number of bedrooms in the house. He said you can still have five media rooms and ten kitchens and that's what governs the size of the house. He said the Town of Chatham is not actively at this point promoting any major zoning changes because of the wastewater plan. He said that, as alluded to in the presentation, back in 2005, the Town did put in flow neutral regulation; it started out as a policy but it was ultimately adopted by Town meeting, in a near unanimous vote, into water and sewer regulations. He said that, other than that, the Town is not looking at any substantial zoning proposals coming out of the wastewater plan; the Town is letting the zoning folks deal with the zoning issues. He said that the other side of the coin is that Chatham has probably one of the strictest set of local conservation bylaws of any of the Towns on the Cape. He said that they go well beyond the State regulations in terms of the areas that they regulate, sometimes to the Town staff's detriment because that means Chatham has a lot more projects that come through their conservation office than most communities. He said that Chatham was one of the first communities in the Commonwealth to have a fifty foot no disturb zone, so those first fifty feet are pretty much sacrosanct. He said that even though we may lose some limitations on lot development with Title 5, he doesn't think they are going to significantly result in major development opportunities, because the Town has these other regulations that will

govern, and obviously, just because Title 5 may go away, zoning is still going to be there, and conservation is still going to be there.

Mr. Graham complimented the Town of Chatham on their CWMP and commended the Town on the ease with which he was able to read the document. He pointed out that the layout, the summary, and the organization of the plan made it clear and easy to read. He said the conclusions of the Commission staff are right on. He complimented the Town on being kind to the Subcommittee with large print and a readable plan.

Ms. Taylor then asked whether there were any local, state, or federal officials who had questions or would like to provide comments. There were none. She then invited the public to speak.

Mr. Fred Jensen then gave his testimony. He stated that he is the Chairman of the Citizens Advisory Committee (CAC) for the Town of Chatham's Wastewater Management Planning Study. He introduced some fellow Advisory Committee Members. He then read his statement for the record. He said, "The members of the Citizens Advisory Committee (CAC) for Chatham's Wastewater Management Planning Study have provided input, over the past 12 years, to the development of virtually every aspect of Chatham's Final Comprehensive Wastewater Management Plan (FCWMP) and Final Environmental Impact Report (FEIR), both dated May 2009. The CAC enthusiastically endorses the FCWMP and the FIER in their entirety and strongly recommends that the Cape Cod Commission and the MA Executive Office of Energy and Environmental Affairs, MEPA Unit, promptly approve Chatham's FCWMP and FEIR. Such prompt approval will facilitate Chatham's desire to proceed as expeditiously as possible with the implementation of Phase I of the plan."

Ms. Carole Ridley, the coordinator for the Pleasant Bay Resource Management Alliance, then congratulated the Town on developing the Plan. She said that the CWMP is a leader among plans, and that Chatham has been a leader to the other Alliance Towns throughout the process. She said that, in terms of regional coordination, the Pleasant Bay Alliance supports regional discussions and hopes that those continue. She said, finally, in terms of the fertilizer management, that is something that they are working on, as Mr. Duncanson mentioned, and that they look forward to continue working with the Town in support of that.

Hearing Officer, August 18, 2009
Marisa Mejia, Cape Cod Commission Regulatory Officer, acted as a Hearing Officer at the Chatham Community Center to open a pro-forma hearing on a Development of Regional Impact (DRI) project.

Public Hearing, September 24, 2009
Mr. Nathan Weeks of Stearns & Wheler, LLC presented on behalf of the Town of Chatham. He stated that he has been working with the Town of Chatham on their CWMP for twelve years. Mr. Weeks presented an alternative evaluation summary, watershed evaluations, hydrogeologic and site evaluations, alternative plan formation

and evaluation, the recommended plan, and reviewed next procedural steps. He then reviewed the implementation schedule for the recommended plan, stating that from March 2009 through February 2010 will be the design, Massachusetts Department of Environmental Protection (MassDEP) review, and bidding and award phase. He said that February 2010 through July 2012 will be the construction phase. He said that phase one, which is the collection system expansion, will go from the year 2010 through 2030. He then described the collection system and said that phase two, which is the collection system and the wastewater treatment facility expansion, will take place from the year 2030 through 2040.

Marisa Mejia and Tom Cambareri presented the Commission report. Ms. Mejia reviewed the procedural history and the Commission's involvement with the project.

She reviewed the issue area of Natural Resources. She stated that the proposed treatment plant site and discharge locations appear to have few potential conflicts with wetlands or rare species habitat at this time. She said that the disposal site components of the project also do not appear to have wetland or rare species impacts at this time. She said that as specific placement and construction phases of the sewer extensions and pumping stations occur over the 30 year project timeframe, each should be reviewed for impacts to rare species and wetlands by the local conservation commission and the Natural Heritage and Endangered Species Program (NHESP) as appropriate. She said that the Cape Cod Regional Policy Plan (RPP) prohibits activities that result in adverse impacts to rare species or their habitat and that where conflicts with rare species habitat to arise, the primary planning approach should be to avoid, and then minimize impacts. She said that whatever impacts remain unavoidable will have to be mitigated. She said that specific construction-related impacts are unknown at this time and that an additional review for impacts to rare species may be required once plans have become finalized.

In the issue area of Historic and Archaeological Resources, Ms. Mejia said that the proposed project has the potential to impact archaeological resources in the construction of pump stations and installation of underground pipes and other sewer facilities. She said that the Massachusetts Historical Commission (MHC) requested more detailed project plans to help determine if pump stations and other sewer project elements are located within or adjacent to archaeological sites and archaeologically sensitive areas. She said that if MHC finds that the proposed project will impact such sites, RPP minimum performance standard 6.1.3 requires a predevelopment investigation to serve as a guide for layout of the development. She said that development proposed on or adjacent to known archaeological sites or sites with high archaeological sensitivity must be configured to maintain and/or enhance such resources where possible. She said that any work done within or adjacent to areas listed on the National Register of Historic Places or found eligible for listing on the National Register may be impacted by above-ground structures that are proposed in conjunction with sewer facilities. She stated that to be consistent with RPP minimum performance standards 6.1.1 and 6.1.2, any work within significant historic areas must preserve distinguishing original features of historic structures and cultural landscapes, including their site and setting.

Mr. Cambareri then discussed the issue area of Water Resources. He presented the Water Resources RPP goals and identified that the CWMP targets nutrient reduction through certain non-structural elements, including stormwater and fertilizer management. Mr. Cambareri reviewed the wellhead protection areas and public supply wells in Chatham and mentioned that seventeen of the 44 freshwater ponds in Chatham were sampled and indicated that the Town will continue to monitor these seventeen ponds. He spoke about marine water quality and the Environmental Protection Agency (EPA) approved TMDLs for nutrients. Mr. Cambareri explained relative nitrogen thresholds and TMDLs and reviewed the percent nitrogen removal needed for several embayments and ponds. He spoke about groundwater modeling and mentioned that groundwater mounding will pose no issues for the Town. He showed a groundwater monitoring particle tracking map and said that the effluent will flow downgradient and will be within acceptable TMDL limits to begin the implementation of the plan. Mr. Cambareri identified regional wastewater management opportunities and stressed the importance of inter-town cooperation. He concluded by reviewing the adaptive management plan.

Ms. Mejia then concluded by saying that in order to approve the project, the Commission must find that the project meets the minimum performance standards of the RPP; that the project is consistent with the Town's Commission-certified Local Comprehensive Plan (LCP); that, if located within a DCPC, the project is consistent with said DCPC; and finally, that the project's probable benefits outweigh the probable detriments. She said that the Chatham CWMP/FEIR is sufficiently detailed to provide adequate guidance for regulatory agencies for permitting, and that Commission staff recommends approval of the project with conditions.

Ms. Taylor then asked whether there were any Subcommittee member questions.

Ms. Taylor said that she noticed a lot of large lots on the map and she wondered whether those are undeveloped or open space owned by the Town or possible future development. Mr. Robert Duncanson, Director of Health & Environment for the Town of Chatham, said that a lot of those areas are already protected areas. He said that the Town of Chatham is very fortunate in that the Town owns a fairly significant amount of open space for wellhead protection and conservation purposes and in addition to that they also have the Chatham Conservation Foundation, which is a private land trust which also has a significant amount of holdings. He said that the Town does not have a flow neutral policy, but that they have a flow neutral regulation which was adopted by Town meeting in 2005. He said that the regulation doesn't limit development per se, but that it limits the amount of flow; it's a wastewater issue. He said it is not meant to usurp zoning, which is really the way to regulate density and development. He said that this regulation says you can't have any more wastewater flow than you could have under a Title V scenario. He said while it theoretically limits the number of bedrooms, he doesn't want people to get the misconception that it will regulate the size of the house or the density of development. He said that the size of the house and the density of development is a zoning issue and needs to be addressed as such.

Ms. Taylor then said that the Town is anticipating a 30% increase in the future flow and wondered whether that includes the switch from part-time to full time in all of the housing. Mr. Duncanson said that in Chatham, it is the subdivision of existing developed parcels that is more significant. He said that, unlike other communities, Chatham doesn't have a large amount of open space, large tracts of land, but what Chatham does have is a fair number of parcels that could be subdivided to create another one or two lots. He said that is where a majority of where that buildout comes from. He said that Chatham is going to be more impacted by the redevelopment of existing parcels more than anything else.

Ms. Taylor asked whether they expect a large shift from people who are just there in the summer to deciding to be there full time, year-round? Mr. Duncanson said that they haven't seen that to date. He said that every planner you talk to will have a different answer. He said that roughly 60% of the Town is non-resident tax payers. He said that number has been roughly the same over the past 22 years. He said that, looking at past trends, so far they haven't seen a substantial shift one way or the other.

Ms. Taylor then asked whether the Town is anticipating any other zoning changes for future development requiring larger lot sizes, restricting the type of development, requiring specific types of clusters, or requiring low impact development? Mr. Duncanson answered that Chatham has been working on a zoning bylaw re-write for almost as long as they have been working on the Comprehensive Wastewater Management Plan. He said that the Town is having discussions about revisions to the current zoning bylaw to basically put further limitations on development. He said that a number of efforts have been brought forth to Town Meeting, some more successful than others in recent years. He said that he doesn't think we are going to see any real substantial changes in lot sizes in Chatham. He said that was done a number of years ago and the Town doesn't have a lot of large tracts of land.

Mr. Graham asked how long it will take the Town to assess whether or not the Town is hitting its goals for the reduction and is that going to be apparent right away or will that be after a ten year project? He asked how the Town will figure out along the way that it is making progress and hitting targets. Mr. Duncanson answered that the Town will measure progress in a number of ways. He said that there have been a lot of discussions with the DEP about TMDL compliance and exactly how that is going to be measured. He said that from the scientific side of the ledger, it is going to be a fairly lengthy period of time before we know how effective we are being. He said there is something called travel time. He said that water on the Cape tends to move a foot per day, so that if you are close to the shoreline, the cleaner water will get there fairly rapidly, but if you are quite a ways inland, it may take years or tens of years before that cleaner water reaches the embayment. He said that there is a lag time between when you sewer those parcels and when the potential benefit reaches the embayment system. He said that so far the way they are talking about measuring adaptive management is by looking at expenditures, for example, how many houses have been sewered. He said that ultimately, it will be water quality monitoring and eel grass monitoring and those things out in the environment that will really show that we are

achieving the goal. He said that some smaller watershed will reach the goal sooner than larger watersheds.

Ms. Taylor then asked whether there were any local, state, or federal officials who had questions or would like to provide comments. There were none. She then invited the public to speak.

Mr. Fred Jensen, the Chairman of the Citizens Advisory Committee (CAC) for the Town of Chatham's Wastewater Management Planning Study, read his statement for the record. He said, "The members of the Citizens Advisory Committee (CAC) for Chatham's Wastewater Management Planning Study have provided input, over the past 12 years, to the development of virtually every aspect of Chatham's Final Comprehensive Wastewater Management Plan (FCWMP) and Final Environmental Impact Report (FEIR), both dated May 2009. The CAC enthusiastically endorses the FCWMP and the FIER in their entirety and strongly recommends that the Cape Cod Commission and the MA Executive Office of Energy and Environmental Affairs, MEPA Unit, promptly approve Chatham's FCWMP and FEIR. Such prompt approval will facilitate Chatham's desire to proceed as expeditiously as possible with the implementation of Phase I of the plan."

Hearing Officer, October 15, 2009
Marisa Mejia, Cape Cod Commission Regulatory Officer, acted as a Hearing Officer at the Cape Cod Commission to procedurally continue the public hearing to October 22, 2009 at 1:00 pm at the Cape Cod Commission.

Public Hearing, October 22, 2009
Ms. Taylor noted that the purpose of the public hearing was to discuss the draft decision for the Chatham Comprehensive Wastewater Management Plan. Ms. Mejia introduced the draft decision and gave an overview of the decision. She summarized the project description, stating that the project will take place in two phases, with a 20 year implementation schedule for Phase 1. She said that the CWMP has been underway since 1996. She described the four project alternatives. Ms. Mejia then discussed the general findings from the draft decision. She stated that the Commission finds that the applicant is the Town of Chatham, that the project consists of a centralized wastewater treatment system with sewer extensions to restore water quality to its impaired coastal embayments and the remainder of the Town. She said that the Chatham CWMP involves the implementation of an adaptive management approach that includes a two-phased expansion of the existing wastewater treatment facility presently located at Sam Ryder Road in Chatham, MA. She said that the proposed project is consistent with Chatham's zoning bylaws and that the project is not located within a District of Critical Planning Concern and that the Town of Chatham does not have a Commission-certified Local Comprehensive Plan. She said that the benefits of the CWMP include: protection of public health; improvement of the water quality in the aquifer and restoration of marine water quality to meet federally adopted TMDLs for nutrients and pathogens. She said that the detriments are limited to the construction activities and the long time frame it requires to implement the plan. In the issue area of Natural Resources, Ms. Mejia stated that the Commission finds that the proposed

treatment plant site and discharge locations do not appear to have conflicts with wetlands or rare species habitat. She said that, provided that the construction impacts do not impact vegetated areas outside the road layout, installation of sewer lines should be consistent with RPP requirements to protect rare species and wetlands, as well.

Mr. Cambareri then presented the findings in the issue area of Water Resources. He discussed the protection of drinking water and the protection and restoration of the ecological integrity of fresh water ponds. He said that the project also seeks to restore and protect the ecological integrity of marine waters. Mr. Cambareri also discussed the monitoring of marine water quality at the sentinel stations. Mr. Cambareri discussed the criteria that will be used in the process of prioritizing areas for sewering. He stated that the implementation of Phase 1 (to remediate watershed nitrogen loadings) as the method to meet TMDLs will require a period of 20 years. He discussed the Adaptive Management Plan and said that the sewering of the Stage Harbor watershed is a priority subsequent to the Initial Implementation Phase. He said that the Town of Chatham has been in discussions with the Town of Harwich on their potential shared use of Chatham's wastewater facility site. He said that there is the potential for expansion, should these regional discussions move forward. He said that any potential shared use of the site would require a modification to the decision. He said that the Town of Chatham has adopted a flow-neutral policy position for the CWMP. He said that the Chatham CWMP refers to discussions to potentially accept additional wastewater from the Muddy Creek watershed portion of Harwich. He said that enhanced natural attenuation and tidal flushing will be continually evaluated as the CWMP is implemented, and that the Town continues to participate and is open to regional opportunities for shared management. He said that the Town continues to make excellent progress on its Stormwater management efforts and that it will continue to work with other towns and the region on educational efforts. He discussed the Adaptive Management Plan and the Commission staff's suggestions for the plan.

Ms. Mejia reviewed the Conclusions section of the decision and identified that the project is consistent with the minimum performance standards of the RPP; that the project is consistent with the Town's local development by-laws, that the project does not fall within a District of Critical Planning Concern (DCPC), and finally, that the project's probable benefits outweigh the probable detriments. She listed the benefits of the project. She said that the draft decision recommends approval of the project with conditions. She then reviewed the general and natural resources conditions. Ms. Mejia stated that the DRI decision is valid for 7 years. She said that the project shall be constructed in accordance with the Final Comprehensive Wastewater Management Plan/Final Environmental Impact Report. She said that the Applicant may return to the Commission to seek an extension of the decision by the Regulatory Committee of the Commission. Ms. Mejia said that failure to comply with all of the conditions stated in the decision shall be deemed cause to revoke or modify the decision. In the issue area of natural resources, Ms. Mejia stated that sewer work within the roadway or road layout that may result in impacts within the 100 foot buffer to wetlands or vernal pools shall be permitted by the Chatham Conservation Commission. She said that potential impacts to rare species should be reviewed, and permits filed as necessary; as the specific

placement and construction phase of pumping stations occurs, each should be reviewed for impacts to rare species.

Mr. Cambareri concluded the staff presentation by discussing the water resources conditions. He stated that the Town shall submit copies of Ground Water Discharge Permit monitoring and compliance reports to the Commission. He said that the Town shall submit copies of public drinking water laboratory results and Annual Statistical Reports to the Cape Cod Commission. He said that within six months of the approval of the DRI, the Town shall convene a Technical Review Committee comprised of town and DEP and Commission staff. He said that sewering of Phase 1 areas, to achieve compliance with the TMDL, shall be prioritized over Phase 2 areas, to the extent practicable. Mr. Cambareri stated that regional opportunities shall be evaluated prior to implementing the Phase 2 expansion of the wastewater treatment facility. He said that implementation of Enhanced Natural Attenuation or tidal flushing to alter the implementation of the CWMP shall require consultation with the Commission. He stated that as the Town continues to regularly evaluate, manage, and improve stormwater collection and treatment, reports on improvement of water quality and progress as it relates to the CWMP and Stormwater Phase II regulations shall be included under Non-Structural Management actions as indicated in the Adaptive Management Plan Scope. He said that implementation of Enhanced Natural Attenuation or tidal flushing to alter the implementation of the CWMP shall require consultation with the Commission. Mr. Cambareri said that the Town of Chatham shall continue to participate in a regional study that will integrate the progression of regional planned sewering in the collective Pleasant Bay watershed. He said that the Town shall submit for Commission staff approval an Adaptive Management Plan. He said that Implementation Progress Reports shall be submitted to the Commission every 2 to 3 years, along with Marine and Surface Water Monitoring Reports, which shall be filed every 2 years.

Mr. Richardson moved that the subcommittee approve the draft decision for the Chatham Comprehensive Wastewater Management Plan. The motion was seconded by Mr. Graham. The motion was approved unanimously.

Ms. Pleffner moved to continue the public hearing to October 29, 2009 at 3:00 p.m. at the Assembly of Delegates Chamber at the First District Courthouse on Route 6A in Barnstable, MA. Mr. Graham seconded the motion and it was approved unanimously.

FINDINGS

General

G1. The Commission finds that the applicant is the Town of Chatham.

G2. The project is the Comprehensive Wastewater Management Plan for the town of Chatham, as described in the Final Comprehensive Wastewater Management Plan/Final Environmental Impact Report of May, 2009. The project consists of a

centralized wastewater treatment with sewer extensions to restore water quality to its impaired coastal embayments and the remainder of the Town.

G3. The Commission finds that the Chatham CWMP involves the implementation of an adaptive management approach that includes a two-phased expansion of the existing wastewater treatment facility presently located at Sam Ryder Road in Chatham, MA (Exhibit C attached to this decision in incorporated by reference). Phase 1 will treat approximately 1.3 mgd on an average annual basis to meet total nitrogen TMDL requirements. Phase 2 will expand this facility to 1.9 mgd on an average annual basis to serve the remaining areas of Chatham. Phase 1 and Phase 2 areas are identified on Exhibit B attached to this decision and incorporated by reference. The Commission finds that Phase 1 will be implemented over a 20-year period (approximately 2010 to 2030) and Phase 2 will be implemented over the following 10-year period (approximately 2030 to 2040).

G4. The Commission finds that the project will be constructed in accordance with the Final Comprehensive Wastewater Management Plan/Final Environmental Impact Report of May 2009, incorporated herein by reference. The Commission finds that any deviation from the CWMP/FEIR that affects TMDL compliance or otherwise changes or impacts the findings and/or conditions of this decision will be reviewed as a modification of this decision in accordance with the Commission's Enabling Regulations in effect at that time.

G5. Based on testimony provided by Mr. Bob Duncanson, Director of Health & Environment for the Town of Chatham, the proposed project is consistent with Chatham's zoning bylaws. The site of the proposed facility is the site of the town's existing wastewater treatment facility located on Sam Ryder Road. The project is not located in a District of Critical Planning Concern and the Town of Chatham does not have a Commission-certified Local Comprehensive Plan.

G6. The proposed project is consistent with Massachusetts State Revolving Loan regulations to provide infrastructure to existing development and provide wastewater capacity for denser development in designated areas for growth. The town has adopted a flow neutral sewer regulation for controlling development and redevelopment in existing residential areas that will be provided with new sewer services.

G7. As described in the Final EIR, the benefits of the Comprehensive Wastewater Management Plan include: protection of public health; improvement of the water quality in the aquifer and restoration of marine water quality to meet federally adopted TMDLs for nutrients and pathogens. The detriments are limited to construction activities and the long time frame it requires to implement the plan.

G8. As the first substantive public hearing on the DEIR/CWMP was held on May 22, 2008, this project was reviewed for consistency with the 2002 Regional Policy Plan.

Natural Resources

NR1. The RPP prohibits activities that result in adverse impacts to rare species or their habitat. Consequently, in general, where conflicts with rare species habitat do arise, the primary planning approach should be to avoid, and then to minimize the impacts. In response to an information request by the Town on the presence of rare species on the treatment plant site, the Natural Heritage and Endangered Species Program (NHESP) provided a letter in August 2006 indicating that two rare species which had recently been reported near the project site, New England bluet and Pine barrens bluet, would likely result in mapping a portion of the project site as priority habitat for rare species. Upon further review of the NHESP Habitat Atlases published in October 2006 and October 2008, NHESP determined that the Chatham Wastewater Treatment Plant Site does not occur within Estimated Habitat of Rare Wildlife or Priority Habitat according to a letter of May 18, 2009. The Commission finds that the proposed treatment plant site and discharge locations do not appear to have conflicts with wetlands or rare species habitat.

NR2. Sewer line installation within the roadway or road shoulders will likely qualify for an exemption from MESA review. Provided that the construction impacts do not impact vegetated areas outside of the road layout, installation of sewer lines should be consistent with RPP requirements to protect rare species and wetlands, as well.

Historic and Archaeological Resources

HR1. The Commission finds that the proposed project will not impact significant historic properties.

HR2. As noted in the Secretary's certificate, the Massachusetts Historical Commission (MHC) has requested more detailed project plans to help determine if the pump stations and other sewer project elements are located within or adjacent to archaeological sites and archaeologically sensitive areas. In order to ensure the project will not impact archaeological resources, the Applicant will need to submit final project plans to MHC for review.

Water Resources

WR1. The project affects the following water resources areas of the Town of Chatham as defined by the Regional Policy Plan:

- Wellhead Protection Area
- Potential Public Water Supply Area
- Fresh Water Recharge Area
- Marine Water Recharge Area
- Water Quality Improvement Area

WR2. Applicable water resources minimum performance standards are:

MPS 2.1.1.2.C.2: requires that development in estuary watersheds where critical nitrogen loads are exceeded or where there are documented water quality problems in the estuary to maintain or improve existing levels of nitrogen loading.

MPS 2.1.1.2.E.2: allows the use of public sewage treatment facilities within Water Quality improvement areas that are in Wellhead Protection Areas providing it includes the remediation of existing wastewater problems in the same Area. Requires treatment facilities to maintain hydrologic balance in the aquifer and demonstrate that there are no negative ecological impacts to surface waters. This standard also requires such facilities to be subject to MPS 2.1.2.1 through 2.1.2.7.

MPS 2.1.2.2: requires all sewage treatment facilities to be designed to achieve tertiary treatment with denitrification and meet a maximum 5-ppm total nitrogen discharge standard in the effluent or at the downgradient property line.

MPS 2.1.2.7: requires that applications for approval of public and private sewage treatment facilities shall include a plan for sludge disposal.

MPS 2.2.2.2: requires that in order to accommodate possible relative sea-level rise and possible increased storm intensity, ensure human health and safety, and protect the integrity of coastal landforms and natural resources, all new buildings, including replacements, or substantial improvements to existing structures within FEMA A-zones shall be designed to accommodate the documented relative sea-level rise rate in Massachusetts of at least one foot per 100 years, except as provided in MPS 2.2.2.13, and in V-zones shall be designed to accommodate relative sea-level rise rate of two feet per 100 years.

MPS 2.2.2.6: requires that except as provided in MPS 2.2.2.13, no new public infrastructure or expansion of existing infrastructure shall be made in flood hazard zones (FEMA A- and V-zones) unless it is shown that there is an overriding public benefit provided, and provided that such infrastructure will not promote new growth and development in flood hazard areas.

WR3. The location of the Wastewater Treatment Facility is at the town's existing treatment facility site. The Facility discharges treated effluent into the Monomoy Lens of the Cape Cod Aquifer and within the Wellhead Protection Area to the Indian Hill Well, which is not online due to pre-existing contamination. The facility is also located in the Marine Water Recharge Area to Cockle Cove Creek, Bucks Creek, Taylors Pond and Sulphur Springs.

WR4. The protection of drinking water is a major goal of the RPP (RPP Water Resources Goal 2.1.3). The town of Chatham has undertaken appropriate actions to protect its drinking water quality including the adoption of a water resource protection district overlay and bylaw, acquired open space, performed required water quality sampling, and produced consumer confidence reports. Land use controls and regulations that have been adopted and implemented

over the last 30 years have been effective in protecting Chatham's water supply. There are nine wells in Chatham. According to the 2008 water quality report Chatham supplies have low concentrations of nitrogen ranging from .5 to 2.2 ppm with an average of 0.72 ppm. These concentrations are well below state and federal drinking water regulations and the Regional Policy Plan's nitrogen loading standard of 5 ppm. The benefits of sewering the priority areas of the town for TMDL compliance and other Areas of Concern will have an additional benefit of protecting drinking water that originates in the Zone II areas by further reducing nitrogen and other contaminants from entering the Zone II areas. The town is in the process of developing new source approvals for new wells in the western part of town that are in a Potential Public Water Supply Area under the RPP. The Indian Hill Well is off-line due to concerns for pre-existing volatile organic contamination.

WR5. Protection and restoration of the ecological integrity of fresh water ponds is also a goal of the Regional Policy Plan. There are 44 fresh water ponds in Chatham. Commission finds that the Town of Chatham has undertaken significant actions concurrent with the CWMP/FEIR including an assessment of the status and management needs of its fresh water ponds. Information about Chatham Ponds was initially presented in the Commission's Cape Cod Ponds and Lakes Atlas of 2004 and more recently the CWMP included an Action Plan for the Town of Chatham Ponds, dated November, 2003 and prepared by Stearns & Wheler, LLC of Hyannis, MA and EcoLogic, LLC of Cazenovia, NY. As a result of the Ponds assessments, Chatham is in the process of conducting an Alum treatment of Stillwater and Lover Lake. The Action report indicates that the Town will continue to monitor the conditions of 17 ponds. The implementation of the Town-wide Phase 1 and 2 Plan will ultimately serve parcels in close proximity to the ponds that will have an additional benefit of removing septic system phosphorous. Continued implementation of Stormwater Management Plans will also address phosphorous and bacterial sources from runoff. Commission staff will continue to work with the town through their participation in the PALS water quality snap-shot offered by the School of Marine Science and Technology at the University of Massachusetts at Dartmouth.

WR6. The restoration and protection of the ecological integrity of marine waters is a major goal of the Regional Policy Plan (RPP Water Resources Goal 2.1.1). Section 303(d) of the Federal Clean Water Act requires each state to (1) identify waters for which effluent limitations normally required are not stringent enough to attain water quality standards and (2) to establish Total Maximum Daily Loads (TMDLs) for such waters for the pollutants of concern. The TMDL "allocation" establishes the maximum loadings (of pollutants of concern), from all contributing sources, that a water body may receive and still meet and maintain its water quality standards and designated uses, including compliance with numeric and narrative standards. The Coastal systems shown in Exhibit D, appended to this decision and incorporated by reference, and Tables 1A, below were identified by the state as impaired waters due to nitrogen loading, primarily from septic systems in their watersheds and bacteria. For the purposes of the

RPP, these embayments and their watersheds are considered impaired and water quality improvement is the goal (MPS 2.1.1.2.C.2).

TABLE 1 a. Chatham Embayments Listed in the Proposed Massachusetts 2008 Integrated List[1]

Name	Segment ID	Description	Size	Pollutant Listed
Stage Harbor				
Oyster Pond	MA96-45_2008	Including Stetson Cove	0.21 sq mi	Nutrients & Pathogens
Oyster Pond River	MA96-46_2008	Outlet of Oyster Pd to confluence with Stage harbor, Chatham	0.14 sq mi	Nutrients & Pathogens
Stage Harbor	MA96-11_2008	From the outlet of Mill Pd (including Mitchell River) to the Confluence with Nantucket Sound at a line from the southernmost point of Harding Beach southeast to the Harding Beach Point, Chatham	0.58 sq mi	Nutrients & Pathogens
Mill Pond	MA96-52_2008	Including Little Mill Pond (PALIS #96174), Chatham	0.06 sq mi	Nutrients
Sulphur Springs				
Harding Beach Pond	MA96-43_2008	Locally known as Sulphur Springs (northeast of Bucks Cr), Chatham	0.07 sq mi	Pathogens & Nutrients
Bucks Creek	MA96-44_2008	Outlet from Harding Beach Pond (locally known as Sulphur Springs) to confluence with Cockle Cove, Chatham	0.02 sq mi	Pathogens & Nutrients
Taylors Pond				
Mill Creek	MA96-41_2008	Outlet of Taylors Pond to confluence with Cockle Cove, Chatham	0.03 sq mi	Pathogens & Nutrients
Taylors Pond	MA96-42_2008	Chatham	0.02 sq mi	Pathogens & Nutrients

[1] All segments are in Category 5, with the exception of Mill Pond, which is in Category 4 a.

Table 1A. The Pleasant Bay System Waterbody Segments in Category 5 of the Massachusetts 2002 and 2004 Integrated List[1]

NAME	WATERBODY SEGMENT	DESCRIPTION	SIZE	POLLUTANT LISTED
Pleasant Bay System				
Crows Pond	MA96-47_2002	To Bassing Harbor, Chatham	0.19 sq mi	-Nutrients
Frostfish Creek	MA96-49_2002	Outlet from cranberry bog northwest of Stony Hill Road to confluence with Ryder Cove, Chatham	0.02 sq mi	-Nutrients -Pathogens
Ryder Cove	MA96-50_2002	Chatham	0.17 sq mi	-Nutrients -Pathogens
Muddy Creek	MA96-51_2002	Outlet of small unnamed pond south of Countryside Drive and north-northeast of Old Queen Anne Road to mouth at Pleasant Bay, Chatham	0.05 sq mi	-Pathogens

[1] These segments are also classified as Category 5 on the Draft 2006 Integrated List.

WR7. The Town of Chatham was one of the first Cape towns to engage the Massachusetts Estuary Project to better document the health and critical nitrogen loads for its marine waters. The MEP was developed by the Commonwealth in response to the need of coastal communities for scientific evidence on the nature of their marine waters by using a more detailed approach to these assessments. This effort took a substantial period of time, in part, due

to the many organizational and institutional matters that were required to be tested and resolved in this multi-million dollar, multiple-year project for Southeast Massachusetts. The MEP through the use of the "Linked Water Quality Model" and several years of citizen water quality monitoring results, determined the nitrogen thresholds for Chatham's marine waters in a series of technical reports, listed in the CMWP. These thresholds were then codified into TMDLs by EPA under the Federal Clean Water Act. Shown below are target percentages of nitrogen to be removed through wastewater management according to a scenario listed in the MEP Technical Report "as one possible restoration scenario" to achieve compliance with the Final Total Maximum Daily Load. These target percentages are referenced in the EPA letters of approval of the South Coastal and Pleasant Bay TMDLs (included in the materials list of this decision) and are required for compliance with MPS 2.1.1.2.C.2.

Percent of Septic System Derived Wastewater to be Removed from Watershed

Stage Harbor
Oyster Pond 100%
Oyster River 100%
Stage Harbor 100%
Mitchell River 50%
Mill Pond 50%
Little Mill Pond 50%

Sulphur Springs
Buck Creek 62%
Cockle Cove 0%

Taylor's Pond
Taylor's Pond 60%
Mill Creek 100%

Pleasant Bay
Crows Pond 0%
Pleasant Bay 50%
Ryders Cove 75%
Frost Fish Creek 100%
Bassing Harbor 0%
Upper Muddy Creek 100%
Lower Muddy Creek 76%

WR8. Efforts to comply with the TMDL by reducing nitrogen loading are expected to result in: 1) restoration of natural distribution of eelgrass as a habitat for shell and finfish, 2) prevent algae blooms, 3) protect benthic communities from impairment or loss, and 4) maintain dissolved oxygen concentrations that are protective of estuarine environments.

WR9. The TMDL requires monitoring of marine water quality at sentinel stations as shown on Exhibit B, appended to this decision and incorporated by reference, to provide for a primary measure of success of the CWMP goal to restore water quality. The TMDL provides nitrogen water quality targets for those embayments in comparison to present observed nitrogen concentrations, as shown in the Tables 2 excerpted below from the TMDLs for Chatham's South-coastal and Pleasant Bay embayment systems.

TABLE 2. "Existing" Total Nitrogen Concentrations (Observed and Modeled) and Calculated Target Threshold Nitrogen Concentrations Derived for the Southern Chatham Embayment Systems. Concentrations appear as ranges when two or more segments of the water body were sampled.

Embayment Systems and Sub-Embayments	Observed Total Nitrogen Concentration [1] (mg/L)	System Threshold Nitrogen Concentration (mg/L)
Stage Harbor		
Oyster Pond	0.51-0.74	0.38 (near sta CM1-A)
Oyster Pond River	0.49	
Stage Harbor	0.39-0.50	
Mitchell River	0.46	0.38 (near sta CM5-A)
Mill Pond	0.49	
Little Mill Pond	0.74	
Sulphur Springs		
Sulphur Springs	0.58	0.38 (sta CM 8)
Bucks Cr	0.52	
Cockle Cove Cr	0.73-1.86	
Taylors Pond		
Mill Cr	0.52	
Taylors Pond	0.53	0.38 (sta CM 10)

[1] Based on annual means from 1999 – 2005. Individual yearly means and standard deviations of the average are presented in Tables A of Appendix A

Table 2. Observed present nitrogen concentrations and target threshold nitrogen concentrations derived for the Pleasant Bay System

Subembayments (Sentinel Stations are in bold)	Sub-embayment Observed Total Nitrogen Concentration [1] (mg/L)	Sub-embayment Observed Bioactive Nitrogen Concentration (mg/L)	Target Threshold Bioactive Nitrogen Concentrations (mg/L)
Muddy Creek-upper (PBA-05a)	1.26	0.70	0.41
Muddy Creek-lower (PBA-05)	0.57	0.24	0.21
Pleasant Bay	0.44-0.73[2]	0.14-0.19[2]	0.16
Ryders Cove (PBA-03)	0.42-0.72[2]	0.16-0.25[2]	0.16
Frost Fish Creek-lower (M-14)	1.16	0.35	0.17
Crows Pond (PBA-04)	0.84	0.21	0.15
Bassing Harbor (PBA-022)	0.49	0.12	0.12
Chatham Hbr – upper (PBA-01)	0.35-0.43[2]	0.10-0.11[2]	0.10
Atlantic Ocean (Boundary Condition)		0.09	

[1] calculated as the average of the separate yearly means of 2000-2005 data. Overall means and standard deviations of the average are presented in Tables A-1 Appendix A
[2]listed as a range since it was sampled as several segments (see Table A-1 Appendix A)

WR10. The observed concentration values of Table 2 above are at approximate mid-ebb tide and the threshold values of Table 2 above are the tidal average. The Commission finds that based on MEP Technical Reports included in the materials submitted for the record, that it is generally true that the mid-ebb tide concentration is very close to the tidally averaged concentration, except in areas where there are wide swings like in the channels of tidal rivers that are connected to a high quality open water.

WR11. The FEIR has identified 80 sewersheds including 14 commercial areas that will ultimately be hooked-up to the treatment facility at the end of Phase 2, as shown on Exhibits E and F, appended to this decision and incorporated by reference. Phase 1 includes 57 of the 88 sewersheds and will hook-up 72% of the town. Completion of the Phase 1 sewersheds has been designed to provide compliance with the percent removal of septic system wastewater as specified in the TMDL.

WR12. The CWMP demonstrates compliance with the TMDLs through a commitment to the 20 year Phase 1 sewer plan to remove appropriate levels of nitrogen to comply with TMDL target removal percentages. Chatham Town meeting (2009) has voted for 59.5 million dollars for the "Initial Implementation Phase" of Phase 1, as shown on Exhibit G, as appended to this decision and incorporated by reference. The "Initial Implementation Phase" includes the upgrade to the Treatment facility and installation of the main sewer line that crosses through a number of sewersheds to hook-up areas along Route 28. The Initial Implementation Phase will provide the backbone structure for the subsequent sewer expansions into the Phase 1 and 2 sewersheds. Chatham intends to expedite this initial work using federal Stimulus funds under the American Recovery and Reinvestment Act.

WR13. The town of Chatham has established several criteria that will be used in the process of prioritizing areas for sewering including:

High priority watersheds based on TMDLS;
Related capital projects where projects can be completed with mutual advantage;
Coordination with other infrastructure projects (roads, water, etc.) including Mass Highway Route 28 work;
Coordination with private development and redevelopment that offsets some public expense for infrastructure;
Coordination with regional efforts, and;
Prioritization recommendations of the town's Technical Advisory Group and Water and Sewer Committee.

WR14. The CWMP indicates that "the implementation of Phase 1 (to remediate watershed nitrogen loadings) as the method to meet the TMDLs will require a

period of 20 years. The positive response of water quality and benthic habitat will require several more years, given the lag of groundwater travel time from the watersheds to the estuaries, and the release and flushing of the stored benthic nitrogen loads."

WR15. The CWMP proposes a system of adaptive management to gauge the overall success of meeting the water quality goals.

WR16. The scope of an Adaptive Management Plan, Exhibit A of this decision, with monitoring conditions has been reviewed and agreed upon by the town and Cape Cod Commission.

WR17. The Stage Harbor watershed requires a 100% removal of wastewater nitrogen sources for most of the watershed to achieve TMDL compliance and restore water quality. It is totally contained with in the town boundaries and is adjacent to the Initial Implementation Area.

WR18. Completing the sewering of the Stage Harbor watershed as a priority subsequent to the Initial Implementation Phase will provide for a shorter period of restoration of water quality for this specific system. Completion of sewering within this watershed will also provide a best case for demonstrating the achievement of the CWMP goals through the evaluation and review of project's implementation and monitoring data under the proposed Adaptive Management Plan.

WR19. The CWMP/FEIR provided sufficient documentation to demonstrate that the existing wastewater treatment facility and effluent recharge site could be expanded to provide infiltration capacity to handle the average annual flows of the Phase 2 town-wide plan of 1.9 mgd. The June 2008 Modeling Tech Memo in the CWMP/FEIR Appendix G indicates that at 30 gpm/ft2 an infiltration area of 140,000 to 200,000 ft2 would be needed for Phase 1 and 2 and provide a 100 % redundancy.

WR20. The proposed Orbal treatment will achieve nitrogen concentrations of 3 ppm. The TMDL concentration for Cockle Cove is 3 ppm. Although the Orbal technology is new to Cape Cod, the technology is well founded with there being over 658 installed applications throughout the US with two presently in Massachusetts. The draft groundwater discharge permit application is specifying 3 ppm total nitrogen in the effluent for compliance.

WR21. According to the June 2009 Groundwater Monitoring Report, associated with the Groundwater Discharge Permit, groundwater monitoring of the existing facility consists of measuring water levels at 50 locations and taking groundwater samples from 8 wells at 6 locations three time a year, as shown on Exhibit H, as appended to this decision and incorporated by reference. Samples are analyzed for nitrate, total nitrogen, sodium, temperature, Specific Conductance and pH. Since 2007 analysis also included Total Organic Carbon. Results from the

monitoring program are consistent, indicating treated effluent flow is constrained to the upper aquifer and migrates towards Cockle Cove Creek.

WR22. Groundwater modeling as described in the Technical Memorandum of the CWMP, Appendix G, was performed by the town's consultant and several Linked Water Quality Modeling scenarios conducted by SMAST, as described in the MEP Technical Memorandum of the CWMP, Appendix L, was undertaken by the Town to better gauge the influence of the use of the site relative to receiving downgradient waters of Cockle Cove, Sulphur Springs and Taylor's Pond. The FEIR states that the results show that TMDL will be met at the Sentinel station in Bucks Creek and result in an acceptable nitrogen concentration in Cockle Cove. The modeling also showed compliance with the Taylor's Pond TMDL concentration. The results indicated the TMDL threshold of 0.38 mg/l total nitrogen would be exceeded in Sulphur Springs by 0.02 mg/l to 0.04 mg/l for Phase 1 and 2 conditions. DEP has recommended that the town proceed with the initial Phases of the sewer plan, but undertake further investigations to determine the maximum nitrogen load which can be assimilated in the Buck's Creek/Cockle Cove/Sulfur Springs system.

WR23. Commission finds that it concurs with DEP's recommendation to proceed with the initial Phases of the sewer plan. The resolution of the potential for substantial groundwater underflow, as one component to clarify the assimilative capacity of the system, as discussed in the CWMP, can be addressed by conducting a hydrogeologic investigation of the watershed specific hydrogeological conditions near the mouth of the system.

WR24. A portion of the selected Chatham effluent recharge site is in a Zone II to Chatham's Indian Hill water supply well. The location of such sites in the Zone II is not prohibited by either state or county RPP regulations, when the objective of the facility is to improve water quality. However, recently revised Groundwater Discharge Permit Regulations adopted by the MassDEP includes stringent treatment standards for discharges in Zone IIs. One aspect of these regulations is meant to address the issue of pharmaceuticals and personal care products in wastewater by adopting a very low Total Organic Carbon (TOC) treatment level. The treatment of wastewater as proposed in the CWMP/FEIR will result in an effluent nitrogen concentration of 3 ppm, but to meet the new TOC standard would affect a significant cost to the town. The FEIR included a technical assessment on alternatives to meet this standard including the abandonment or wellhead treatment of the Indian Hill Well as described in the Technical Memorandum contained in the CWMP Appendix Y-1. The provision of high quality untreated drinking water is a goal of the Regional Policy Plan (RPP Water Resources Goal 2.1.1). Commission staff worked with the Cape Cod Water Protection Collaborative and DEP staff to further consider the ramifications and benefits of this new regulation on all Cape Cod Communities. Some relief in the regulations was subsequently adopted by DEP. During the course of the CWMP implementation and bringing new wells online, the town and regulatory agencies

will continue to monitor drinking water and potential changes in aquifer conditions.

WR25. A portion of the discharge site is located in the Zone II and it is unlikely that the pumping conditions of the Zone II delineation will be met over the next 30 years of this project's implementation with the Indian Hill well off-line. Current groundwater modeling indicates that the predominant groundwater flow pattern from the loaded site will be towards the coast, not the interior where the wells are located. The Commission concurs with the resolution that the Town reached with DEP on this matter as described in the meeting notes of February 11, 2009 in the CWMP Appendix Y-2, that the treatment plant can proceed as designed without substantial changes for TOC removal or treatment at the).

WR26. The Commission finds that it concurred with the Draft-CWMP/DEIR proposal that disinfection may not be warranted for treated effluent recharge at this site, given that there is essentially natural pathogen removal through the proposed sand beds and that the predominate groundwater flow direction is towards the coast, not into Water Supply areas. MassDEP has required disinfection and the chosen method is UV radiation.

WR27. The CWMP/FEIR includes a map of the present groundwater monitoring program for the effluent recharge site. The groundwater monitoring program is a component of the DEP Groundwater Discharge Permit which the town recently submitted to DEP. Commission staff will provide input on the monitoring program through that process. The Commission recommends that the program include groundwater monitoring program for water levels, stream flow and water quality, based upon a review of the existing data. Additional parameters such as ammonia, alkalinity should be added and occasional monitoring of TOC and PCPP should be considered by the Technical Review Committee as described in the Adaptive Management Plan scope attached to this decision as Exhibit A.

WR28. The Town of Chatham has been in discussions with the Town of Harwich on their potential shared use of Chatham's wastewater facility site. Because the Harwich CWMP has been delayed, fundamental information on which to base decisions is presently not available. Prior to proceeding with the potential shared use of the site, additional site characterization would need to be conducted to determine 1) if the treatment capacity could be expanded, 2) if the site has the capacity for expanded subsurface disposal and 3) if the assimilative capacity of the downgradient waters can receive the increase of nitrogen load. The Commission finds that allowing for the Town of Harwich to share Chatham's wastewater facility site could be advantageous. Potential shared use of the site would require a modification of this decision in accordance with the Commission's Enabling Regulations Governing Review of DRI.

WR29. The Town of Chatham has adopted a flow-neutral policy position for the CWMP. This policy addresses potential undesired growth that can accompany the installation of sewers. The flow neutral position has been implemented by

the town as a sewer regulation which specifies that a parcel of land for development or re-development is only apportioned that amount of flow that would be allowed under Title 5 and/or other town health regulations. This does not mean that the CWMP limits all growth. The design sewer flow incorporates additional flows for buildout conditions according to zoning. The buildout conditions predict a 33% and 35% increase for commercial and residential flows respectively. This is a conservative approach to designing flow capacity for the treatment facility. The CWMP also designates additional increase of 13% of existing commercial flows for infilling, affordable housing, laundry and Chatham Bars Inn.

WR30. Commission staff is working with the DEP to develop regulatory guidelines that will be used for evaluating flow-neutral policies related to the Environmental Bond Bill and SRF applications for 0% loans. It is likely that these regulations will become effective during the course of the CWMP implementation.

WR31. The CWMP/FEIR addresses a number of regional wastewater management issues within the context of Chatham's demonstrated need. The CWMP, in response to a question from the Pleasant Bay Alliance, indicates that sewer extensions for the Phase 1 Plan would prioritize the reduction of nitrogen in the watersheds to the south coastal embayments to Stage Harbor, Sulphur Springs, and Taylor's Pond.

WR32. The Commission recommends that the town participate in a regional study that will integrate the progression of planned sewering in the collective Pleasant Bay watershed with MEP scenarios to project the progress of improved water quality in the Bay. This assessment would be done independent of the FEIR/DRI timeframe, but inform decisions about the plan's phased implementation.

WR33. The reductions of nitrogen in the shared watersheds to Pleasant Bay including Muddy Creek involve neighboring towns of Harwich, Orleans and Brewster. A substantial portion of the Muddy Creek watershed falls in the Town of Harwich. Commission staff provided a nitrogen loading breakdown by town for the Pleasant Bay Resource Management Alliance Working Group. The existing attenuated nitrogen load for Muddy Creek is comprised of 36% from Chatham and 64% from Harwich. The Chatham CWMP/FEIR refers to discussions to potentially accept additional wastewater from the Muddy Creek watershed portion of Harwich.

WR34. Enhanced natural attenuation and tidal flushing are other potential approaches for reducing nitrogen in the watershed to Muddy Creek and potentially other systems. The CWMP/FEIR indicates that the response to preliminary characterization work conducted to modify a dike on the upper portion of Muddy Creek to convert it from a brackish to freshwater system to enhance attenuation was met with citizen opposition. According to the CWMP/FEIR this regional effort is presently targeting inlet modification over stream flow modifications. A

recent draft report by Applied Coastal Engineering Resources indicates that tidal flushing of Muddy Creek can be substantially improved with a 24 ft culvert.

WR35. The CWMP/FEIR indicates the town will continue to participate and be open to potential regional opportunities for shared management, infrastructure and enhanced natural attenuation.

WR36. The Town of Chatham is a Phase II regulated community for Stormwater management CWMP, which indicates that the Town has made excellent progress on its Stormwater management efforts and that it will continue to work with other towns and the region on educational efforts, including the Pleasant Bay Alliance and Project Storm. Continued implementation of the Stormwater management will further reduce nitrogen from run sources and also address phosphorous and bacterial sources from runoff.

WR37. The Chatham CWMP/FEIR outlines an Adaptive Management Plan to help guide the implementation of the Plan and to monitor its success. Items outlined include:

- Implementation of Plan
- Documentation of capital expenditures
- Compliance with the groundwater discharge permit
- Reporting on Estuary water 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

WR38. Commission staff in its report to the Cape Cod Commission subcommittee indicated that it has worked with the town and its consultant to provide additional detail on the Adaptive Management Plan. A scope for the Adaptive Management Plan is included with this decision as Exhibit A. Additional items in the Adaptive Management Plan Scope include:

- Reporting of the above data and its use for demonstrating achievement of the water quality goals of the TMDL,
- Reporting progress on the status of the CWMP implementation in regards to the areas sewered and percent of nitrogen removed and comparison to targeted percent removals,
- Estimated and planned accomplishments at regular intervals through Phase 1
- Incorporation of results from MEP scenarios being performed for neighboring towns,
- As sewering increases and potential water supplies are added over the long term that additional groundwater modeling should be conducted when necessary

WR39. In conclusion, Chatham's CWMP/FEIR/DRI represents the region's first truly comprehensive management plan to address coastal water quality degradation. Cape Cod Commission staff recommends approval of the Chatham CWMP/FEIR/DRI with conditions specific to monitoring, reporting, implementation schedule and adaptive management.

CONCLUSION

Based on the findings above, the Commission hereby concludes:

- The proposed project is consistent with the applicable Minimum Performance Standards of the Regional Policy Plan.
- The proposed project is consistent with Chatham local development by-laws.
- The project does not fall within a District of Critical Planning Concern (DCPC).
- The probable benefits of the proposed project outweigh the probable detriments resulting from the development. Project benefits include:
    - Reduction in nitrogen load
    - Reduction in wastewater flows
    - Significant stormwater improvements, including LID-measures, pre-treatment and improved quality
    - Decrease in traffic generated
    - Decrease in impervious coverage
    - Increase in naturally vegetated areas
    - Increased tax revenue
    - Reduction in quantity of hazardous materials

The Commission hereby approves with conditions the application of the Town of Chatham CWMP project as a DRI, provided the following conditions are met:

General Conditions

G1. This DRI decision is valid for 7 years. The Town of Chatham shall seek an extension of this DRI permit prior to the expiration of this DRI in accordance with the Commission's Enabling Regulations.

G2. The proposed project shall be constructed and implemented in accordance with the Final Comprehensive Wastewater Management Plan/Final Environmental Impact Report, May 2009, prepared by Stearns and Wheler, consistent with the findings and conditions of this decision and contingent upon Town Meeting funding. Changes to the CWMP that would affect TMDL

compliance or otherwise change or impact the findings and/or conditions of this decision, shall be reviewed and evaluated through a modification to the DRI decision pursuant to the Commission's Enabling Regulations in effect at the time of the request. The applicant shall submit to the Commission any additional information deemed necessary to evaluate any modifications to the approved plan.

G3. On or before October 29, 2015, the Applicant may return to the Commission to seek an extension of this decision by the Regulatory Committee of the Commission. If said extension is approved, said extension may allow the Applicant to return to the Commission one year prior to the expiration of the extension decision to seek either a renewal or further extension of the DRI approval in accordance with the Commission's Enabling Regulations in effect at the time of the request.

G4. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this decision

G5. The applicant shall construct and implement the development in accordance with the Adaptive Management Plan. The Adaptive Management Plan scope (Exhibit A) is attached to and incorporated into this decision by reference.

Natural Resources

NR1. Sewer work within the roadway or road layout that may result in impacts within the 100 ft buffer to wetlands or vernal pools shall be permitted by the Chatham Conservation Commission. Potential impacts to rare species should be reviewed, and permits filed as necessary; as the specific placement and construction phase of pumping stations occurs, each should be reviewed for impacts to rare species.

Historic and Archaeological Resources

HR1. Before beginning construction of any subsurface work, the Applicant shall contact MHC for a determination of whether a review of the project is necessary in order to protect archaeologically sensitive areas, and the applicant shall conduct such review as required by MHC.

HR2. If aboveground structures necessary for the project are located near or adjacent to historic areas/structures or cultural landscapes, or both, the Applicant shall contact MHC and the Town of Chatham Historic Business District Commission, as applicable, to determine whether a review of the project is necessary by either. The applicant shall conduct such reviews as required by MHC or the Town of Chatham Historic Business District Commission, or both.

Water Resources

WR1. Upon approval of the Development of Regional Impact, the Town of Chatham shall submit on-going copies of Ground Water Discharge Permit monitoring and compliance reports, as identified in the Adaptive Management Plan scope attached to this decision as Exhibit A, simultaneously with submission to DEP to the Cape Cod Commission.

WR2. Upon approval of the Development of Regional Impact, the Town of Chatham shall submit copies of public drinking water laboratory results and Annual Statistical Reports, simultaneously with submission to DEP to the Cape Cod Commission.

WR3. Within 6 months of the approval of the DRI, the Town shall convene a Technical Review Committee comprised of town, DEP and Commission staff, as described below in the Adaptive Management Plan scope of Exhibit A of this decision.

WR4. Sewering of Phase I areas, to achieve compliance with the TMDL, shall be prioritized over Phase 2 areas, to the extent practicable. The extent of practicability, as defined in Finding WR13 shall be determined in consultation with the Commission.

WR5. After the Initial Implementation Phase is completed, sewer hook-ups for the Stage Harbor Oyster River and Oyster Pond watershed areas should be prioritized within the Phase 1 Area, to the extent practicable, so that the TMDL required percent nitrogen removals are achieved expeditiously for the Stage Harbor, Oyster River and Oyster Pond Watersheds. The extent of practicability as defined in Finding WR13, shall be determined in consultation with the Commission.

WR6. Regional opportunities to achieve TMDL compliance for Muddy Creek and infrastructure sharing with Harwich, and other opportunities for regional wastewater management, shall be evaluated prior to implementing the Phase 2 expansion of the wastewater treatment facility.

WR7. As the town continues to regularly evaluate the health of the ponds and progresses in its in-pond and watershed protection efforts according to the Action Report contained in the CWMP, reporting on improvements in water quality or new efforts as it may relate to the CWMP implementation shall be included under Non-Structural Management actions as indicated in the Adaptive Management Plan Scope, Exhibit A of this decision.

WR8. As the town continues to regularly evaluate, manage and improve stormwater

collection and treatment, as indicated in the CWMP, reports on improvement of water quality and progress as it relates to the CWMP and Stormwater Phase II regulations shall be included under Non-Structural Management actions as indicated in the Adaptive Management Plan Scope, Exhibit A of this decision.

WR9. As the town continues to assess opportunities for Enhanced Natural Attenuation or tidal flushing to reduce watershed nitrogen loads and improve stormwater collection and treatment, as indicated in the CWMP, reports on improvement of water quality and progress as it relates to the CWMP shall be included under Non-Structural Management actions as indicated in the Adaptive Management Plan Scope, Exhibit A of this decision.

WR10. Implementation of Enhanced Natural Attenuation or tidal flushing to alter the implementation of the CWMP shall require consultation with the Commission.

WR11. Modeling by SMAST indicates that the nitrogen loads from the proposed sewage treatment plant at future flows will not meet the nitrogen threshold at the sentinel stations at Buck's Creek. DEP's has recommended that the town proceed with the initial Phases of the sewer plan, but undertake further investigation to clarify the maximum nitrogen load which can be assimilated in the Buck's Creek/Cockle Cove/Sulfur Springs system. The resolution of the potential for substantial groundwater underflow, as one component to clarify the maximum nitrogen load, as discussed in the CWMP, shall be addressed by conducting a hydrogeologic investigation of the watershed specific hydrogeological conditions near the mouth of the system, unless the town is able to demonstrate to the satisfaction of the Commission that the assimilative capacity of the system can otherwise be achieved or mitigated to achieve the TMDL.

WR12. The Town of Chatham shall continue to participate in a regional study that will integrate the progression of regional planned sewering in the collective Pleasant Bay watershed with MEP scenarios to evaluate the progress of improved water quality in the Bay. This assessment would be done independent of the FEIR/DRI timeframe, but may inform decisions about the plan's phased implementation.

WR13. The Town shall submit for Commission staff approval an Adaptive Management Plan that incorporates the scoping items for monitoring, evaluation and reporting as described in Exhibit A, attached to this decision, of the approval of the DRI according to the timetable below. The AMP shall detail the resources necessary to implement the aspects of the Plan.

a. Initial Meeting with staff within 6 months of the decision
b. Submit initial draft within one year of the decision.
c. Submit Final Adaptive Management Plan for approval within 2 years of the decision.

WR14. Implementation Progress Reports described in the Adaptive Management Plan scope, Exhibit A of this decision, shall be submitted to Commission staff for review and approval every 2 to 3 years or simultaneously with a Project Evaluation Form submitted to DEP as part of the State Revolving Loan Application.

WR15. Marine and Surface Water Monitoring Reports of the Adaptive Management Plan Scope, Exhibit A of this decision shall be filed every 2 years. The Technical Review Committee comprised of Cape Cod Commission staff, DEP and the Town shall review the monitoring reports not less than every 5 years for modifications or changes to the monitoring program.

The Cape Cod Commission hereby approves with conditions the application of the Town of Chatham for the Development of Regional Impact as outlined in this decision pursuant to Sections 12 and 13 of the Act, c 716 of the Acts of 1989, as amended for the proposed Chatham Comprehensive Wastewater Management Plan.

29 Oct 2009

John D. Harris
Commission Chair

Date

COMMONWEALTH OF MASSACHUSETTS

Barnstable, ss

Oct 29, 2009

Before me, the undersigned notary public, personally appeared _____, in his/her capacity as Chairman of the Cape Cod Commission, whose name is signed on the preceding document, and such person acknowledged to me that he/she signed such document voluntarily for its stated purpose. The identity of such person was proved to me through satisfactory evidence of identification, which was [ ] photographic identification with signature issued by a federal or state governmental agency, [ ] oath or affirmation of a credible witness, or [✓] personal knowledge of the undersigned.

Notary Public

My Commission Expires:

10, 13, 11

Exhibit A - Adaptive Management Plan Scope

The Decisions for Adaptive Management of the plan's implementation shall be based upon the review and evaluation of the monitoring and implementation conditions outlined above. The town shall establish a technical review committee comprised of representatives including, but not limited to, the town, DEP and Cape Cod Commission. The TRC shall meet as required to review the plan's implementation status and monitoring components and provide input to the town's decisions for next steps. Items to be considered as part of the Adaptive Management Plan include but are not limited to:

- Implementation of Plan
- Documentation of capital expenditures
- Compliance with the groundwater discharge permit
- Reporting on Estuary water 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
- Potential evaluations and changes as needed

The primary purpose of the AMP is to insure the cost-effective achievement of the Town's CWMP goal to restore impaired marine water quality and habitat. The CWMP will achieve this goal by sewering in the Phase 1 Area over the course of the next 20 years. There are several types of monitoring and evaluation components of the AMP:

Implementation Progress Reports– measuring progress
Monitoring and reporting on the progress of the plan is one component of the type of review that the Commission and DEP will require to ensure that the CWMP is implemented. Major milestones for the project as described in the CWMP are:

- Initial Sewer Area to be completed in 2012
- Phase I sewer areas shall be prioritized over Phase II Areas
- Regional opportunities to achieve TMDL compliance for Muddy Creek and infrastructure sharing with Harwich, and other opportunities for regional wastewater management, shall be evaluated prior to implementing the Phase II wastewater facility expansion.

The following items shall be included for measuring progress on the plan's implementation including milestones where appropriate. Implementation Progress Reports shall be submitted to the Commission together with any Project Evaluation Form also submitted to DEP or every 2 to 3 years and include the following:

1) Capital Expenditures to date
2) Amount sewered
3) Percent removed from Phase I watersheds

4) Comparison to TMDL target amounts
5) Planned Capital Expenditures
6) Projected Expansion areas to be serviced in the next two years
7) Status of Regional watershed management opportunities

Groundwater Discharge Permit

Monitoring according to the GWDP is another component of review that will ensure the treatment facility is complying with its treatment goals and compliance with the Regional Policy Plan and TMDLs of the receiving waters. Monitoring in the receiving waters downgradient of the facility will ensure that the reconfiguration of nitrogen loads in those watersheds (sewering to remove loads in the watersheds vs. additional loads from outside of the watersheds) will be protective of those resources.

- Convene Technical Review Committee to review Permit
  - Evaluate past monitoring
  - Identify wells, parameters and frequency of monitoring
  - Identify stream monitoring locations for flow and quality
  - Identify marine water monitoring locations and frequency
- Provide for baseline measurements and phased in monitoring in adjacent receiving watersheds based upon phased in increases of discharge from the facility.
- Reporting to the Commission Simultaneous with DEP submission
  - WWTP –Flow Rate – measured daily & monthly with averages
  - WWTF - Quality-influent/effluent monthly
  - Monitoring Wells - Annually
    - Groundwater quality -parameters such as ammonia, alkalinity should be added TOC and PCPPs should be monitored every five years
  - Water Table Elevations to evaluate mounding
  - Stream flow – continuous stage recorder should be deployed
  - Marine Water quality at Sentinel Stations - seasonally

Marine Water Quality and Habitat

Monitoring of marine waters in the targeted Phase 1 watersheds which presently exceed nitrogen-TMDLs will provide confirmation that the project's goals are ultimately met.

- Surface Water Quality– Seasonally with Report submitted at a frequency to be decided by the TRC but no less than every 5 years
  - Marine –
    - Sentinel Stations
    - Others to be determined by the TRC (Streams, tributaries…)
  - Eelgrass – to be conducted by Mass DEP

Benthic - to be decided by the TRC but no less than every 5 years

Non Structural Management, (as appropriate for demonstrating achievement of related CWMP goals)

Stormwater management
Freshwater ponds – sewering in watersheds, in-pond restoration, monitoring
Enhance Natural Attenuation and/or tidal flushing

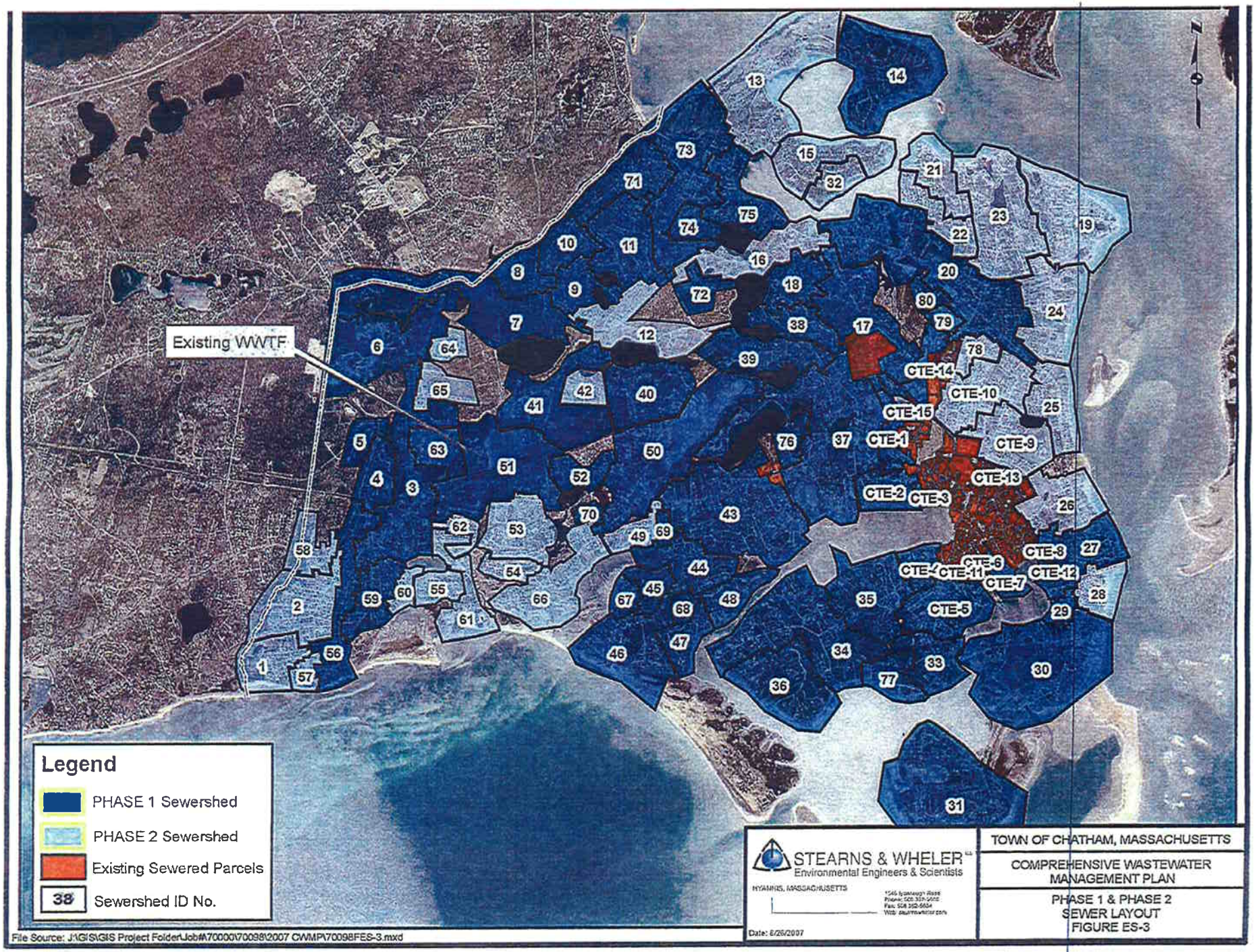

Existing WWTF
Legend
PHASE 1 Sewershed
PHASE 2 Sewershed
Existing Sewered Parcels
38 Sewershed ID No.
File Source: J:\GIS\GIS Project Folder\Job#\70000\70098\2007 CWMP\70098FES-3.mxd
STEARNS & WHELER
Environmental Engineers & Scientists
HYANNIS, MASSACHUSETTS
Date: 6/26/2007
TOWN OF CHATHAM, MASSACHUSETTS
COMPREHENSIVE WASTEWATER MANAGEMENT PLAN
PHASE 1 & PHASE 2 SEWER LAYOUT
FIGURE ES-3

Exhibit B

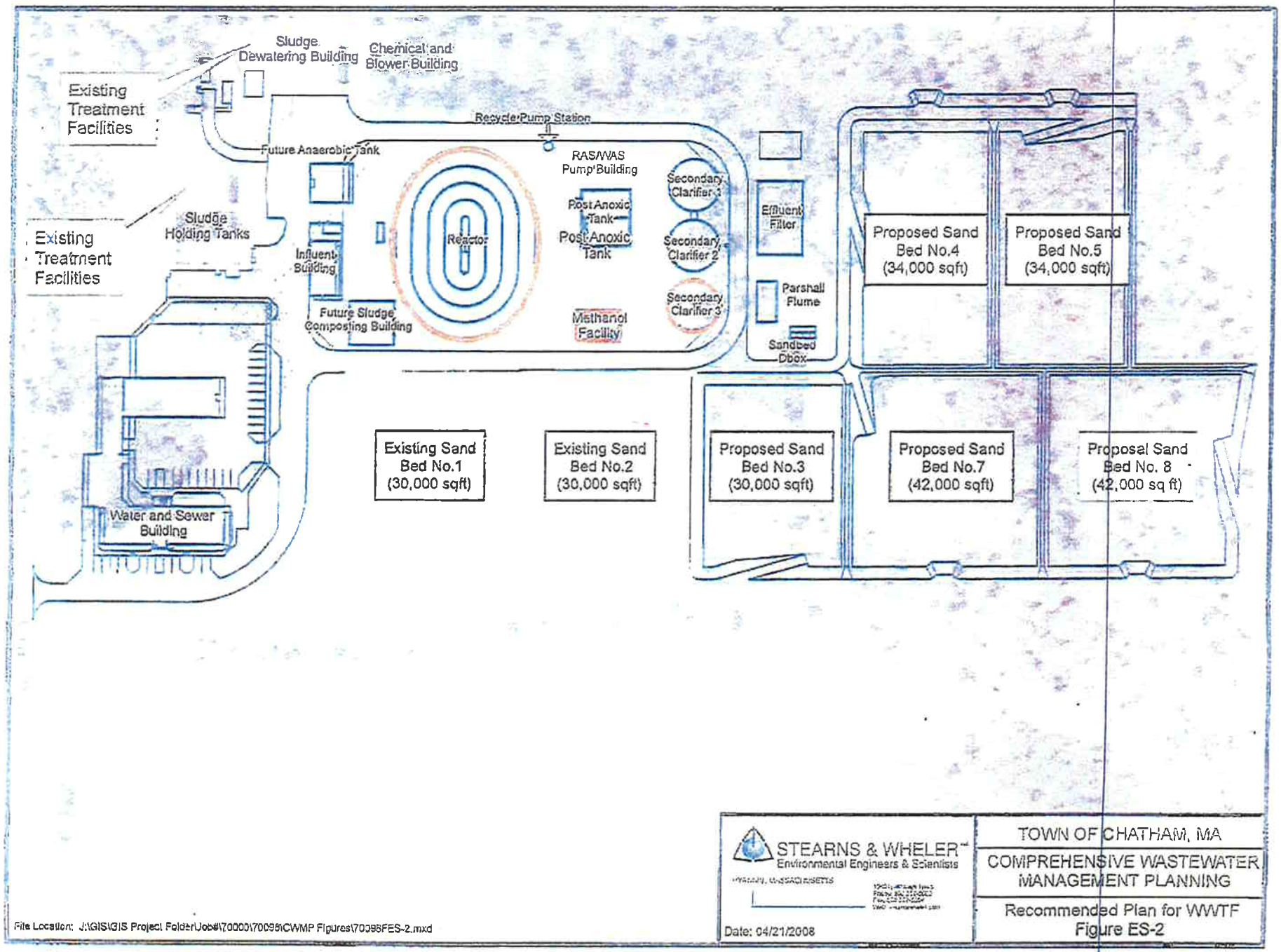

Sludge Dewatering Building
Chemical and Blower Building
Existing Treatment Facilities
Recycle Pump Station
Future Anaerobic Tank
RAS/WAS Pump Building
Secondary Clarifier 1
Post Anoxic Tank
Sludge Holding Tanks
Effluent Filter
Proposed Sand Bed No.4 (34,000 sqft)
Proposed Sand Bed No.5 (34,000 sqft)
Existing Treatment Facilities
Influent Building
Reactor
Post Anoxic Tank
Secondary Clarifier 2
Parshall Flume
Future Sludge Composting Building
Methanol Facility
Secondary Clarifier 3
Sandbed Dbox
Existing Sand Bed No.1 (30,000 sqft)
Existing Sand Bed No.2 (30,000 sqft)
Proposed Sand Bed No.3 (30,000 sqft)
Proposed Sand Bed No.7 (42,000 sqft)
Proposal Sand Bed No. 8 (42,000 sq ft)
Water and Sewer Building
STEARNS & WHELER
Environmental Engineers & Scientists
TOWN OF CHATHAM, MA
COMPREHENSIVE WASTEWATER MANAGEMENT PLANNING
Recommended Plan for WWTF
Figure ES-2
Date: 04/21/2008
File Location: J:\GIS\GIS Project Folder\Job#\70000\70095\CWMP Figures\70095FES-2.mxd

Exhibit C

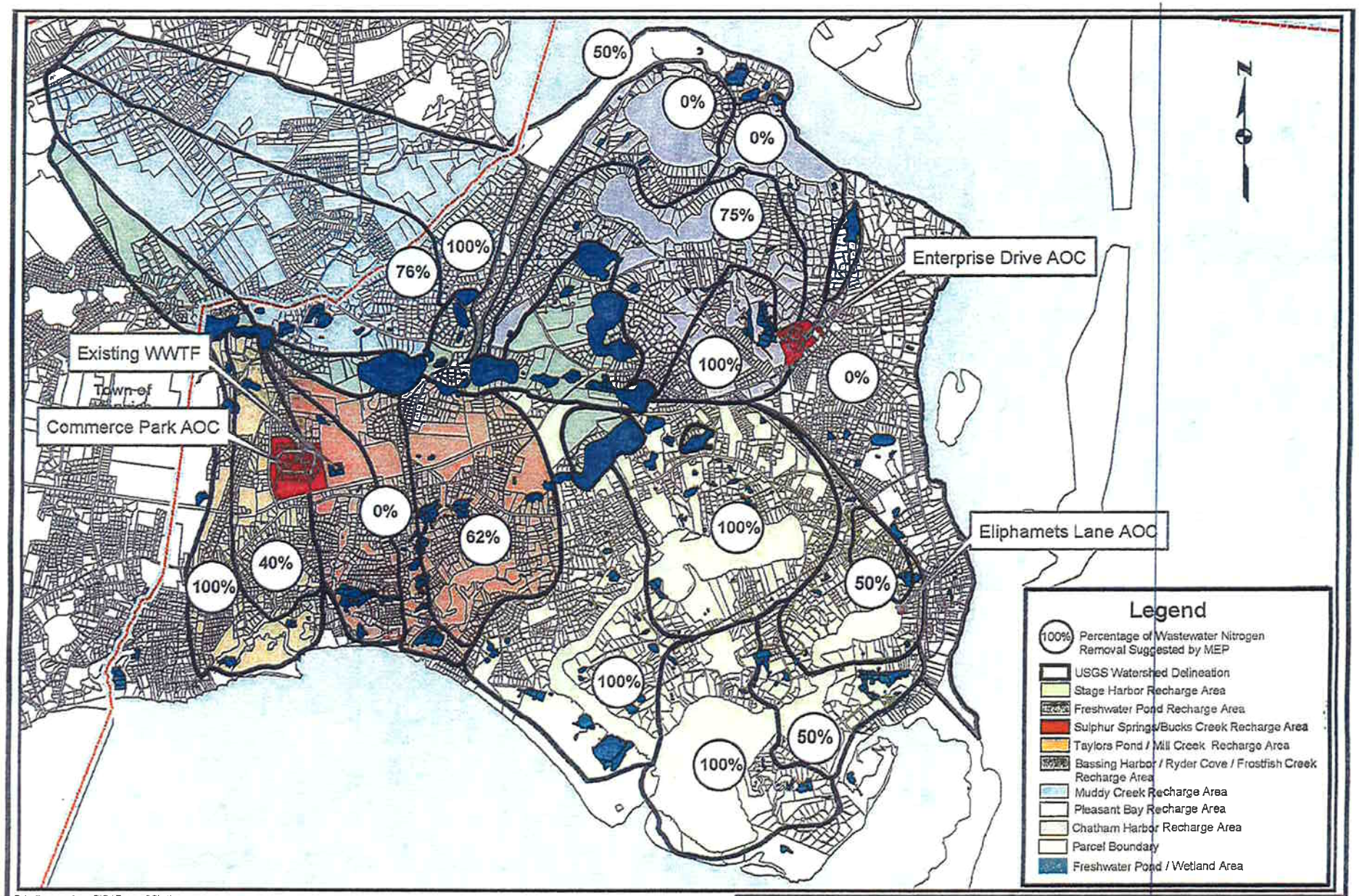
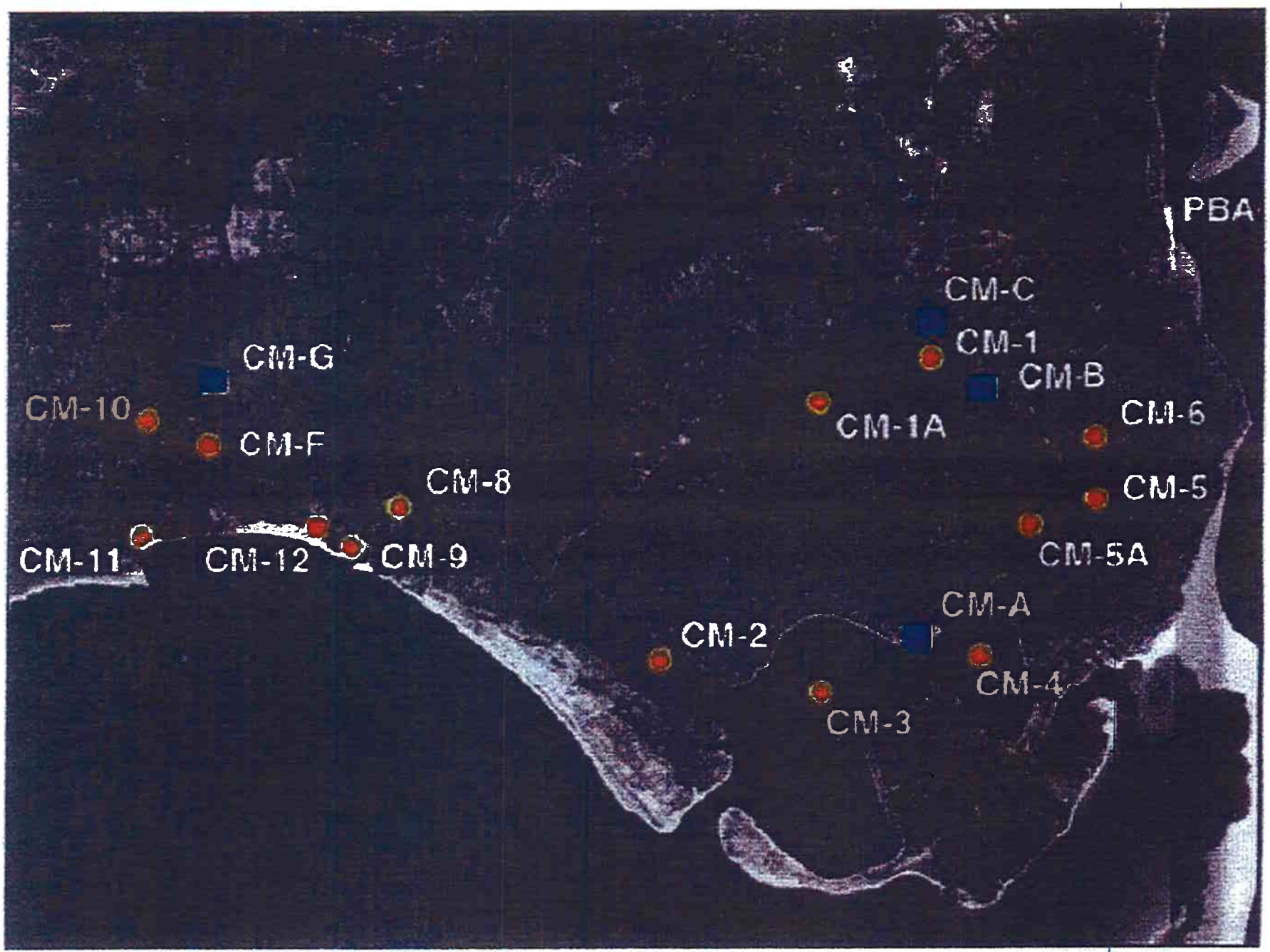

50%
0%
0%
75%
100%
76%
Enterprise Drive AOC
Existing WWTF
Town of
Commerce Park AOC
100%
0%
0%
62%
40%
100%
100%
50%
Eliphamets Lane AOC
100%
50%
100%
N
Legend
100% Percentage of Wastewater Nitrogen Removal Suggested by MEP
USGS Watershed Delineation
Stage Harbor Recharge Area
Freshwater Pond Recharge Area
Sulphur Springs/Bucks Creek Recharge Area
Taylors Pond / Mill Creek Recharge Area
Bassing Harbor / Ryder Cove / Frostfish Creek Recharge Area
Muddy Creek Recharge Area
Pleasant Bay Recharge Area
Chatham Harbor Recharge Area
Parcel Boundary
Freshwater Pond / Wetland Area
Data Source: Mass GIS / Town of Chatham
0 0.25 0.5 1
Miles
NOTE: The percent removals indicated are only one scenario that could meet the TMDL - This scenario is suggested by MEP & MassDEP
An "AOC" is a wastewater area of concern.
File Location: J:\GIS\GIS Project Folder\Job#\70000\70096\2007 CWMP\2009 Figures\V0096FES-1.mxd
STEARNS & WHELER
Environmental Engineers & Scientists
HYANNIS, MASSACHUSETTS
DATE: 4/15/2009
TOWN OF CHATHAM, MASSACHUSETTS
COMPREHENSIVE WASTEWATER MANAGEMENT PLAN
SUMMARY OF NEEDS
FIGURE ES-1

Exhibit D



Map of freshwater discharge (blue squares) and estuarine (red circles) water quality monitoring stations within the Town of Chatam's southern three estuaries.

I-1. Estuarine water quality monitoring station locations in the Pleasant Bay system. Station labels correspond to those provided in Table VI-1.

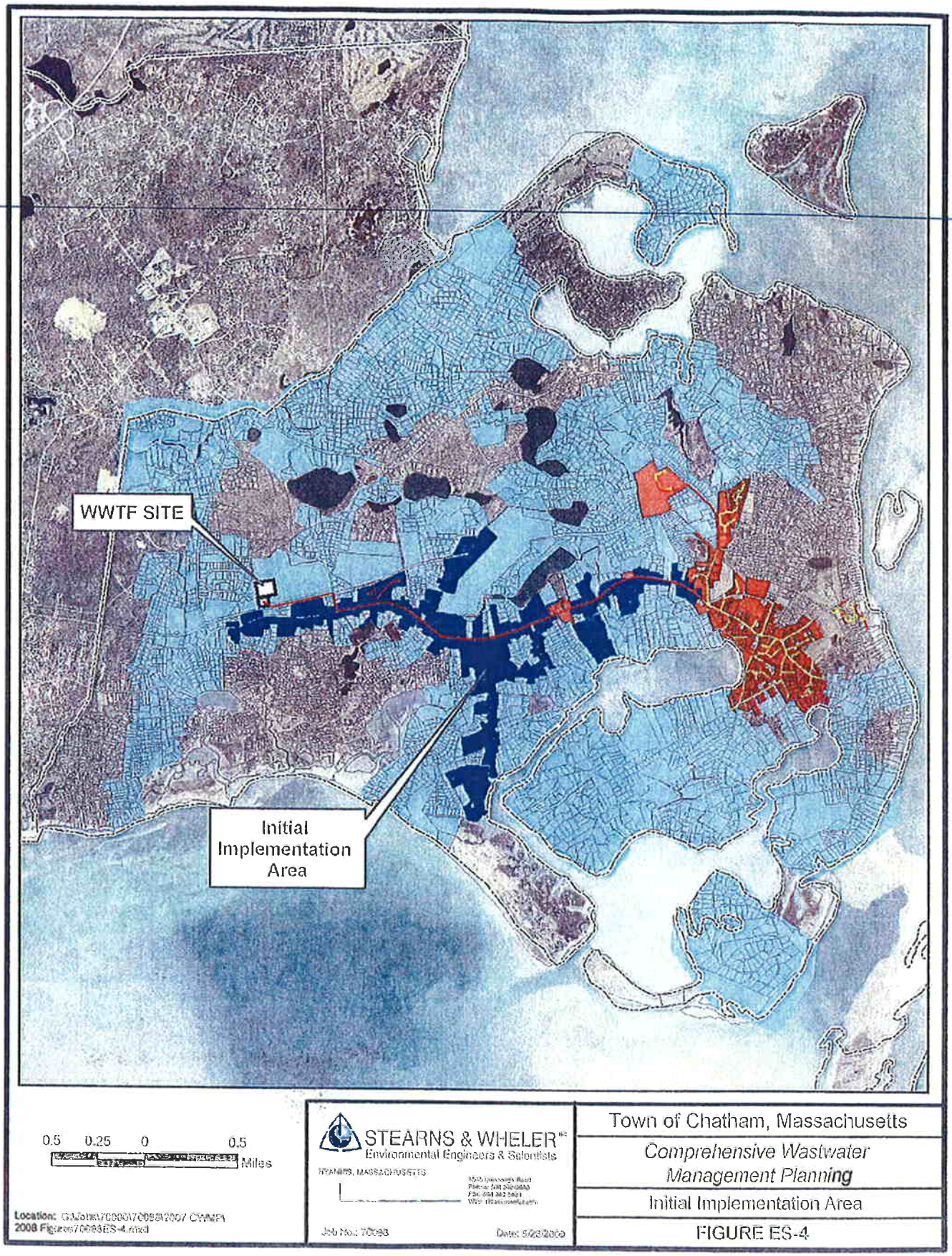
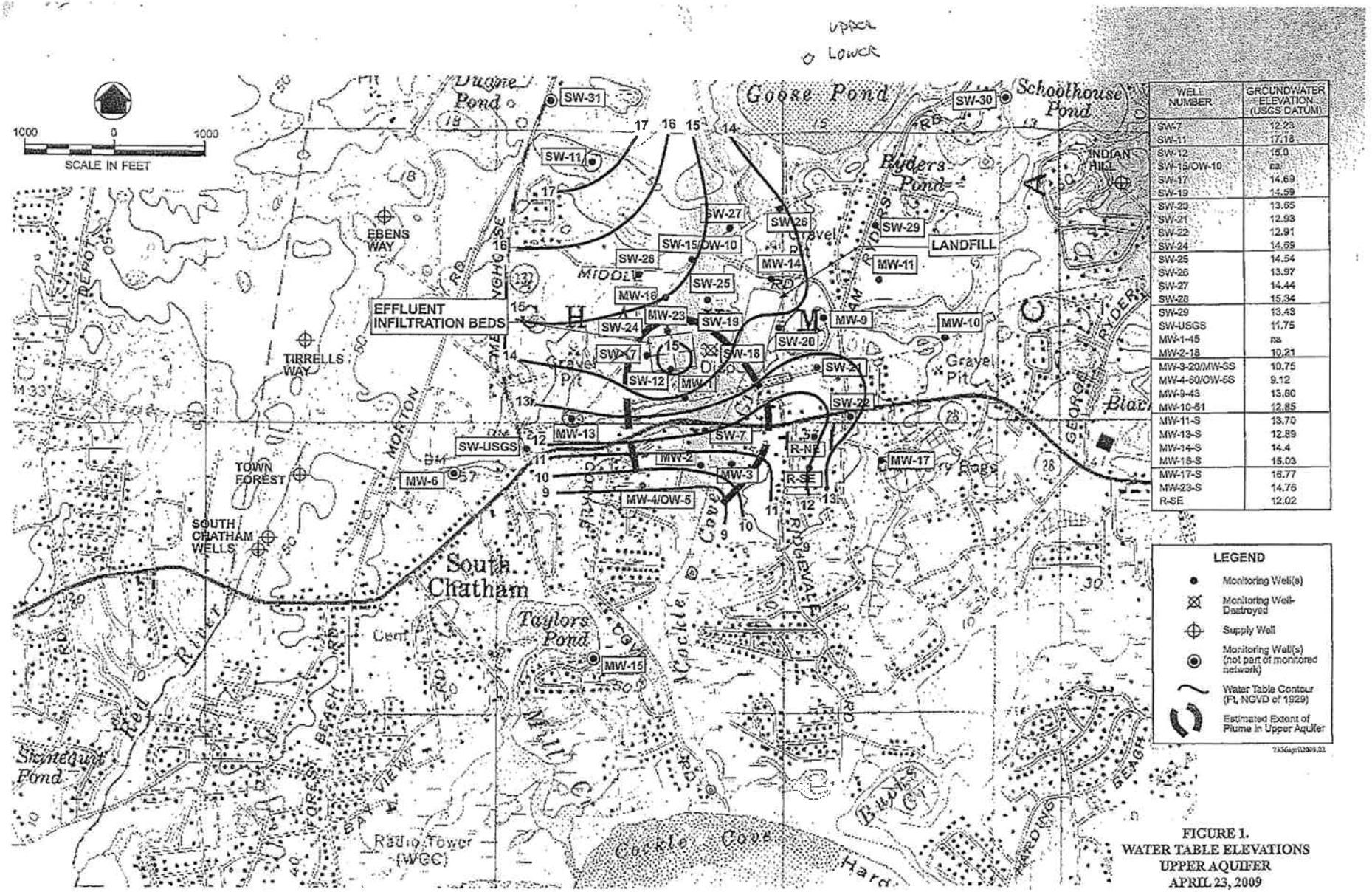

WWTF SITE
Initial Implementation Area
0.5 0.25 0 0.5
Miles
STEARNS & WHELER
Environmental Engineers & Scientists
Location: G:\Jobs\70000\70098\300\ CHAMP\ 2008 Figures\70098ES-4.mxd
Job No.: 70098
Date: 5/23/2008
Town of Chatham, Massachusetts
Comprehensive Wastwater Management Planning
Initial Implementation Area
FIGURE ES-4

Exhibit G



WELL NUMBER	GROUNDWATER ELEVATION (USGS DATUM)
SW-7	12.23
SW-11	17.18
SW-12	15.0
SW-15/OW-10	na
SW-17	14.69
SW-19	14.59
SW-20	13.65
SW-21	12.93
SW-22	12.91
SW-24	14.69
SW-25	14.54
SW-26	13.97
SW-27	14.44
SW-28	15.34
SW-29	13.43
SW-USGS	11.75
MW-1-45	na
MW-2-18	10.21
MW-3-20/MW-3S	10.75
MW-4-60/OW-5S	9.12
MW-9-43	13.60
MW-10-61	12.85
MW-11-S	13.70
MW-13-S	12.89
MW-14-S	14.4
MW-16-S	15.03
MW-17-S	16.77
MW-23-S	14.76
R-SE	12.02

FIGURE 1.
WATER TABLE ELEVATIONS
UPPER AQUIFER
APRIL 23, 2009

DEP Ground Water Discharge Permit data point and water table map

Exhibit H

Appendix C

CWMP Recommended Plan Section on TMDL Compliance and Adaptive Management

CWMP Section 11.5.D on
TMDL Compliance and Adaptive Management Plan

Discussions with MassDEP have indicated that nitrogen TMDL compliance will be met with the restoration of the habitat quality that has been targeted by the MEP. These discussions have identified that this restoration may take several years after new wastewater facilities are installed due to the long groundwater and nitrogen flow travel times. The same discussions have also indicated that steady implementation of the CWMP will demonstrate compliance with the TMDL because the CWMP has been established to meet the TMDLs using the scientific methods supported and approved by MassDEP. The commitment to steady implementation has been stated in the Financial Plan of Section 11.4.

It is understood that ongoing and proposed environmental monitoring activities may observe environmental changes (hopefully for the better, but possibly to the worse) and that mid-course corrections to the plan implementation may be needed. This understanding of possible mid-course correction is called "Adaptive Management". The following text summarizes the major components of the TMDL compliance and Adaptive Management Plan. It is understood that this plan will be updated as time proceeds in the spirit of Adaptive Management.

1. **Implementation of the CWMP.** The CWMP will be implemented as indicated in the recommended plan portion of Chapter 11 (Section 11.2). The Phase 1 wastewater facilities will be implemented over a 20-year period (approximately 2010 to 2030) and the Phase 2 wastewater facilities will be implemented in the next 10 years (approximately 2030 to 2040).

The Town has committed to fund the implementation at $15,000,000 to $20,000,000 every two (2) years for the 30-year implementation period. The May 2009 Annual Town Meeting recently approved $59,508,000 for the initial implementation discussed in Section 1.7. This initial appropriation indicates a 6- to 8-year "jump start" on the program.

2. **Documentation of Capital Expenditures.** The primary TMDL compliance tool used by MassDEP will be verifying that the Town has applied to the SRF program for low interest loans in the $15,000,000 to $20,000,000 range per 2-year period committed by the Town. MassDEP's support of the SRF applications will be needed to facilitate implementation.

3. **Compliance with the Groundwater Discharge Permit.** The design for the WWTF upgrade will be accompanied by a MassDEP discharge permit application. MassDEP will review the application information and develop a draft discharge permit for public review. Once the permit is finalized, the Town will need to comply with the various treatment, sampling, and reporting requirements specified in the permit. Compliance with the groundwater discharge permit will be a major component of the TMDL compliance.

4. **Reporting on Groundwater Elevation and Quality Monitoring in the Vicinity of the WWTF.** This monitoring and reporting will be part of the Groundwater Discharge Permit requirements and the Discharge Permit requirements and the Discharge Permit will identify the monitoring plan.

5. **Reporting on Estuarine Water Quality Monitoring.** The Town of Chatham continues to sample and analyze the marine waters in their estuaries even though the MEP Technical Reports and TMDLs are complete. The Town has a large group of volunteers who do this sampling, and the volunteers have been an important support group for the CWMP and the initial implementation of the CWMP. Now that the MEP work is complete, the Town has reduced the monitoring frequency and locations (in consultation with SMAST and MassDEP) from a very analytical strategy (needed to develop the TMDLs) to more of a program to develop and investigate long-term trends. This monitoring is closely coordinated with the other Pleasant Bay communities through the Pleasant Bay Alliance. As discussed earlier in this chapter, the Town is participating in the MassDEP Pilot Project to develop a standard protocol for long-term monitoring in the estuaries.

6. **Habitat Assessments That May be Completed by the Town, MassDEP, and/or Regional Organizations.** As part of the MassDEP Pilot Project to develop standard protocols for estuarine water quality and habitat monitoring programs, there has been much discussion on who will perform these assessments and who will pay for them. It has been generally agreed:

- The timeline for wastewater infrastructure implementation and the groundwater travel times indicate that the first habitat assessment (that could be correlated to wastewater system improvements) will not be needed for several years; therefore, there is time to develop the program.
- MassDEP will continue its eel grass mapping program (if state funding continues).

- Individual Towns or resource groups such as the Pleasant Bay Alliance will probably be the responsible parties to complete the benthic habitat surveys. The protocols, goals, and reporting procedures for these surveys will be a major focus for the MassDEP Pilot Project.

7. **Continued Coordination with the Pleasant Bay Alliance for Regional Model Runs.** The Town will continue to be an active member of the Pleasant Bay Alliance to develop and support water quality model runs of the Pleasant Bay system. Several model runs have recently been completed to investigate the effects of the new breach (2007). Additional model runs are in the planning stages for a future nitrogen loading scenario based on the developing wastewater plans of the 4 Pleasant Bay Towns.

8. **Periodic Watershed Assessments and Other Evaluations.** Watershed assessments will be completed periodically (every 5 to 10 years) to tabulate water consumption, estimated septic system discharges, WWTF recharge and treatment performance, and nitrogen loadings from the non-wastewater sources to summarize changes of nitrogen loads to the estuaries over time. These nitrogen loading summaries will be compared to the water quality monitoring trends to investigate possible correlations between water quality and nitrogen loading. Other evaluations of nitrogen and/or phosphorus loading will be completed as needed.

9. **Possible Changes to this Plan as Part of Adaptive Management.** This plan is still being developed as evidenced by the ongoing MassDEP Pilot Project. Changes will occur as the Town moves forward with its wastewater implementation program. The WWTF Discharge Permit needs to be renewed every 5 years (by regulatory statute) and will provide a formal opportunity for permitted change.

Appendix D

Chatham WWTF Groundwater Discharge Permit No. 44-1 Dated December 17, 2009

91057.5

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST REGIONAL OFFICE
20 RIVERSIDE DRIVE, LAKEVILLE, MA 02347 508-946-2700

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

December 17, 2009

Dr. Robert Duncanson, Director
Department of Health and Environment
1455 Main Street
Chatham, Massachusetts 02633

RE: CHATHAM: Chatham Wastewater Treatment Facility, 59 Sam Ryder Road.
Permit No.: 44-1
Transmittal No. X228025

Dear Dr. Duncanson:

In response to your application for a permit to discharge into the ground a treated effluent from the proposed treatment works at the Chatham Wastewater Treatment Facility in Chatham, Massachusetts, and after due public notice, I hereby issue the attached final permit. Enclosed also please find Section 61 findings as required by M.G.L. c. 30 §61 and 310 CMR 11.00.

No comments objecting to the issuance or terms of the permit were received by the Division of Wastewater Management during the public comment period; therefore, the permit is effective upon issuance.

Parties aggrieved by the issuance of this permit are hereby advised of their right to request an Adjudicatory Hearing under the provisions of Chapter 30A of the Massachusetts General Laws and 314 CMR 1.00, Rules for the Conduct of Adjudicatory Proceedings. Unless the person requesting the adjudicatory hearing requests and is granted a stay of the terms and conditions of the permit, the permit shall remain fully effective.

If you have any questions, please contact me at (508)771-6047.

Very truly yours,

Brian A. Dudley
Bureau of Resource Protection

BAD/
Enclosure (1 Permit)

cc: Mr. J. Jefferson Gregg
Sterns and Wheler/GHD
1545 Iyannough Road
Hyannis, MA 02601
Enclousre (1 Permit, 1 Section 61)

ecc: DEP/Boston Wastewater Management Section
Attn: Marybeth Chubb
Enclosure (1 Permit, 1 Section 61)

DEP/SERO
Attn: Jonathan Hobill
Jeffrey Gould
Laura Patriarca
Enclosure (1 Permit, 1 Section 61)

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

GROUNDWATER DISCHARGE PERMIT

Name and Address of Applicant: **Town of Chatham, 549 Main Street, Chatham, Massachusetts 02633**

Date of Application: **June 26, 2009**

Application/Permit No.: **44-1**

Date of Issuance: **December 17, 2009**

Date of Expiration: **December 17, 2014**

Effective Date: **December 17, 2009**

AUTHORITY FOR ISSUANCE

Pursuant to authority granted by Chapter 21, Sections 26-53 of the Massachusetts General Laws, as amended, 314 CMR 2.00, and 314 CMR 5.00, the Massachusetts Department of Environmental Protection (the Department or MassDEP) hereby issues the following permit to: Town of Chatham (hereinafter called "the permittee") authorizing discharges to the ground from the on site wastewater treatment facility located at Chatham Wastewater Treatment Facility, 59 Sam Ryder Road, West Chatham (a municipal wastewater treatment facility) such authorization being expressly conditional on compliance by the permittee with all terms and conditions of the permit hereinafter set forth.

Brian A. Dudley
Bureau of Resource Protection

December 17, 2009
Date

I. SPECIAL CONDITIONS

A. Effluent Limits

The permittee is authorized to discharge into the ground from the existing wastewater treatment facilities for which this permit is issued a treated effluent whose characteristics shall not exceed the following values until the Department authorizes discharge from the proposed upgraded wastewater treatment facility:

Effluent Characteristics	Discharge Limitations
Flow	200,000 gallons per day (annual average)
Oil and grease	15 mg/l
Total Suspended Solids (TSS)	30 mg/l
Total Nitrogen ($NO_2 + NO_3 + TKN$)	10 mg/l
Nitrate-Nitrogen	10 mg/l
Biochemical Oxygen Demand, 5-day @20°C (BOD_5)	30 mg/l

Immediately after the Department authorizes discharge from the proposed upgraded wastewater treatment facility, the permittee is authorized to discharge into the ground from the wastewater treatment facilities for which this permit is issued a treated effluent whose characteristics shall not exceed the following:

Effluent Characteristics	Discharge Limitations
Flow	1.0 MGD (annual average) 2.3 MGD (peak day)
Oil and grease	15 mg/l
Total Suspended Solids (TSS)	10 mg/l
Total Nitrogen ($NO_2 + NO_3 + TKN$)	10 mg/l and not to exceed 9,132 pounds per calendar year[1]
Nitrate-Nitrogen	10 mg/l

Biochemical Oxygen Demand, 5-day @20°C (BOD_5)	30 mg/l
Turbidity	5 NTU
Fecal Coliform	200 colonies /100 ml
Total Organic Carbon (TOC)[2]	3 mg/L

[1]10 mg/L represents the maximum daily limit. 9,132 pounds per year represents the mass load at an annual average flow of 1 MGD and an annual average Total Nitrogen discharge of 3 mg/L.
[2]Total Organic Carbon will not be considered an effluent discharge limitation unless and until the currently dormant Indian Hill public drinking water supply well is returned to service.

a) The pH of the effluent shall not be less than 6.5 nor greater than 8.5 at any time or not more than 0.2 standard units outside the naturally occurring range based on the upgradient monitoring well (SW-11).
b) The discharge of the effluent shall not result in any demonstrable adverse effect on the groundwater or violate any water quality standards that have been promulgated.
c) The monthly average concentration of BOD and TSS in the discharge shall not exceed 15 percent of the monthly average concentrations of BOD and TSS in the influent into the permittee's wastewater treatment facility.
d) When the average annual flow exceeds 80 percent of the permitted flow limitations, the permittee shall submit a report to the Department describing what steps the permittee will take in order to remain in compliance with the permit limitations and conditions, inclusive of the flow limitations established in this permit.

B. Monitoring and Reporting

1) The permittee shall monitor and record the quality of the **influent** and the quality and quantity of the **effluent** prior to discharge to the leaching facilities according to the following schedule and other provisions:

INFLUENT:

Parameter	**Minimum Frequency of Analysis**	**Sample Type**
BOD_5	Monthly	24-Hour Composite
Total Suspended Solids	Monthly	24-Hour Composite

Total Solids	Monthly	24-Hour Composite
Ammonia Nitrogen	Monthly	24-Hour Composite

EFFLUENT:

Parameter	**Minimum Frequency of Analysis**	**Sample Type**
Flow	Daily or continuous	Daily Flow and Monthly Max-Min-Average
pH	Continuous/sample	Continuous recording/Grab (report daily maximum)
UV Intensity	Continuous	Continuous recording (report daily range)
Total Suspended Solids	Weekly	24-Hour Composite
Oil & Grease	Monthly	Grab
Biochemical Oxygen Demand (BOD_5)	2/Week	24-Hour Composite
Nitrate Nitrogen	2/Week	24-Hour Composite
Total Nitrogen (NO_2 + NO_3 + TKN)	2/Week	24-Hour Composite
Turbidity	Continuous	Continuous recording (report daily range)
Total Phosphorus[2] (as P)	Quarterly	Grab
Orthophosphate[2] (as P)	Quarterly	Grab
Fecal Coliform	Weekly	Grab
Total Organic Carbon (TOC)[3]	2/Week	24- Hour Composite[4]
Volatile Organic Compounds[1]	2/Annually	Grab

[1]USEPA Method #624

[2]After one full year of monitoring the Total Phosphorus and Orthophosphate results, the Department may determine, upon the request of the permittee, that the frequency of monitoring may be reduced if, in the judgement of the Department, the results of the sampling indicate that existing phosphorus levels will not adversely impact downgradient receptors.

[3]Total Organic Carbon will not have to be sampled unless and until the currently dormant Indian Hill public drinking water supply well is returned to service.

[4]If reverse osmosis is the final treatment step, a grab sample is acceptable.

2) The permittee shall sample the upgradient monitoring well, SW-11, and the downgradient monitoring wells MW-3S, MW-3D, MW-4-60/OW-5S, MW-4-81/OW-5D, MW-13S, MW-13D, MW-17S and MW-17D as shown on a plan titled "Groundwater Discharge Permit Monitoring Wells Chatham, MA", prepared by the Chatham Community Development Department. and dated December 15, 2009. Labels identifying each monitoring well's identification in accordance with the above-referenced approved plan shall be affixed to the steel protective casing of each monitoring well.

The permittee shall monitor, record and report the quality of water in the monitoring wells according to the following schedule and other provisions:

Parameter	**Sample Type**	**Frequency of Analysis**
Static Water Level[1]	Measurement	April, August, December
Specific Conductance	Grab	April, August, December
pH	Grab	April, August, December
Total Nitrogen (NO_2+NO_3+TKN)	Grab	April, August, December
Nitrate-Nitrogen	Grab	April, August, December
Total Phosphorus[2] (as P)	Grab	April, August, December
Orthophosphate[2] (as P)	Grab	April, August, December
Volatile Organic Compounds[3]	Grab	April, August, December

Starting with the next permit cycle commencing in 2015, the permittee shall monitor, record and report the quality of water in the monitoring wells according to the following schedule and other provisions:

Parameter	Sample Type	Frequency of Analysis
Static Water Level[1]	Measurement	Monthly
Specific Conductance	Grab	Monthly
pH	Grab	Monthly
Total Nitrogen (NO_2+NO_3+TKN)	Grab	Quarterly
Nitrate-Nitrogen	Grab	Quarterly
Total Phosphorus[2] (as P)	Grab	Quarterly
Orthophosphate[2] (as P)	Grab	Quarterly
Volatile Organic Compounds[3]	Grab	Annually
Total Organic Carbon (TOC)[4]	Grab	Quarterly

[1] Static Water Level shall be expressed as an elevation and shall be referenced to the surveyed datum established for the site. It shall be calculated by subtracting the depth to the water table from the surveyed elevation of the top of the monitoring well's PVC well casing/riser.
[2]After one full year of monitoring the Total Phosphorus and Orthophosphate results, the Department may determine, upon the request of the permittee, that the frequency of monitoring may be reduced if, in the judgement of the Department, the results of the sampling indicate that existing phosphorus levels will not adversely impact downgradient receptors.
[3]USEPA Method #624
[4]Total Organic Carbon will not have to be sampled unless and until the currently dormant Indian Hill public drinking water supply well is returned to service.

3) Any grab sample or composite sample required to be taken less frequently than daily shall be taken during the period of Monday through Friday inclusive. All composite samples shall be taken over the operating day.

The permittee shall submit all monitoring reports required above within 30 days of the last day of the reporting month. Reports shall be on an acceptable form, properly filled and signed and shall be sent to: Department of Environmental Protection, Southeast Regional Office, 20 Riverside Drive, Lakeville, MA 02347, and to the Program Director, Watershed Permitting, Bureau of Resource Protection, Department of Environmental Protection, One Winter Street/5th Floor, Boston, MA 02108, and to the Board of Health, 549 Main St., Chatham, Massachusetts 02633

Submission of monitoring reports in electronic format is available through eDEP and serves as data submission to both the Regional and Boston offices. To register for electronic submission go to: *http://www.mass.gov/dep/service/compliance/edeponlf.htm*

4) The permittee shall monitor at the open water stations as shown on the plan titled "Water Quality Sample Stations Chatham, MA" prepared by the Chatham Community Development Department. and dated December 15, 2009 in accordance with the following schedule:

	Watershed/Stations	**Parameters**	**Sample Type**
Twice during July 2010, 2011, 2012	Stage Harbor (CM-1A and CM-5A), Sulphur Springs (CM-8), Taylors Pond (CM-10), Muddy Creek (PBA-05) and Bassing Harbor (PBA-3 and CM-13)	PON, DON, DIN, DO, Chlorophyll a, Secchi Depth, salinity, TSS[1]	Grab/Observation
Twice during August 2010,2011, 2012	Stage Harbor (CM-1A and CM-5A), Sulphur Springs (CM-8), Taylors Pond (CM-10), Muddy Creek (PBA-05) and Bassing Harbor (PBA-3 and CM-13)	PON, DON, DIN, DO, Chlorophyll a, Secchi Depth, salinity, TSS[1]	Grab/Observation
Once during September 2010, 2011, 2012	Stage Harbor (CM-1A and CM-5A), Sulphur Springs (CM-8), Taylors Pond (CM-10), Muddy Creek (PBA-05) and Bassing Harbor (PBA-3 and CM-13)	PON, DON, DIN, DO, Chlorophyll a, Secchi Depth, salinity, TSS[1]	Grab/Observation

[1]TSS included for potential use in optical modeling.

All samples shall be collected between 0500 hours and 0900 hours. The permittee shall submit a schedule for sampling dates by April 1st for each year that sampling is required.

5) During the summer of 2014, the permittee shall conduct a survey of the following embayments systems to evaluate the benthic infauna:

Stage Harbor, Sulphur Springs, Taylors Pond, Muddy Creek and Bassing Harbor (Ryder's Cove).

The permittee shall submit a plan to the Department by October 1, 2013 for review and approval of the methodology to complete the benthic community evaluation.

The permittee shall submit all monitoring reports required above within six (6) months of the last sampling round for each year. Reports shall be on an acceptable form, properly filled and signed and shall be sent to: Department of Environmental Protection, Southeast Regional Office, 20 Riverside Drive, Lakeville, MA 02347, and to the Program Director, Watershed Permitting, Bureau of Resource Protection, Department of Environmental Protection, One Winter Street/5th Floor, Boston, MA 02108, and to the Board of Health, 549 Main St., Chatham, Massachusetts 02633

C. Supplemental Conditions

1. The permittee shall notify the Department at least thirty (30) days in advance of the proposed transfer of ownership of the treatment works for which this permit is written. Said notification shall include a written agreement between the existing and new permittees containing a specific date for transfer of permit, responsibility, coverage and liability between them.
2. A staffing plan for the treatment works shall be submitted to the Department once every two years and whenever there are staffing changes. The staffing plan shall include the following components:
   a) The operator(s)'s name(s), operator grade(s) and operator license number(s);
   b) The number of operational days per week;
   c) The number of operational shifts per week;
   d) The number of shifts per day;
   e) The required personnel per shift;
   f) Saturday, Sunday and holiday staff coverage;
   g) Emergency operating personnel
3. The permittee is responsible for the operation and maintenance of all sewers, pump stations, and treatment units for the permitted facility, which shall be operated and maintained under the direction of a properly certified wastewater operator.
4. The permittee shall contract to have any and all solids and sludges generated by the treatment works for which this permit is issued removed off site by a properly licensed waste hauler for disposal at an EPA/DEP approved facility. The name and license number of the hauler along with the quantity of wastes removed and the date(s) of removal shall be reported by the permittee in writing to the Department.
5. All tests or analytical determinations to determine compliance with permit standards and requirements, with the exception of the open water sampling stations, shall be done using tests and procedures found in the most recent version of *Standard Methods for the Examination of Water and Wastewater* and shall be performed by a Massachusetts certified laboratory. The laboratory performing the open water station sample analyses shall be approved by the Department.
6. The permittee shall notify the Department, in writing, within thirty (30) days of the following events:
   a. Any interruption of the treatment system operation, other than routine maintenance.

b. Final shutdown of the treatment system.

7. Prior to any application for an increase in discharge, the permittee must demonstrate that the proposed increase will conform the limits set forth in the Total Maximum Daily Loads (TMDLs) set for the Sulphur Springs system.

8. Commencing in 2011, and every two(2) years thereafter, the permittee must submit a capital improvement plan to the Department showing that it has budgeted sufficient funds for additional sewer construction through the next two (2) fiscal years consistent with the phased implementation plan to meet nitrogen TMDLs as stated in the Town of Chatham's Final Comprehensive Wastewater Management Plan and Final Environmental Impact Report.

D. Appeal Rights

This Permit is an action of the Department. Any person aggrieved by this action, may request an Adjudicatory Hearing. A request for a hearing must be made in writing and postmarked within thirty (30) days of the Permit issuance date. Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought.

The Hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

II. GENERAL PERMIT CONDITIONS

The following conditions apply to all permits:

(1) No discharge authorized in the permit shall cause or contribute to a violation of the Massachusetts Surface Water Quality Standards (314 CMR 4.00) or any amendments thereto. Upon promulgation of any amended standard, this permit may be revised or amended in accordance with such standard and 314 CMR 2.10 and 3.13 or 5.12. Except as otherwise provided in 314 CMR 5.10 (3)(c), 310 CMR 5.10(4)(a)2 and 314 CMR 5.10(9), no discharge authorized in the permit shall impair the ability of the ground water to act as an actual or potential source of potable water. Evidence that a discharge impairs the ability of the ground water to act as an actual or potential source of potable water includes, without limitation, analysis of samples taken in a downgradient well that shows one or more exceedances of the applicable water quality based effluent limitations set forth in 314 CMR 5.10. In those cases where it is shown that a measured parameter exceeds the applicable water quality based effluent limitations set forth in 314 CMR 5.10 at the upgradient monitoring well, evidence that a discharge impairs the ability of the ground water to act as an actual or potential source of potable water is deemed to exist if a measured parameter in any downgradient well exceeds the level of that same measured parameter in the upgradient well for the same sampling period. . A statistical procedure approved by the Department shall be used in determining when a measured parameter exceeds the allowable level.

(2) Duty to comply. The permittee shall comply at all times with the terms and conditions of the permit, 314 CMR 5.00, M.G.L. c. 21, §§ 26 through 53 and all applicable state and federal statutes and regulations.

(3) Standards and prohibitions for toxic pollutants. The permittee shall comply with effluent standards or prohibitions established under § 307(a) of the Federal Act, 33 U.S.C § 1317(a), for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(4) Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and equipment installed or used to achieve compliance with the terms and conditions of the permit, and the regulations promulgated at 314 CMR 12.00 entitled "Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Discharges, and 257 CMR 2.00, Rules and Regulations for Certification of Operators of Wastewater Treatment Facilities".

(5) Duty to halt or reduce activity. Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or discharges or both until the facility is restored or an alternative method of treatment is provided. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

(6) Power Failure. In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

(a) provide an alternative power source sufficient to operate the wastewater control facilities; or

(b) halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

(7) Duty to mitigate. The permittee shall take all reasonable steps to minimize or prevent any adverse impact on human health or the environment resulting from non-compliance with the permit.

(8) Duty to provide information. The permittee shall furnish to the Department within a reasonable time as specified by the Department any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine whether the permittee is complying with the terms and conditions of the permit.

(9) Inspection and entry. The permittee shall allow the Department or its authorized representatives to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records required by the permit are kept;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

(c) Inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under the permit; and

(d) Sample or monitor at reasonable times for the purpose of determining compliance with the terms and conditions of the permit.

(9A) The permittee shall physically secure the treatment works and monitoring wells and limit access to the treatment works and monitoring wells to those personnel required to operate, inspect and maintain the treatment works and to collect samples.

(9B) The permittee shall identify each monitoring well by permanently affixing to the steel protective casing of the well a tag with the identification number listed in the permit.

(10) Monitoring. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 unless other test procedures are specified in the permit.

(11) Recordkeeping. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and all records of all data used to complete the application for the permit, for a period of at least three years from the

date of the sample, measurement, report or application. This period may be extended by request of the Department at any time. Records of monitoring information shall include:

(a) The date, exact place, and time of sampling or measurements;
(b) The individual(s) who performed the sampling or measurement;
(c) The date(s) analyses were performed;
(d) The individual(s) who performed the analyses;
(e) The analytical techniques or methods used; and
(f) The results of such analyses.

(12) Prohibition of bypassing. Except as provided in 314 CMR 5.16(13), bypassing is prohibited, and the Department may take enforcement action against a permittee for bypassing unless:

(a) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the permittee could have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
(c) The permittee submitted notice of the bypass to the Department:
1. In the event of an anticipated bypass, at least ten days in advance, if possible; or
2. In the event of an unanticipated bypass, as soon as the permittee has knowledge of the bypass and no later than 24 hours after its first occurrence.

(13) Bypass not exceeding limitations. The permittee may allow a bypass to occur which does not cause effluent limitations to be exceeded, but only if necessary for the performance of essential maintenance or to assure efficient operation of treatment facilities.

(14) Permit actions. The permit may be modified, suspended, or revoked for cause. The filing of a request by the permittee for a permit modification, reissuance, or termination, or a notification of planned changes or anticipated non-compliance does not stay any permit condition.

(15) Duty to reapply. If the permittee wishes to continue an activity regulated by the permit after the expiration date of the permit, the permittee must apply for and obtain a new permit. The permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department in writing.

(16) Property rights. The permit does not convey any property rights of any sort or any exclusive privilege.

(17) Other laws. The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, nor does it relieve the permittee of its obligation to comply with any other applicable Federal, State, and local laws and regulations.

(18) Oil and hazardous substance liability. Nothing in the permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or

penalties to which the permittee is or may be subject under § 311 of the Federal Act, 33 U.S.C. § 1321, and M.G.L. c. 21E.

(19) Removed substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed in a manner consistent with applicable Federal and State laws and regulations including, but not limited to, the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26 through 53 and the Federal Act, , 33 U.S.C. § 1251 *et seq*, the Massachusetts Hazardous Waste Management Act, M.G.L. c. 21C, and the Federal Resource Conservation and Recovery Act, 42 U.S.C. § 6901, *et seq.*, 310 CMR 19.000 and 30.000, and other applicable regulations.

(20) Reporting requirements.

(a) Monitoring reports. Monitoring results shall be reported on a Discharge Monitoring Report (DMR) at the intervals specified elsewhere in the permit. If the permittee monitors any pollutant more frequently than required by the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(b) Compliance schedules. Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date.

(c) Planned changes. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility or activity which could significantly change the nature or increase the quantity of pollutants discharged. Unless and until the permit is modified, any new or increased discharge in excess of permit limits or not specifically authorized by the permit constitutes a violation.

(d) Anticipated non-compliance. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in non-compliance with permit requirements.

(e) 24 hour reporting. The permittee shall report any non-compliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the non-compliance, including exact dates and times, and if the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the non-compliance. The following shall be included as information which must be reported within 24 hours:

1. Any unanticipated bypass which exceeds any effluent limitation in the permit.
2. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit to be reported within 24 hours.

(f) Other non-compliance. The permittee shall report all instances of non-compliance not reported under 314 CMR 5.16(20)(a), (b), or (e) at the time monitoring reports are submitted. The reports shall contain the information listed in 314 CMR 5.16(20)(e).

(g) Toxics. All manufacturing, commercial, mining, or silvicultural dischargers must notify the Department as soon as they know or have reason to believe:

1. That any activity has occurred or will occur which would result in the discharge of any toxic pollutant listed in 314 CMR 3.17 which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
    a. 100 micrograms per liter (100 ug/l);
    b. 200 micrograms per liter (200 ug/l) for acrolein and acrylonitrile; 500 micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
    c. Five times the maximum concentration value reported for that pollutant in the permit application; or
2. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

(h) Indirect dischargers. All Publicly Owned Treatment Works shall provide adequate notice to the Department of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to § 301 or 306 of the Federal Act, 33 U.S.C. § 1311 or 1316, if it were directly discharging those pollutants; and
2. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(i) Information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

(21) Signatory requirement. All applications, reports, or information submitted to the Department shall be signed and certified in accordance with 314 CMR 3.15 and 5.14.

(22) Severability. The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

(23) Reopener clause. The Department reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions which may be authorized under the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26 through 53 or the Federal Act, 33 U.S.C. §1251 *et seq* in order to bring all discharges into compliance with said statutes.

(24) Approval of treatment works. All discharges and associated treatment works authorized herein shall be consistent with the terms and conditions of this permit. Any modification to the approved treatment works shall require written approval of the Department prior to the construction of the modification.

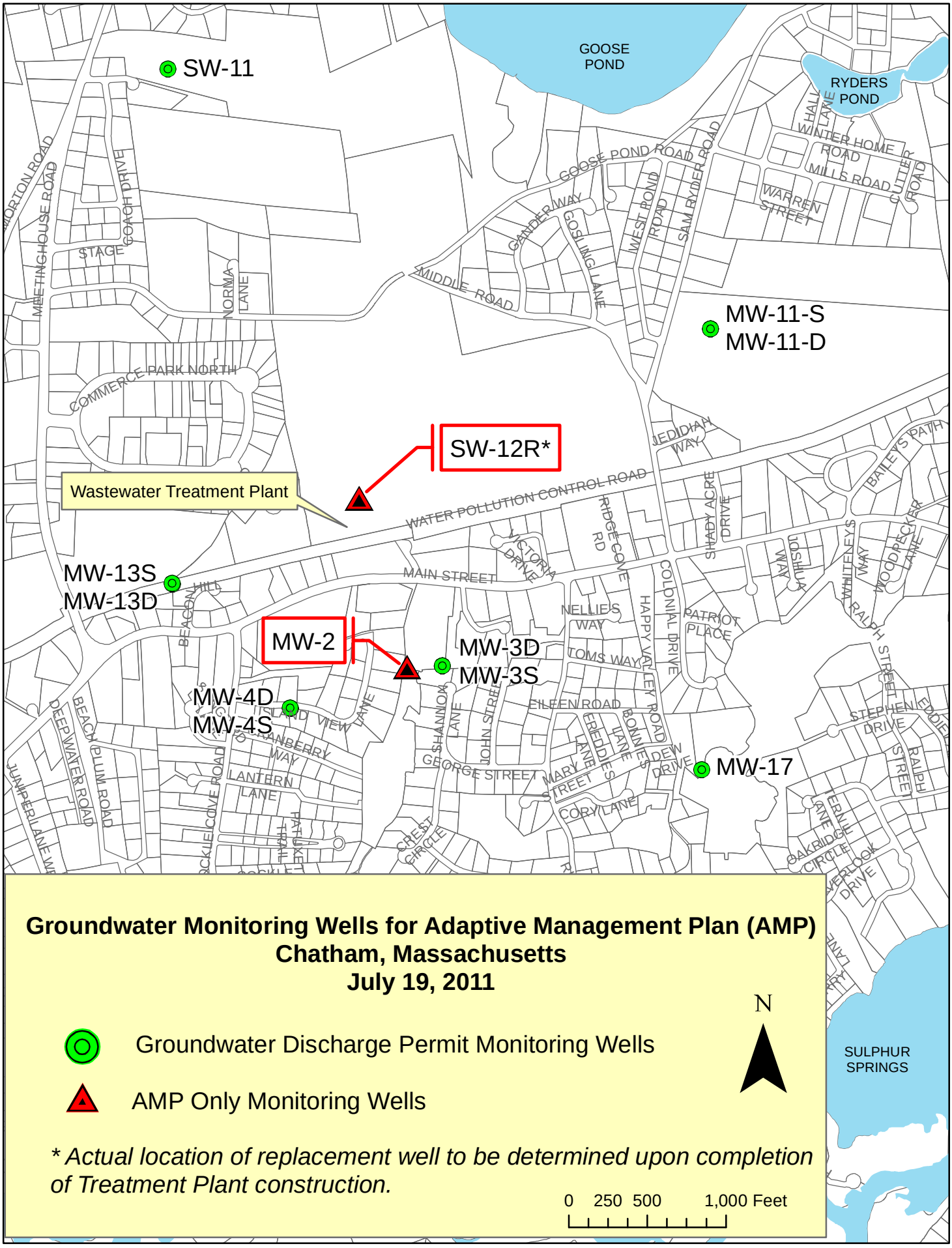
(25) Transfer of Permits.

(a) RCRA facilities. Any permit which authorizes the operation of a RCRA facility which is subject to the requirements of 314 CMR 8.07 shall be valid only for the person to whom it is issued and may not be transferred.
(b) Transfers by modification. Except as provided in 314 CMR 5.16(25)(a) and (c), a permit may be transferred by the permittee to a new owner or operator provided that the permit has been modified or revoked and reissued or a minor modification is made to identify the new permittee in accordance with 314 CMR 5.12(3) and (4).
(c) Automatic transfers. For facilities other than Privately Owned Wastewater Treatment Facilities (PWTFs) that treat at least some sewage from residential uses, hospitals, nursing or personal care facilities, residential care facilities, and/or assisted living facilities, PWTFs that have been required to establish financial assurance mechanism(s) pursuant to 314 CMR 5.15(6), and RCRA facilities subject to the requirements of 314 CMR 8.07, a permit may be automatically transferred in accordance with 314 CMR 5.12(5).

(26) Permit Compliance Fees and Inspection Information. Except as otherwise provided, any permittee required to obtain a surface water or ground water discharge permit pursuant to M.G.L. c. 21, § 43 and 314 CMR 3.00 and 5.00, shall be required to submit the annual compliance assurance fee established in accordance with M.G.L. c. 21A, § 18 and 310 CMR 4.00 as provided in 314 CMR 2.12. The requirement to submit the annual compliance fee does not apply to any local government unit other than an authority. Any permittee required to obtain a surface water or ground water discharge permit pursuant to M.G.L. c. 21, §43 and 314 CMR 3.00 and 5.00 may be required to submit inspection information annually as a condition of the permit as provided in 314 CMR 2.12.

Appendix E

Groundwater Monitoring Wells for Adaptive Management Plan



Groundwater Monitoring Wells for Adaptive Management Plan (AMP)
Chatham, Massachusetts
July 19, 2011

Groundwater Discharge Permit Monitoring Wells

AMP Only Monitoring Wells

** Actual location of replacement well to be determined upon completion of Treatment Plant construction.*