

# EFFLUENT RECHARGE LOADING SUMMARY

Harwich, Ma

The logo for CDM, consisting of the letters 'CDM' in a bold, white, sans-serif font on a black rectangular background.

December 21, 2011

# Summary

- Model update
- Groundwater mounding update
- Meeting with DEP and CCC update
- Conducting sensitivity analysis
- Verifying bog operations
- Next Steps

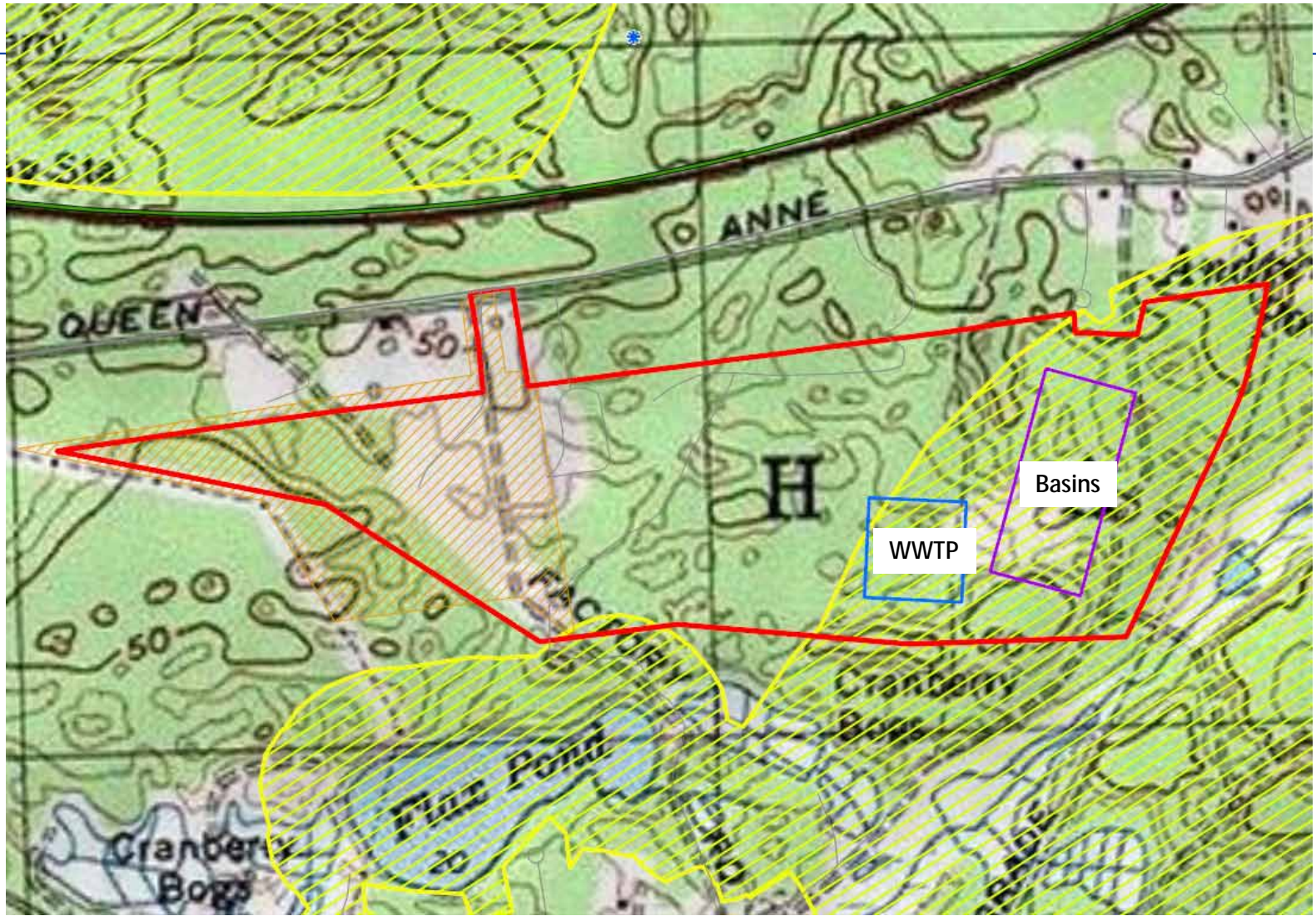
# Surface Water and Boring Locations HR-12



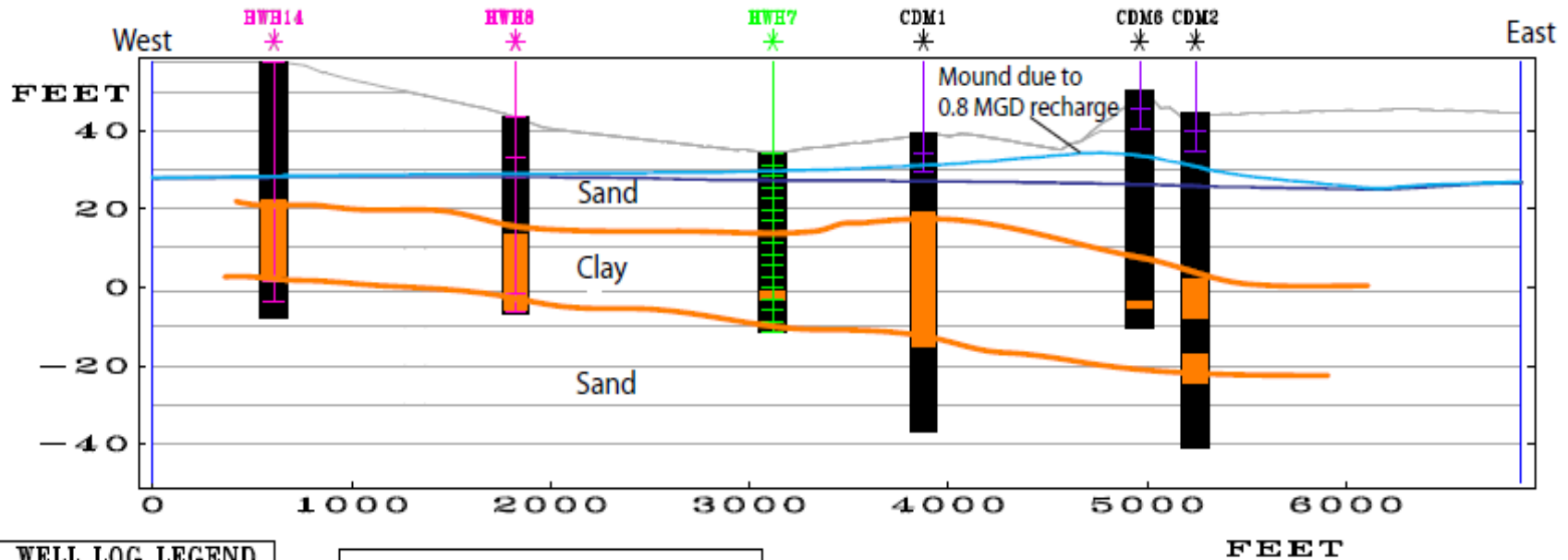
# Model Update









- Groundwater modeling complete
- Borings, elevations, water levels and historic data
- Additional detail added at HR-12 and PB-3
- Clay Layer incorporated into model at HR-12
- Good calibration
  - USGS Regional
  - Landfill 2003 Data

# Proposed Basin Layout HR-12



# Clay Layer at HR-12 Cross-Section

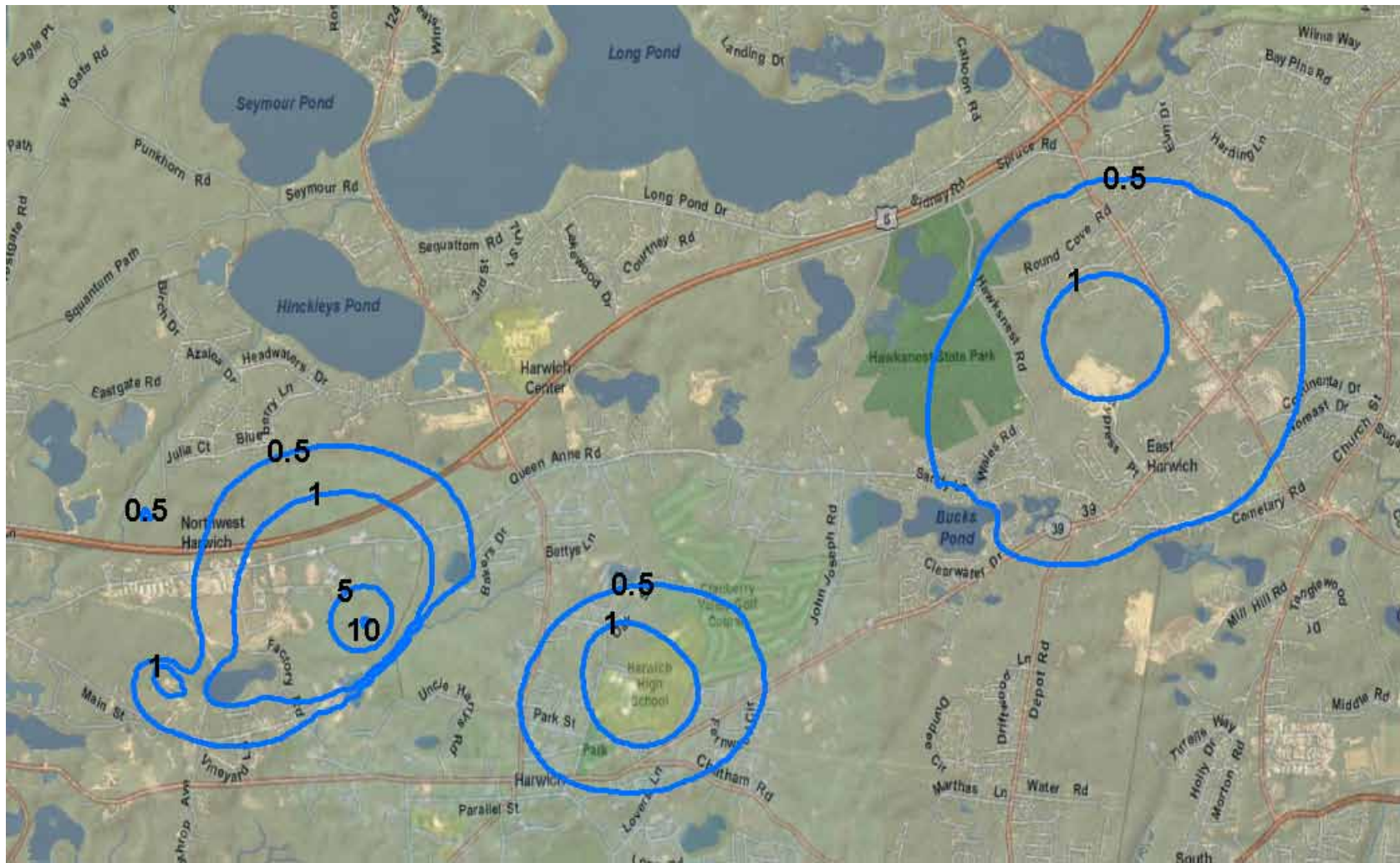


WELL LOG LEGEND	
	CLAY/SILT
	SAND
	CDM
	Landfill Boring
	Landfill Well
	GROUND SURFACE
	TOP OF SCREEN
	BOTTOM OF SCREEN
<b>PROJECTED 300 FT</b>	

# Recharge Scenario

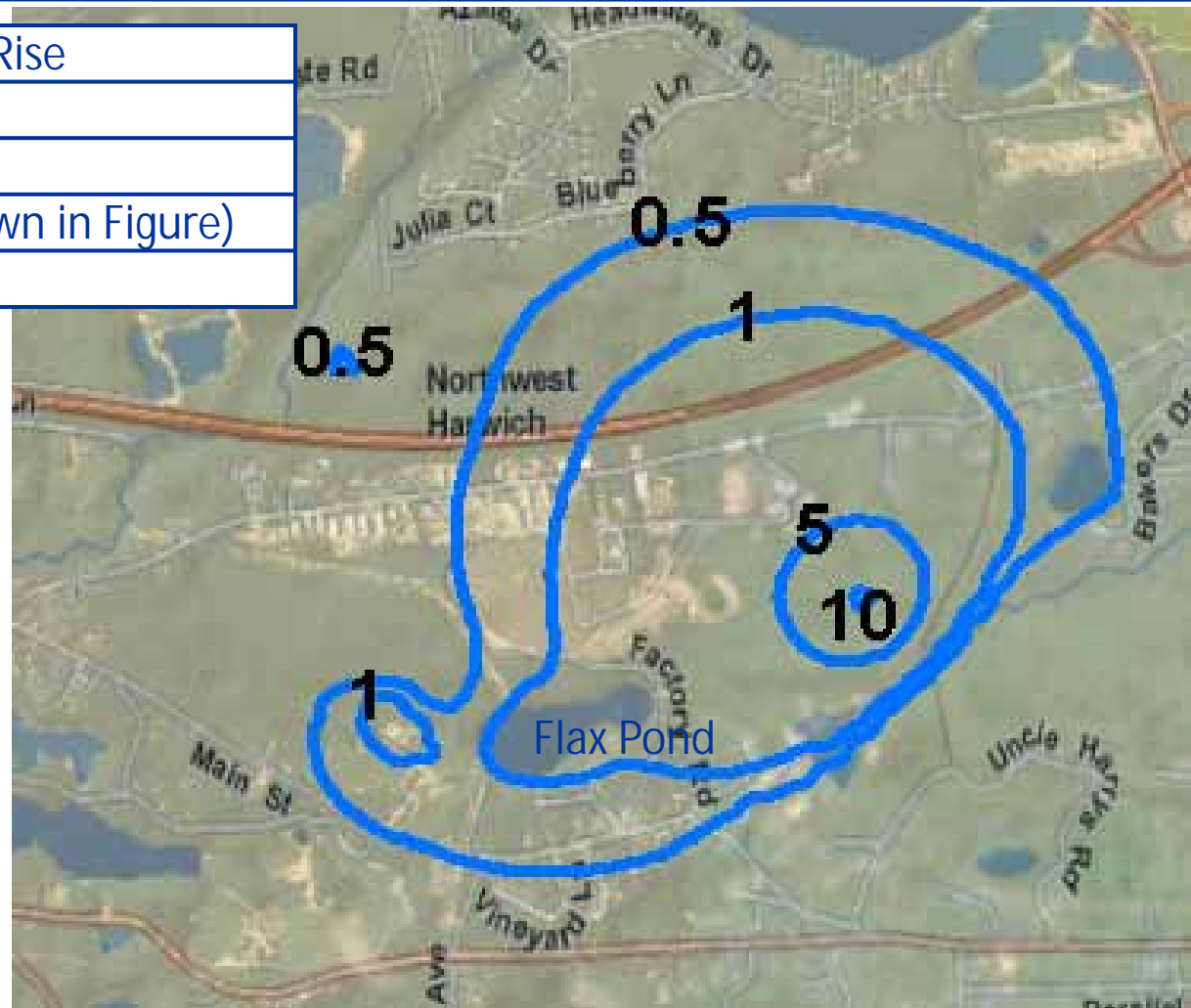
- HR-12 - 800,000 gpd
- SH-2 - 210,000 gpd
- PB-3 – 400,000 gpd

# Mounding



# Mounding - Sensitivity

Loading	Flax Pond Rise
0.4 MGD	0.5 ft
0.6 MGD	0.8 ft
0.8 MGD	1.1 ft (shown in Figure)
1.2 MGD	1.4 ft



# Meeting With DEP and CCC 12/9/2011

- Groundwater Modeling is Considered Complete
  - No significant issues with work performed to date
  - DEP and CCC satisfied with calibration
- Issues to Be Addressed Moving Forward
  - Private well impacts
  - Surface water impacts
  - Flow to nearby brooks and streams
  - Mounding

# Next Steps

- Research private drinking water wells in impact area
- Evaluate surface water impacts (mounding, flow controls, etc.)
- Evaluate impacts from stream flow enhancement
- Evaluate impacts to downgradient bog operations
- Continue to define recommended wastewater plan
- Finalize Hydrogeology Report to incorporate into CWMP

# Comments and Questions?



# FUNDING OPTIONS FOR WASTEWATER CAPITAL PROGRAMS – TOWN OF HARWICH

**Presentation to the Town of Harwich CAC**

Clean Water Protection Planning Group

Robert J. Ciolek

December 19<sup>th</sup>, 2011

# Cape Cod Wastewater Funding Facts

# Funding Facts

Presuming Cape Cod communities execute their present Comprehensive Wastewater Management Plans (CWMP), the total capital cost of building planned wastewater systems will range from \$3.2 billion to \$5.8 billion.

There are 215,000 people living on Cape Cod. On a *per person* basis, each person would be responsible for between \$14,884 to \$26,977 in capital costs.

- Harwich has approximately 11,680 full time and 37,000 seasonal residents; costs TBD

There are 174,000 properties on Cape Cod. On a *per property* basis, each property owner would be responsible for between \$18,391 to \$33,333 in capital costs.

- Amounts do not include system operating expenses [Cape Cod's total ranges from \$40 to \$68 million annually]
- If half of the people or properties are system customers, double per person cost estimates
- Does not take into consideration impact from CLF litigation
- Does not take into consideration community policy judgments on cost issues
- Connection costs and fees not included
- Does not take into consideration future increases in wastewater standards
- Inflation not included

# Benefits of Wastewater Capital Program

# Determining the Benefits of the Wastewater Program

The decision with respect to who should pay and by what funding option or options should be based on a thorough discussion and, to the extent possible, a broad consensus as to the tangible and intangible benefits of the capital program.

- The optimum policy decision is based on three key questions:
  1. What are the benefits of the wastewater capital program?
- Once the discussion as to community benefits has ended, two additional questions then need to be considered:
  2. Who are the beneficiaries of the Town's wastewater capital program?
  3. And thus, who should pay for the wastewater program?

# What are Possible Benefits of the Program?

For most communities there are six broad benefits:

- Protection of the Town's clean drinking water resources
- Protection of public health and meeting sensible sanitation standards
- Permits responsible growth and targeted economic development
- Renewal and protection of saltwater and freshwater resources
- Achieves Town compliance with federal and state laws and regulations
- Recognizes that civilized communities do not foul their own nest

There are two specific benefits for some property owners:

- Properties with failed or inadequate Title V septic systems, and homes atop high groundwater levels may benefit
- Property connected to sewers may receive some marginal though debatable increase in property value. The increased "value" of being connected to a sewer are not included in the Town's property assessment model, however.

So...who are the beneficiaries of the capital program? Who should pay?

# Wastewater Funding Choices

# Funding Options for the Town of Harwich

There will be two categories of expenses for Harwich's wastewater projects: annual *operating expenses* for system operations and maintenance and multi-year *capital expenses* associated with constructing the system. Some funding options are available for one or the other type of expense; a couple are available for both types of expenses.

There are **four** basic funding choices for any Cape Cod town:

- Funding from existing Town funding sources for capital and/or operating expenses
- Funding from betterment assessments for capital expenses
- Funding from a Proposition 2½ override or debt exclusion vote for capital expenses
- Funding from a system of rates and charges for operating and/or capital expenses

There may be some funding support from existing, though *very* limited, federal or state grants for capital expenses. A combination of two or more of the funding options will inevitably be utilized by each town in various permutations and amounts.

Absent any major legislative changes, much of any Town's wastewater system will be financed by low-interest loans from the Commonwealth "Statewide Revolving Loan Fund" (SRF) or through Town-issued general obligation bonds, with the principal and interest (debt service) repaid by one or more of the four funding alternatives.

# Betterment Assessments

Towns have the statutory authority to levy involuntarily betterment assessments in order to defray the capital costs of sewer infrastructure improvements.

## Advantages:

- Town may lien property and place charges on tax bills, thus reasonably insuring it will be paid by property owners
- Appearance of fairness as is believed to be for the receipt of a property benefit
- Relatively low interest rate: 5% or 2% over underlying debt interest rate

## Disadvantages:

- Narrow base of funding for wastewater capital program
- Mismatch between benefits of program and those obligated to pay betterments as many system beneficiaries will pay nothing
- Sewer betterment assessments may be inequitable as assessment based on cost of each neighborhood sewerage projects – assessment may vary significantly
- Not tax deductible
- If EDU formula used, commercial betterments on Cape Cod could be confiscatory
- Not used for cost of constructing wastewater treatment facilities and other assets

# Use of Existing Town Revenue

Debt service costs paid by property taxes *within* Proposition 2½ levy limits. A Town may continue to pass through some capital and, most likely, all operating costs to customer base through rates and charges or other funding methodology.

## Advantages:

- No immediate financial impact on Town property owners
- Spreads cost over a wider base than other funding choices
- Towns will maintain control over scope, pace and cost of project
- Town government will remain directly accountable for program
- No legislation needed

## Disadvantages:

- Most Towns are at Proposition 2½ levy limit
- Major reductions in important Town-funded services will be required
- Available other revenues are minimal compared to total cost of program
- May negatively impact Town credit rating
- Tax-exempt entities would realize program benefits but do not pay real estate taxes
- Solely using Town funds would make regionalizing services more difficult
- Would create significant pressure to limit scope of wastewater capital program

# Proposition 2½ Override or Debt Exclusion

Substantial debt service costs paid by property tax *after* successful override campaign(s). Town may continue to pass through some capital and operating costs to customers by system of rates and charges or other funding methodology.

## Advantages:

- Minimal impact on existing Town services
- Town will continue to control scope, pace and cost of project
- Spreads cost of program over wider base than other funding options
- Tax deductible for those who itemize
- Town government will remain directly accountable for program
- No legislation needed
- NOTE: Town may also create a “Municipal Stabilization Fund”

## Disadvantages:

- Override will require capital-related override ballot campaign
- Significant real estate tax impact for town property owners
- Could create conflict between those connected to sewers and those not connected
- Solely using locally generated funds would make regionalizing services more difficult
- Tax-exempt entities would realize program benefits but do not pay real estate taxes

# System-wide Fees, Rates and Charges

Funding could occur by imposing a system of rates and charges, to be managed by each Town, which could pay for some or all capital costs plus all operating expenses, paid by the users of the service.

## Advantages:

- Flexible and efficient funding system
- Wide base for spreading costs (would include tax-exempt, government users)
- Can more easily create a funding system which best matches relationship of treatment costs with contributions of effluent requiring treatment
- System can be designed to permit some subsidy for low-income households and would enable monthly billing making household budgeting easier
- Could encourage regional approach to problem solving

## Disadvantages:

- Over time, will grow to become a significant utility bill
- Not easily used in a start-up situation with minimal customer base
- Not tax-deductible
- Zero-sum funding mechanism; absent some new revenue source, reductions for some ratepayers means increases in charges to other ratepayers

# Funding and Organizational Options

# Organizational Options and Issues

What is the best organizational model to accomplish the funding effort and administer this complex program? There are two basic choices though with many variations:

Town of Harwich government, *or*  
An independent entity (Two modes – Town or Regional)

Questions for discussion: What is the most effective and efficient organization to fund a large capital program? Which is most capable of managing a public utility? Which best insures that the Town will meet federal and state clean water standards?

- Funding options should be reviewed in the context of creating an independent entity
- An independent entity would require legislative approval
- Issues of financial and political accountability need to be addressed
- Regionalizing some, though not all, wastewater services may be explored

**“It is our firm belief that a coordinated regional approach is necessary – not individual towns trying to solve the problems on their own.”** Christopher Killian, Senior Counsel, Conservation Law Foundation, Boston Globe, November 26, 2011, p.A9,

# Regionalizing Wastewater System

Could result in a reduction of capital and operating costs, primarily through the development of fewer though larger capacity wastewater treatment facilities and permit other cost savings.

## Advantages:

- Greater flexibility in funding options
- Smaller number of wastewater treatment facilities or other capital assets needed
- Greater flexibility in finding discharge sites outside nitrogen sensitive areas
- Some savings in overhead and operating expenses
- Improved planning and coordination of shared watersheds
- If watershed based, could better integrate alternative and innovative technology solutions and adaptive management options
- If regional, could better address Cape-wide Title V issues

## Disadvantages:

- Would require complex legislation
- Individual community would no longer solely control its own wastewater system
- Need to insure public accountability and trust

## Other Funding Options

# Other Financial Options

*Very* limited funding is available from other sources or financing methodologies. Such funding will be constrained in amount or by statutory requirements.

- USDA Rural Development Loan and/or Grant

Limited by size of community/district and amounts available; community income test

- District Improvement Financing/Tax Increment Financing

Typically for commercial development purposes; likely requires interim financing and a financial backstop

- Community Development Block Grant

Limited funds available and must meet grant requirements

In addition, another organizational/funding option Harwich could consider is adoption, by a community vote, of MGL C. 40N, the “Model Water and Sewer Commission Act”. However, provisions of act are generic and not tailored to any specific community or its particular needs.

# New Federal and State Grants

Paying for the cost of the capital program can be achieved by obtaining direct financial support through the imposition of a new tax or reestablishing federal or state grants.

## Advantages:

- A new tax or array of taxes could pay for part of capital costs
- Depending upon the type of tax, cost of the program might be spread over a larger population base than by either betterments or real estate tax
- Tax revenue or new grant funding might be made available to all Cape Cod communities for similar capital programs
- Could possibly encourage regional approach to problem solving
- State currently considering a new grant program

## Disadvantages:

- Would require a major campaign effort
- Negative financial impact on whomever is obligated to pay any new tax
- Some payers of the tax may not be responsible for, or benefit from, the Cape's wastewater capital program
- Could result in unforeseen new obligations or restrictions imposed by State
- Role of Towns in managing wastewater program may be circumscribed

# Use of MGL C.59, Section 21C(n)

Towns may replace rate revenue with property tax revenue by a vote of town Board of Selectmen or Town Council. “Special debt exclusion” not a new funding source, but a legislative grant of authority to shift costs from ratepayers to taxpayers.

## Advantages:

- Dollar for dollar replacement of debt service costs  
[\$1 dollar of rate revenue with \$1 tax revenue]
- Broadens financial base
- Avoids Proposition 2½ override requirements\*
- Decreases rate revenue which is paid by system users with property taxes which are paid by both system users and non-users
- Special debt exclusion will lower *rate* revenue requirements (but not betterment assessments)
- Replaces non-deductible payments with deductible payments

## Disadvantages:

- Funding method may pit property owners against system customer base
- While statutorily permissible, would be controversial – not easily understood
- Avoids Proposition 2½ override requirements\*

**Affordability = Lowest Responsible Cost  
over  
Longest Period of Time**