NANTUCKET WASTEWATER PLAN UPDATE

Nantucket Town Association

Atheneum

Tuesday, June 28, 2016

Agenda

- Current Status of Overall Wastewater Planning
  - Comprehensive Wastewater Management Plan (CWMP) Update
  - Surfside WWTF Improvements Project
  - Sewer Extension Implementation Plan
    - 2016 ATM Approved
      - Nantucket Harbor Shimmo
      - PLUS
    - 2016 Fall STM – Proposed
      - Madaket/Warrens Landing & Somerset
  - Estimated Project Costs
  - Fall Special Town Meeting Articles
  - No Action Alternative

Comprehensive Wastewater Management Plan Update

- Incorporates Massachusetts Estuaries Program Results Into Recommended Plan
  - Nitrogen Reduction to Meet Total Maximum Daily Loads (TMDLs)
- Ranks “Areas of Need”
- Septage Management Solutions
  - Board of Health Local Regulations
- Full Use of Surfside WWTF Permit - Flows
  - Madaket WWTF Eliminated
- 20-Year Planning Document

Adaptive Management Plan to Meet Nitrogen Reductions

Structured Nitrogen Reducing Solutions

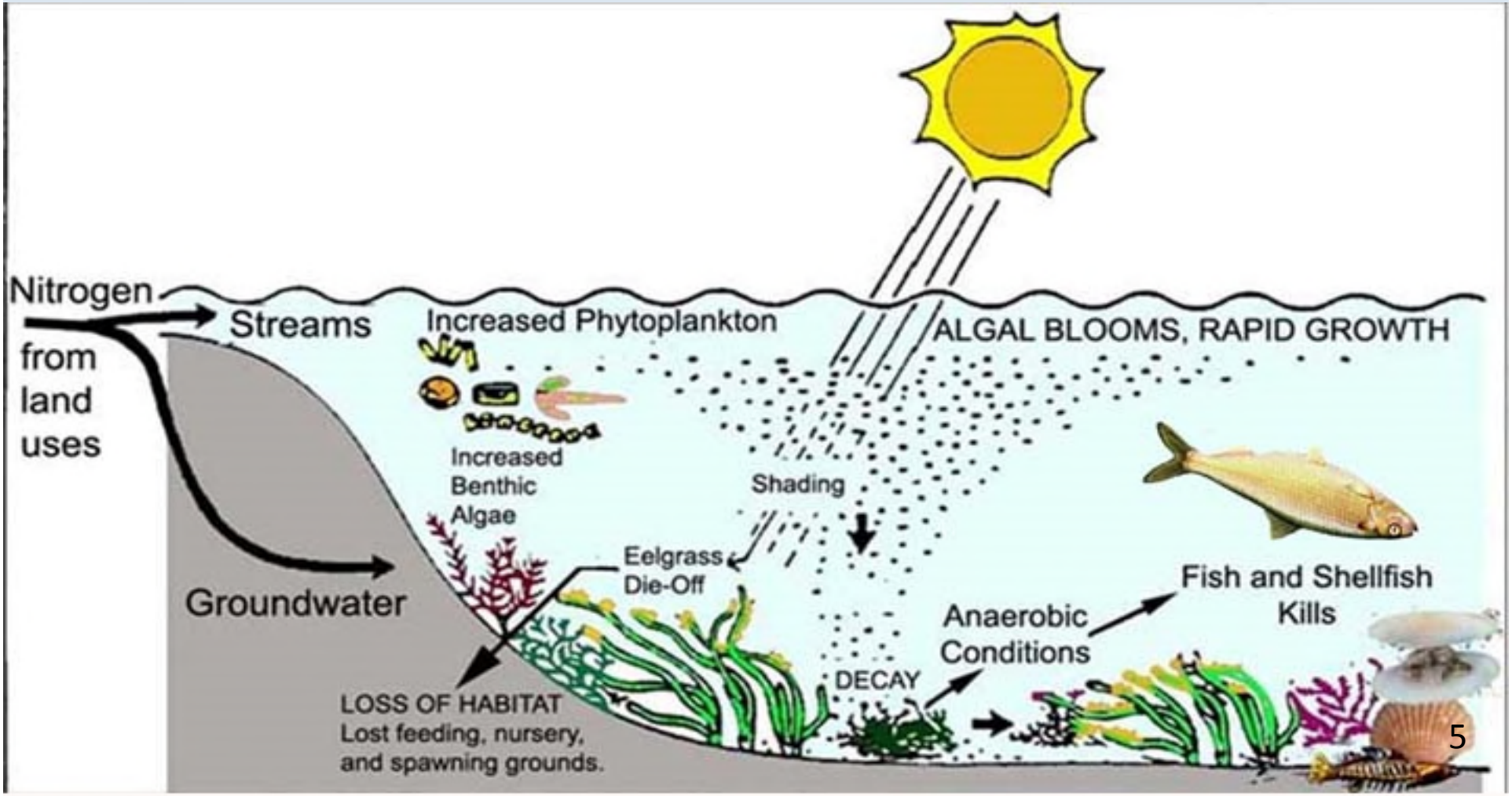
- Address all Needs Areas With a Plan Defined as a Structured, Iterative Process and Adapt As Necessary
  - Sewer Expansion
- Aim to Reduce Nutrient Loading Over Time – Water Quality Monitoring Program
  - Start With Plans That Give the Town the Biggest Bang for its Buck
- Add or Reduce Solutions as Needed to Meet Established Thresholds
  - Hummock Pond Breach – Jetties Reconstruction
  - Sesachacha Pond Breach

Adaptive Management Plan to Meet Nitrogen Reductions

Non-Structured Nitrogen Reducing Solutions

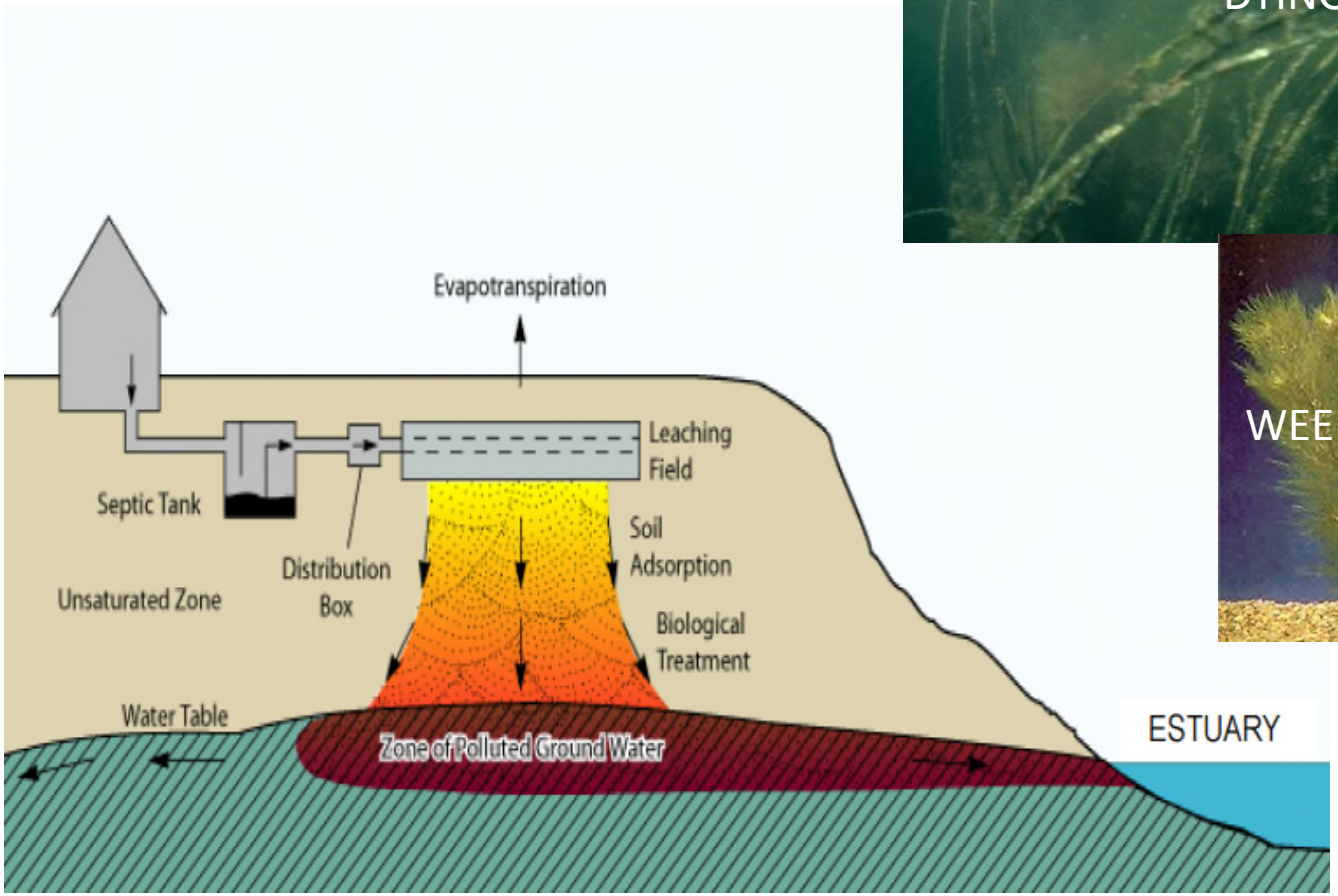
- Septage Management Plan
  - Pumping Incentive
  - Innovative/Alternative Systems
- Fertilizer Management
  - Education and Enforcement of Local Regulations
- Stormwater Management
  - Island-wide

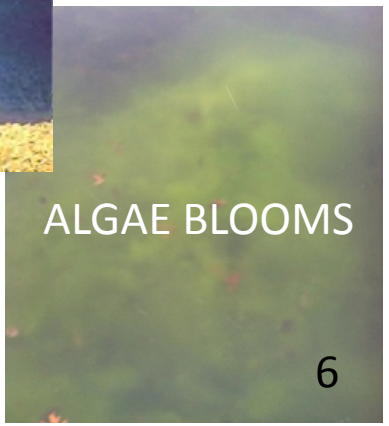
Nitrogen Pollution From Land Uses



Modified from U.S. Fish and Wildlife Circular, Restore Chesapeake Bay, Feb. 1990

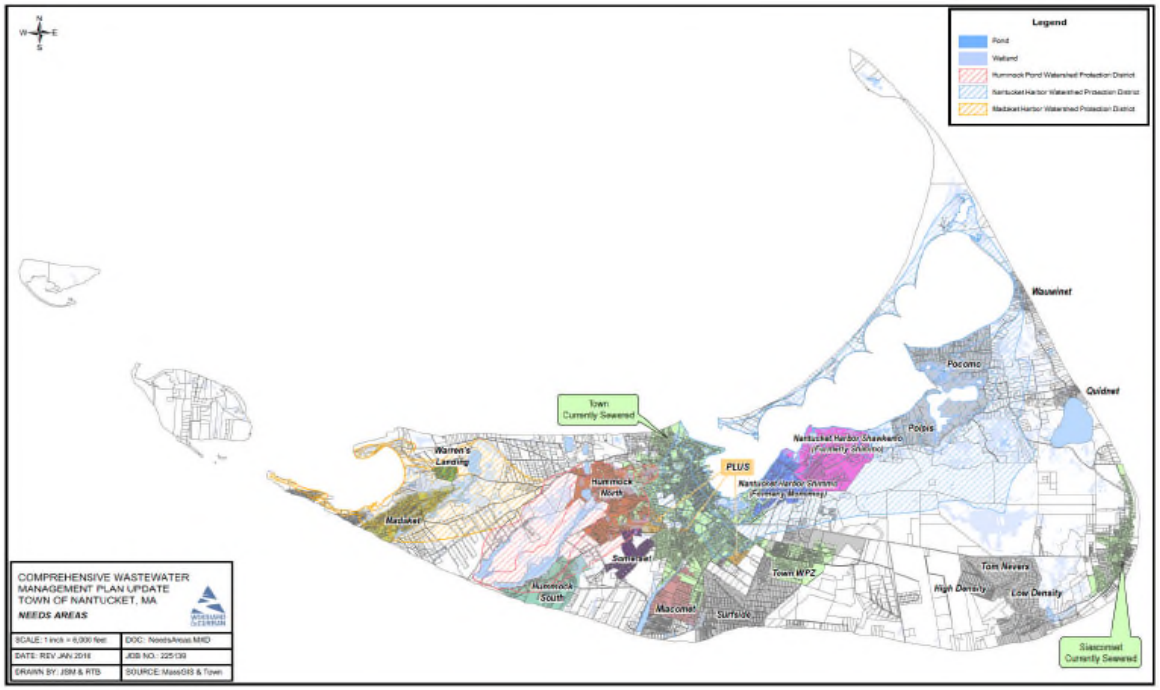
Septic Systems and Nitrogen Pollution Impacts





Comprehensive Wastewater Management Plan Update Final Recommended Plan

Town of Nantucket CWMP Update



AREAS RECOMMENDED FOR SEWER SERVICE

MADAKET

Drivers:
- Draft TMDL – Water Quality
- Madaket Harbor Watershed
- Small, Dense Lots
- Severe Soils
- Severe Groundwater
- Inability to Meet Title 5
- Inability to Meet Local BOH Regs
- Private Water Supply

Recommendation:
Municipal Sewer at Surfside WWTF

HUMMOCK POND SOUTH

Drivers:
- Pending TMDL – Water Quality
- Hummock Pond Watershed
- Small, Dense Lots
- Severe Soils
- Inability to Meet Title 5
- Inability to Meet Local BOH Regs
- Private Water Supply

Recommendation:
Municipal Sewer at Surfside WWTF

WARRENS LANDING

Drivers:
- Draft TMDL – Water Quality
- Madaket Harbor Watershed
  - GW Flow Towards Hither Creek Water Quality
- Small, Dense Lots

Recommendation:
Municipal Sewer at Surfside WWTF

MIACOMET

Drivers:
- Water Quality
- Small, Dense Lots
- Severe Soil and Groundwater Conditions

Recommendation:
Municipal Sewer at Surfside WWTF

HUMMOCK POND NORTH

Drivers:
- Pending TMDL – Water Quality
- Hummock Pond Watershed
  - Head of Hummock

Recommendation:
Municipal Sewer at Surfside WWTF

NANTUCKET HARBOR / SHIMMO

Drivers:
- TMDL – Water Quality
- Nantucket Harbor Watershed
  - Polpis Harbor TMDL
- Severe Soil and Groundwater Conditions

Recommendation:
Municipal Sewer at Surfside WWTF

NANTUCKET HARBOR / SHAWKEMO

Drivers:
- TMDL – Water Quality
- Nantucket Harbor Watershed
  - Polpis Harbor TMDL
- Severe Soil and Groundwater Conditions

Recommendation:
Municipal Sewer at Surfside WWTF

SOMERSET

Drivers:
- Small, Dense Lots
- Severe Soil and Groundwater Conditions
- Inability to Meet Title 5
- Private Water Supply

Recommendation:
Municipal Sewer at Surfside WWTF

AREAS RECOMMENDED FOR SEPTAGE MANAGEMENT PLAN

Polpis, Pocomo, Wauwinet, Quidnet, Surfside, Tom Nevers High Density, Tom Nevers Low Density

SPECIAL AREAS RECOMMENDED FOR SEWER

TOWN WPZ

Drivers:
- Town's Wellhead Protection

Recommendation:
Municipal Sewer at Surfside WWTF IF IMPACTED

TOWN SEWER DISTRICT UNSEWERED & PLUS - Drivers:
- TMDL – Water Quality
- Nantucket Harbor Watershed
  - Polpis Harbor TMDL

Recommendation:
Municipal Sewer at Surfside WWTF

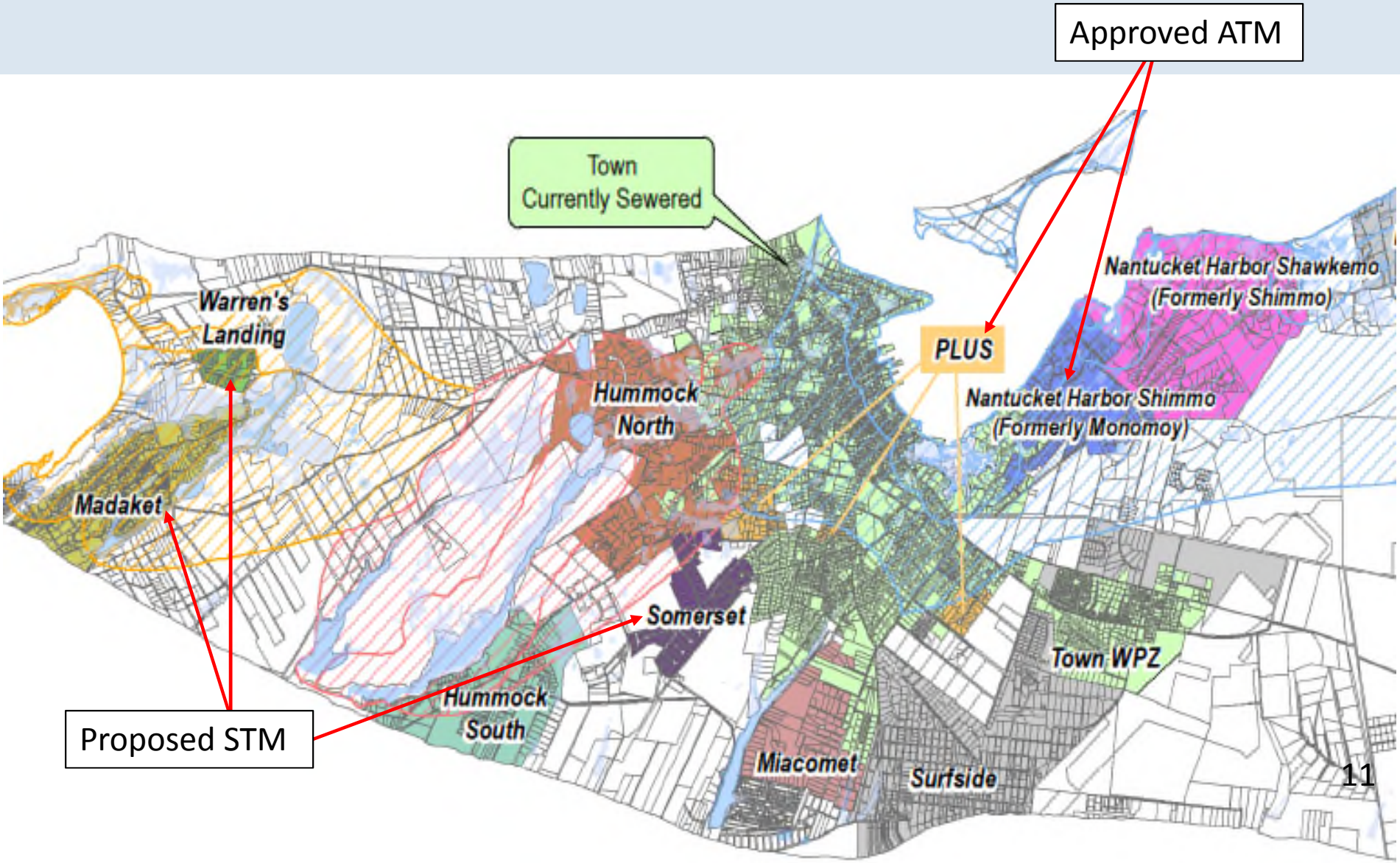
Surfside WWTF Improvements Project Update

- MassDEP Approved Expansion Up to 4.0 MGD
  - Supports All Needs Areas From CWMP Update
  - No Additional Discharge Beds Needed
  - Groundwater Discharge Permit – Monitors Water Quality Testing at TMDL Locations
- MassDEP Approved State Revolving Fund (SRF) Loan at Zero Percent Interest – 20 Years
- Highest and Best Use of Surfside WWTF
  - Madaket WWTF Eliminated
- Final Improvements Project Out to Bid Summer 2016

April 2, 2016 ATM Sewer Implementation Plan Design & Construction of "Nantucket Harbor Shimmo" and "PLUS"

- Two-Phase Sewer Design Approved
  - Phase 1 - Nantucket Harbor Shimmo (Formerly Called Monomoy)
  - Phase 2 - PLUS (Larger Neighborhood In-fill Areas Within or Adjacent to the Existing Town Sewer District

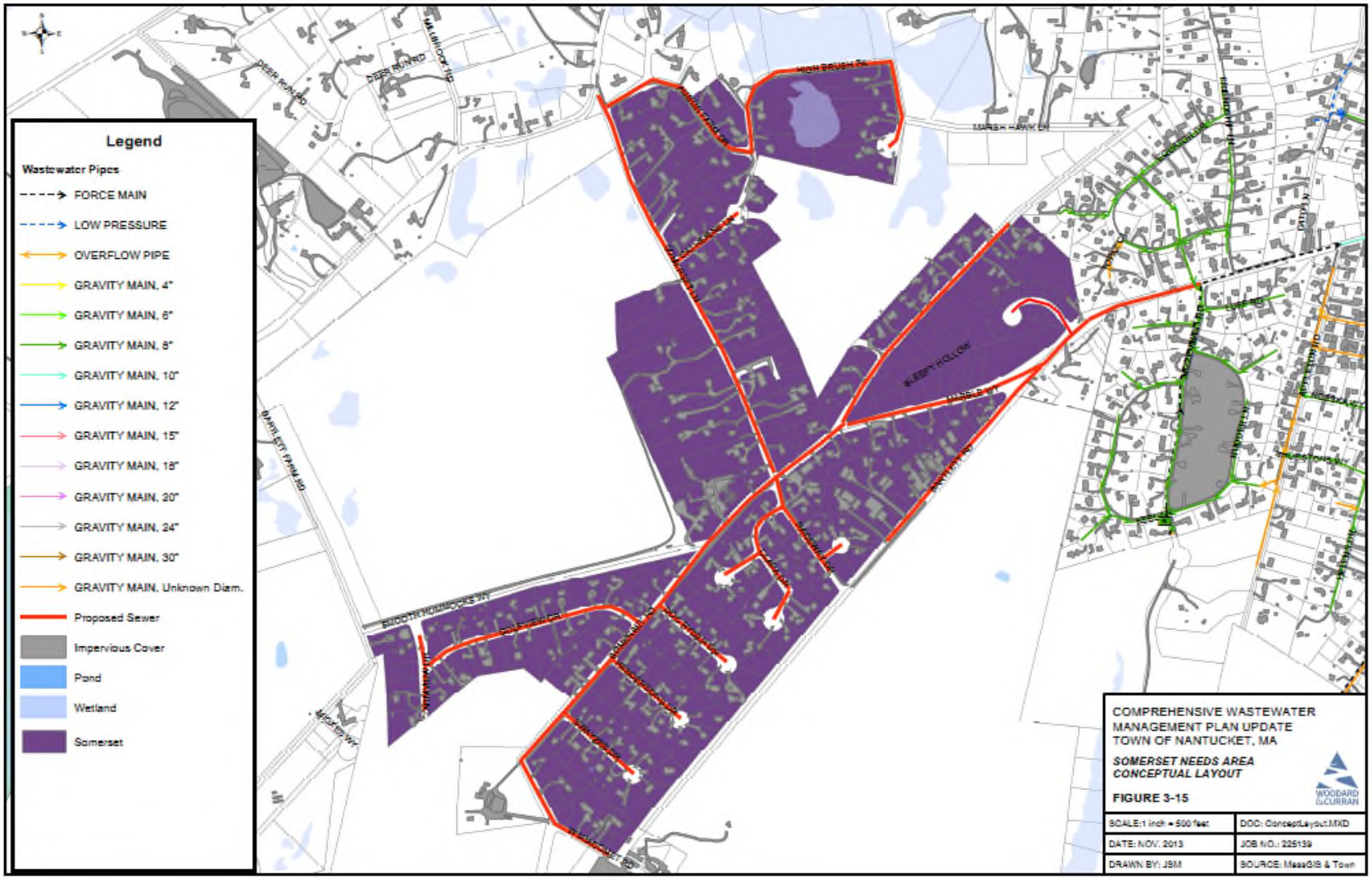
2016 Town Meeting Sewer Locations



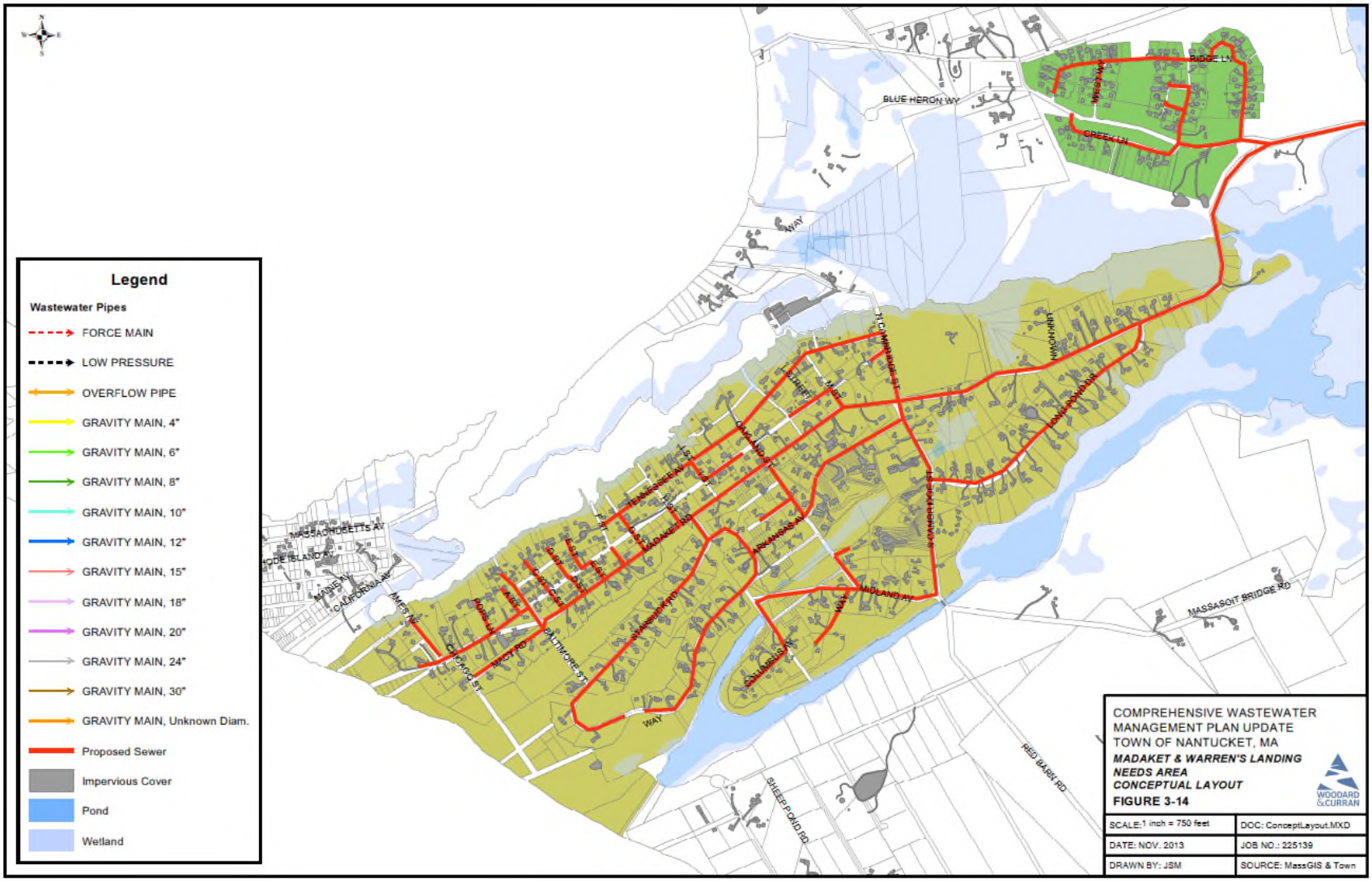
October 17, 2016 STM Sewer Implementation Plan Design & Construction of "Somerset", "Madaket / Warrens Landing"

- Two-Phase Sewer Design Approved
  - Phase Somerset
  - Phase 2 – Madaket / Warrens Landing

Phase 1 - Somerset



Phase 2 – Madaket / Warrens Landing



Why the Need to Sewer – Natural Resources Department

Natural Resources Department

- Annual Water Quality Sampling Program
- Water Quality Issues
  - Nitrogen Impact to Water Quality
    - Total Maximum Daily Load
- Surfside WWTF Groundwater Discharge Permit
  - Monitoring TMDL Through Sampling

Why the Need to Sewer – Board of Health

- Inspection Results
  - 574 Total Septic Systems (69 Innovative / Alternative)
    - 422 Passed
    - 111 Failed
      - 85 Technical
      - 26 Hydraulic

Why the Need to Sewer – Board of Health

- Severe Soils
  - Soils Percolate at Less than 5 Minutes Per Inch
    - Too Fast – No Nitrogen Reduction in Bio-Mat (If a Bio Mat Can Even Form)
    - Inadequately Cleansed Wastewater Enters the Groundwater - Pollution
- Severe Groundwater
  - Extremely Shallow in Madaket Area
    - On-Site systems Do Not Meet Regulatory Mandate for Separation From GW
    - Records of 1.5 Feet of Separation in Area – Regulatory Standard is 6 Feet
- Alternatives
  - Sewer – Remove All On-site Systems from Watershed
  - I/A Systems Do Not Remove Enough Nutrients to Meet TMDL
  - Tight Tanks – Last Resort Technology Governed by Title 5 – 315 CMR 15.00
    - Need Approval From MassDEP
    - Logistically, technically and economically Not Feasible

Overall Estimated Project Costs – Finance Department

Phase 1 – 2017 Cost Estimate

Somerset

- Design - $ 1,753,430.
- Construction - $15,780,867.

TOTAL $17,534,297.

Phase 2 – 2019 Cost Estimate

Madaket / Warrens Landing

- Design - $ 6,109,648.
- Construction – $54,986,828.

TOTAL $61,096,475.

Estimated Project Costs to Taxpayers – Finance Department

Using Average Assessed Property Values, the following are the Estimated Annual Cost Impacts to the Taxpayers for Each Project:

- Average Assessment of $1,784,378
  - Somerset - $53.50
  - Madaket / Warrens Landing - $186.40
- Average Assessed Value of $1,144,544 Year Round Residential
  - Somerset - $34.31
  - Madaket / Warrens Landing - $119.56

2016 Fall Special Town Meeting – Town Administration

- Two Warrant Articles:
  - "Somerset" and "Madaket / Warrens Landing"
    - Adding Needs Areas Parcels to Town Sewer District
    - Approve Design and Construction
- 2016 STM Follow Up
  - Ballot Questions to Follow

What If We Choose To Do Nothing?

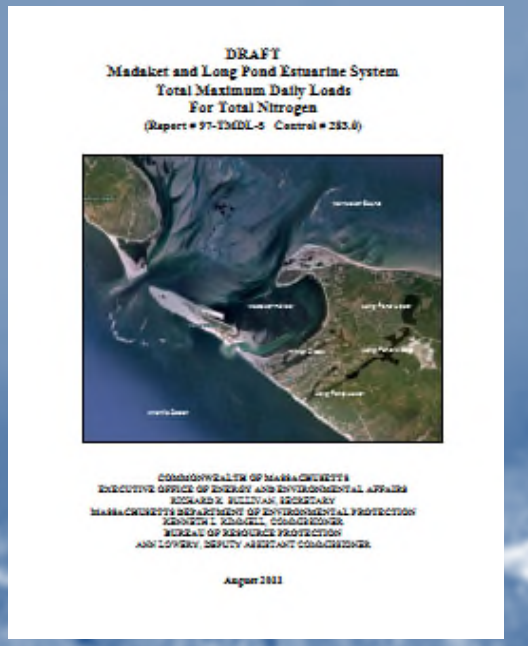
The Town has been issued TMDLs (*a regulatory term in the U.S. Clean Water Act, describing a value of the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards for the subject estuaries)* in Nantucket, Polpis and Madaket Harbors, as well as Sesachacha Pond and has an order pending in Hummock Pond.

If the Town chooses NOT to do anything, EPA with MassDEP has the authority to issue orders with fines to mandate restoration of the Town's waters under its own terms and conditions.

And what Would Doing Nothing Cost Us?

- *We Will Lose SRF Funding*
- *Increased Construction Costs*
- *We Will Lose the Local Control of the Projects*
- *Administrative Consent Order Determines:*
  - *When to Do the Project*
  - *How to Do the Project*
  - *How to Pay For the Project*

Wastewater Plan Update
QUESTIONS & ANSWERS



DRAFT
Madaket and Long Pond Estuarine System
Total Maximum Daily Loads
For Total Nitrogen
(Report # 97-TMDL-5 Control # 283.0)

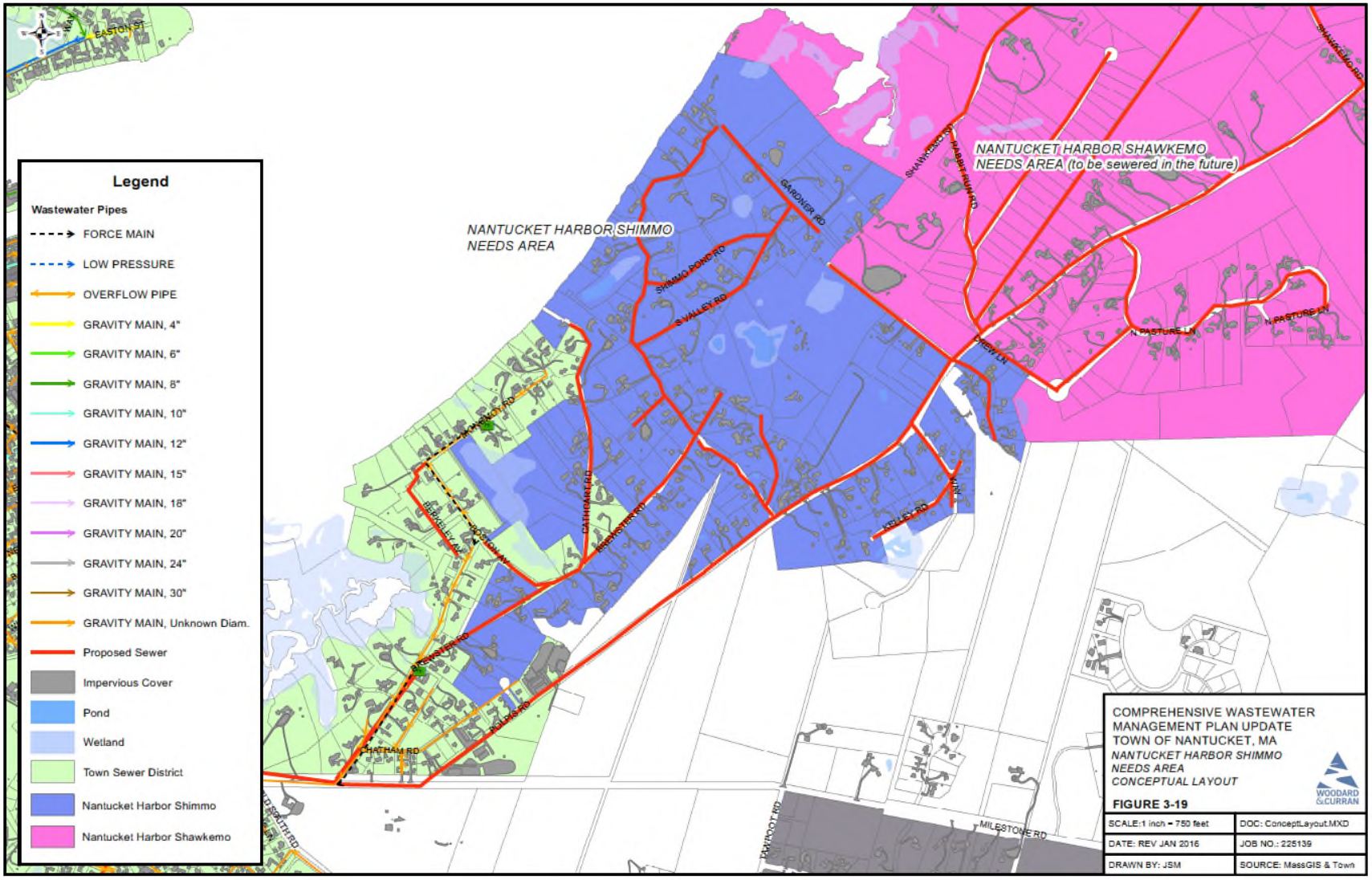
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
RICHARD K. SULLIVAN, SECRETARY
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
KENNETH L. KIMMELL, COMMISSIONER
BUREAU OF RESOURCE PROTECTION
ANN LOWERY, DEPUTY ASSISTANT COMMISSIONER

August 2011

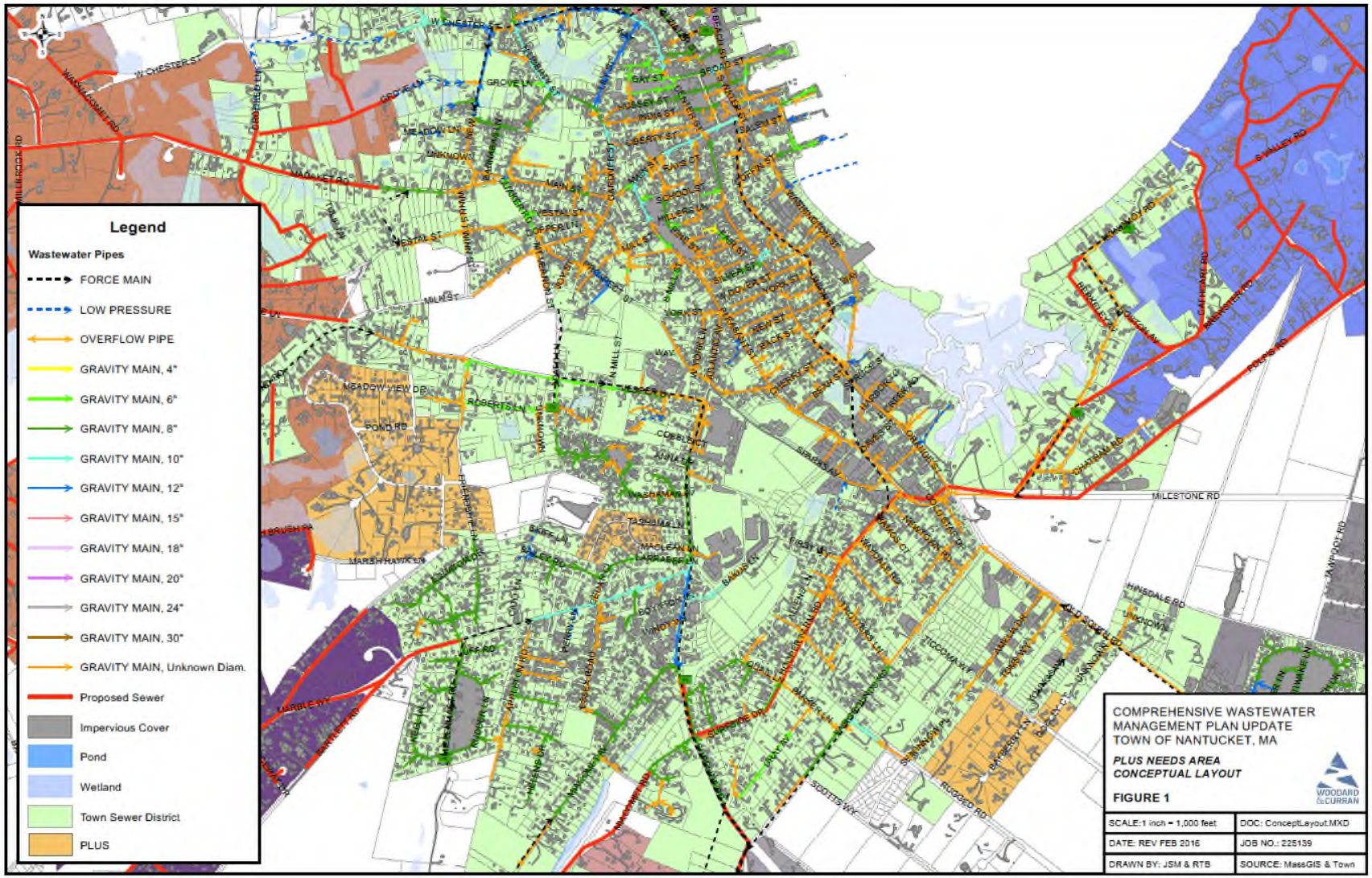
Wastewater Plan Update

BACK-UP SLIDES

Phase 1 Sewer Location



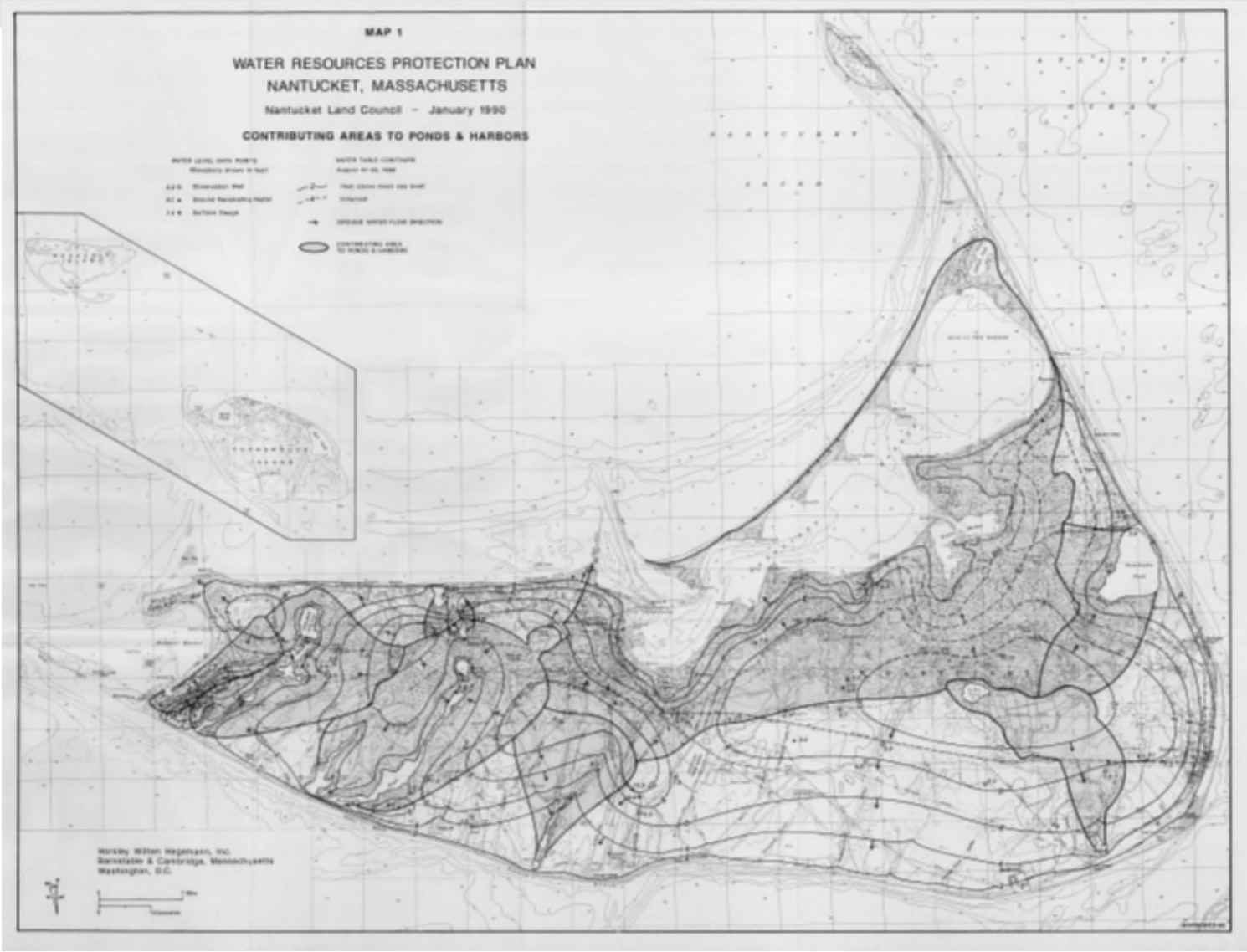
Phase 2 Sewer Location



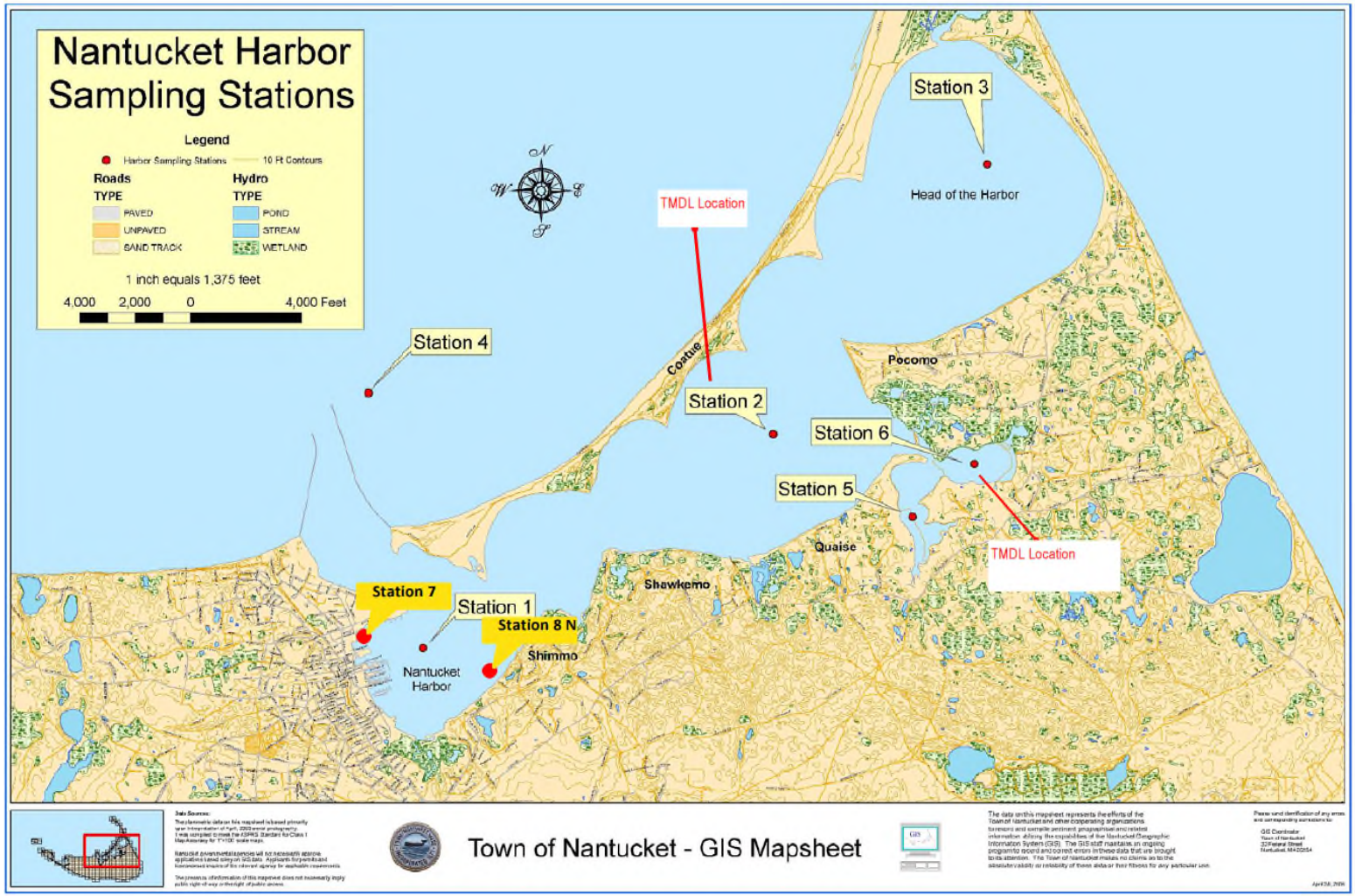
Funding & Financing: Capital Recovery Plan

- SRF Loan at Zero Percent Interest
  - Paid Over 30 Years
  - Costs Savings
    - $44.6M Over Life of Loan

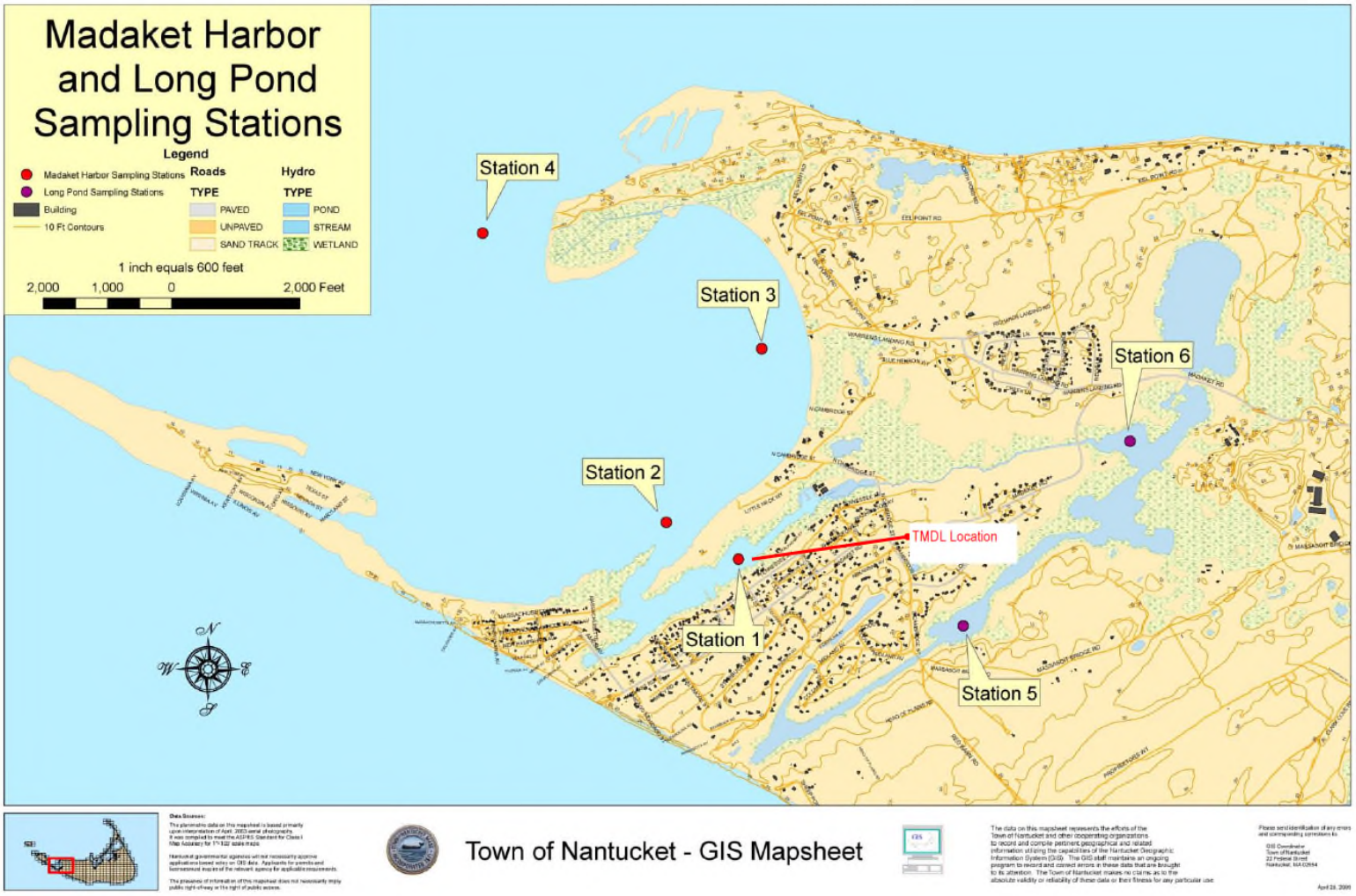
Contributing Areas to Waters



Nantucket Harbor TMDL Locations



Madaket Harbor TMDL Location



Excerpt from Nantucket Harbor TMDL from MassDEP:

Reasonable Assurances

MassDEP possesses the statutory and regulatory authority, under the water quality standards and/or the State Clean Water Act (CWA), to implement and enforce the provisions of the TMDL through its many permitting programs including requirements for N loading reductions from on-site subsurface wastewater disposal systems. However, because most non-point source controls are voluntary, reasonable assurance is based on the commitment of the locality involved. Nantucket has demonstrated this commitment through the comprehensive wastewater planning that they initiated well before the generation of the TMDL. The town expects to use the information in this TMDL to generate support from their citizens to take the necessary steps to remedy existing problems related to N loading from on-site subsurface wastewater disposal systems, storm-water, and runoff (including fertilizers), and to prevent any future degradation of these valuable resources. Moreover, reasonable assurances that the TMDL will be implemented include enforcement of regulations, availability of financial incentives and local, state and federal programs for pollution control. Storm-water NPDES permit coverage will address discharges from municipally owned storm-water drainage systems. Enforcement of regulations controlling non-point discharges include local implementation of the Commonwealth's Wetlands Protection Act and Rivers Protection Act, Title 5 regulations for on-site subsurface wastewater disposal systems and other local regulations (such as the Town of Rehoboth's stable regulations). Financial incentives include federal funds available under Sections 319, 604 and 104(b) programs of the CWA, which are provided as part of the Performance Partnership Agreement between MassDEP and EPA. Other potential funds and assistance are available through the Massachusetts Department of Agriculture's Enhancement Program and the United States Department of Agriculture's Natural Resources Conservation Services. Additional financial incentives include income tax credits for Title 5 upgrades and low interest loans for Title 5 on-site subsurface wastewater disposal system upgrades available through municipalities participating in this portion of the state revolving fund program.

As the town implements these TMDLs the loading values (kg/day of N) will be used by MassDEP for guidance for permitting activities and should be used by the community as a management tool.