Update to Board of Selectmen

Yarmouth Wastewater Planning Efforts
Presentation Agenda

- Overview of Proposed Yarmouth Wastewater Program
  - Nitrogen removal needs
  - Projected wastewater flows
- Proposed Phase 1 Plan
- Proposed Costs: TOY vs DHY
- Status and Overview of Draft DHY Agreement
- Draft Cost Recovery Program
- Schedule and Potential Next Steps
- Questions and Comments
# Yarmouth’s Water Resources Advisory Committee

<table>
<thead>
<tr>
<th>MEMBER</th>
<th>REPRESENTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curt Sears, Chairman</td>
<td>Member-at-Large</td>
</tr>
<tr>
<td>Renie Hamman</td>
<td>Northside Area Representative</td>
</tr>
<tr>
<td>Paul O’Bryan</td>
<td>Board of Health Representative</td>
</tr>
<tr>
<td>George Perkins</td>
<td>Parker’s River Area Representative</td>
</tr>
<tr>
<td>Tom Roche</td>
<td>Bass River Watershed Representative</td>
</tr>
<tr>
<td>John Deliso</td>
<td>Lewis Bay Area Representative</td>
</tr>
<tr>
<td>Tom Durkin</td>
<td>Conservation Commission Representative</td>
</tr>
<tr>
<td>Lee Rowley</td>
<td>Planning Board Representative</td>
</tr>
<tr>
<td>Spyro Mitrokostas</td>
<td>Member-at-Large</td>
</tr>
</tbody>
</table>
Yarmouth Has Changed !!!

1951 – Pop. 3,297

Population Densities

722% Increase

2010 – Pop. 23,793
Our Nitrogen Issue Exists.

Mill Creek Algae Bloom May 2011

Parkers River Fish Kill
Loss of Eelgrass in Yarmouth

1995 → 2013
Controllable Nitrogen Around Us

Wastewater, 85%

Fertilizer, 8%

Stormwater - Impervious Surfaces, 7%

We Are Responsible For Reducing This Nitrogen
Nitrogen Entering Our Groundwater from Title 5 Septic Systems is Our Biggest Issue
Drinking Water Nitrogen Study Shows Negative Impacts

Aquifer Protection District
Pond Health Assessment

- The five ponds examined have differing water quality
- Only Long Pond identified as requiring sewering at this time
Effects On Economic Development

- Pent up demand for development
- Businesses do not want to be in the wastewater business – on-site systems are expensive, limit expansion
- Businesses constrained from reaching market potential
- Continued stagnation/decline of commercial tax base and tourism
- Underperformance on rooms/meals tax.
- 35% decline in non-residential values over 10 years
- Anemic “new growth” rate for property tax base of .77%
- #1 impediment to significant redevelopment ... absence of Wastewater treatment
Primary WRAC Conclusions to date

Centralized wastewater treatment is:

- Most cost-effective solution across the community
  - For capital investment, and
  - For ongoing operation and maintenance costs
- Achieves the best nitrogen removal results
- Has the ability to address Contaminants of Emerging Concern (CEC)
- Provides substantial value to homeowners and businesses
- Potential to provide significant economic development opportunities
Yarmouth’s Conceptual Phasing Plan
2011 - CWMP Recommended Phasing Program
WRAC Proposed Phase 1 Plan

- Addresses nitrogen in all three watersheds of immediate concern.
- Serves as system spine and sets the stage for future phases.
- Provides for significant Economic Development opportunities.
- Provides flexibility for adaptive management opportunities and cost savings.
## Yarmouth – Parcels and Flow by Phase

<table>
<thead>
<tr>
<th>Phase</th>
<th>Watersheds</th>
<th>Number of Parcels</th>
<th>Buildout Flow (GPD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bass River, Direct Discharge, Lewis Bay, Parkers River</td>
<td>604</td>
<td>909,147</td>
</tr>
<tr>
<td>2</td>
<td>Direct Discharge, Lewis Bay, Parkers River</td>
<td>2,474</td>
<td>485,258</td>
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<tr>
<td>3</td>
<td>Bass River, Lewis Bay, Parkers River</td>
<td>2,126</td>
<td>434,409</td>
</tr>
<tr>
<td>4</td>
<td>Bass River, Parkers River</td>
<td>1,449</td>
<td>289,658</td>
</tr>
<tr>
<td>5</td>
<td>Bass River, Direct Discharge, Lewis Bay, Parkers River</td>
<td>1,175</td>
<td>279,776</td>
</tr>
<tr>
<td>6</td>
<td>Bass River, Parkers River</td>
<td>2,029</td>
<td>481,109</td>
</tr>
<tr>
<td>7</td>
<td>Bass River</td>
<td>696</td>
<td>225,868</td>
</tr>
<tr>
<td>8</td>
<td>Bass River, Direct Discharge</td>
<td>1,646</td>
<td>431,413</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12,199</td>
<td>3,536,638</td>
</tr>
</tbody>
</table>
DHY Website

- Website developed: [www.dhycleanwaters.org](http://www.dhycleanwaters.org)
  - Overview
  - Special Legislation
  - Draft Agreement
  - Meeting Minutes
  - Presentations
DHY Clean Waters Community Partnership - Status

- DHY Subgroup formed - June, 2017
- Three Town Meetings authorized filing of Special Legislation to potentially create partnership – May, 2018
- Towns approved Special Legislation filing – September, 2018
- Subgroup developed Draft Agreement – Oct/Nov, 2018
- Individual subgroups review Draft Agreement – Nov, 2018
- Joint community meeting/ input – Nov/ Dec, 2018
- Special Legislation refiled – Jan, 2019
- Local Town information meetings – Jan/ Feb, 2019
- Special Legislation revised based on subgroups – April, 2019
- Special Legislation approved by House – Aug, 2019
- Special Legislation approved and signed – Fall, 2019
- Town Meetings to address DHY Agreement – Spring, 2020.
<table>
<thead>
<tr>
<th>Town</th>
<th>Wastewater Flow at Buildout</th>
<th>% of DHY WWTF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dennis</td>
<td>1.96 MGD</td>
<td>30%</td>
</tr>
<tr>
<td>Harwich</td>
<td>0.98 MGD</td>
<td>15%</td>
</tr>
<tr>
<td>Yarmouth</td>
<td>3.54 MGD</td>
<td>55%</td>
</tr>
<tr>
<td>Total</td>
<td>6.5 MGD</td>
<td></td>
</tr>
</tbody>
</table>

Estimated Wastewater Flow by Town
Summary of Shared Utilities

- The DHY Wastewater Treatment Facility (WWTF) will be located at Dennis DPW site;
- Piping to convey to multiple recharge/reuse sites in each community; and
- Shared effluent recharge/reuse sites:
  - Dennis DPW (Site No. 1)
  - Yarmouth Bass River Golf Course
  - Harwich Site HR-12 (DPW)
  - Dennis Crowell Road (Site No. 2)
  - Dennis Pines Golf Course (Site No. 3)
  - Dennis Highland Golf Course (Site No. 5)
DHY Community Partnership - Wastewater
## DHY Shared Infrastructure Costs and Savings

<table>
<thead>
<tr>
<th>DHY Shared Conveyance, WWTF, and Effluent Recharge Cost Comparison</th>
<th>Capital Costs</th>
<th>O&amp;M Costs</th>
<th>Equivalent Annual Costs</th>
<th>Annual Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Town</td>
<td>Regional</td>
<td>Town</td>
<td>Regional</td>
</tr>
<tr>
<td>Dennis</td>
<td>$90 M</td>
<td>$64 M</td>
<td>$4.5 M</td>
<td>$2.6 M</td>
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<tr>
<td>Harwich</td>
<td>$68 M</td>
<td>$33 M</td>
<td>$2.1 M</td>
<td>$1.5 M</td>
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<tr>
<td>Yarmouth</td>
<td>$132 M</td>
<td>$116 M</td>
<td>$8.9 M</td>
<td>$4.8 M</td>
</tr>
<tr>
<td>Total</td>
<td>$290 M</td>
<td>$213 M</td>
<td>$15.5 M</td>
<td>$9.0 M</td>
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</table>

*EAC assumes 30 year loan at 2% interest*
<table>
<thead>
<tr>
<th>Yarmouth</th>
<th>Capital Costs</th>
<th>O&amp;M Costs</th>
<th>Equivalent Annual Costs</th>
<th>Annual Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Town</td>
<td>Regional</td>
<td>Town</td>
<td>Regional</td>
</tr>
<tr>
<td>Collection System</td>
<td>$324 M</td>
<td>$334 M</td>
<td>$3.7 M</td>
<td>$3.7 M</td>
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<tr>
<td>Shared Conveyance to WWTF</td>
<td>$0 M</td>
<td>$8 M</td>
<td>$0.0 M</td>
<td>$0.2 M</td>
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<tr>
<td>WWTF</td>
<td>$105 M</td>
<td>$81 M</td>
<td>$8.6 M</td>
<td>$4.2 M</td>
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<tr>
<td>Effluent Recharge with PRB</td>
<td>$26 M</td>
<td>$27 M</td>
<td>$0.3 M</td>
<td>$0.3 M</td>
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<tr>
<td>Non-Traditional Technologies</td>
<td>$224,000</td>
<td>$224,000</td>
<td>$11,400</td>
<td>$11,400</td>
</tr>
<tr>
<td>Total</td>
<td>$456 M</td>
<td>$450 M</td>
<td>$12.6 M</td>
<td>$8.5 M</td>
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</table>
# Overall Wastewater Program Costs: Together vs. Go it Alone

<table>
<thead>
<tr>
<th>Wastewater Program Cost Comparisons</th>
<th>Capital Costs</th>
<th>O&amp;M Costs</th>
<th>Equivalent Annual Costs</th>
<th>Annual Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Town</td>
<td>Regional</td>
<td>Town</td>
<td>Regional</td>
</tr>
<tr>
<td>Dennis</td>
<td>$313 M</td>
<td>$282 M</td>
<td>$6.9 M</td>
<td>$4.7 M</td>
</tr>
<tr>
<td>Harwich</td>
<td>$314 M</td>
<td>$289 M</td>
<td>$4.6 M</td>
<td>$4.6 M</td>
</tr>
<tr>
<td>Yarmouth</td>
<td>$456 M</td>
<td>$450 M</td>
<td>$12.6 M</td>
<td>$8.5 M</td>
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<tr>
<td>Total</td>
<td>$1083 M</td>
<td>$1020 M</td>
<td>$24.1 M</td>
<td>$17.8 M</td>
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</table>
## ESTIMATED SAVINGS ON PHASE 1 AND 2 (FIRST 10 YEARS OF PROGRAM)

<table>
<thead>
<tr>
<th>Town of Yarmouth</th>
<th>Capital Costs</th>
<th>O&amp;M (after Phase 2)</th>
<th>Equivalent Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Town</td>
<td>Regional</td>
<td>Town</td>
</tr>
<tr>
<td>Collection System</td>
<td>$99.2 M</td>
<td>$104.1 M</td>
<td>$1.1 M</td>
</tr>
<tr>
<td>Shared Conveyance to WWTF</td>
<td>$0.0 M</td>
<td>$8.4 M</td>
<td>$0.0 M</td>
</tr>
<tr>
<td>WWTF</td>
<td>$74.2 M</td>
<td>$54.5 M</td>
<td>$3.4 M</td>
</tr>
<tr>
<td>Effluent Recharge with PRB</td>
<td>$10.5 M</td>
<td>$11.3 M</td>
<td>$0.1 M</td>
</tr>
<tr>
<td>Non-Traditional Technologies</td>
<td>$0.1 M</td>
<td>$0.1 M</td>
<td>$0.0 M</td>
</tr>
<tr>
<td>Total</td>
<td>$184.0 M</td>
<td>$178.3 M</td>
<td>$4.7 M</td>
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</table>

Savings on capital based upon 2% interest costs – a zero % loan, or a subsidy, increase projected capital savings.
Coordination with MassDOT Projects
Route 28 road project coordination potential savings opportunity or program delay?
State Revolving Fund (SRF) Loan Program

- Competitive Process for Zero Percent interest loans
- Five Criteria:
  - Prevent nutrient enrichment
  - Not subject to enforcement or court orders
  - Approved Comprehensive Wastewater Management Plan
  - Consistent with regional water resources plan
  - Community has adopted land use controls
- Two percent loans also an option
- Regional approach gains more points
- Principal forgiveness may be available
DHY Draft Agreement - General

- Economy of scale – one treatment plant versus three treatment plants.
- This is a separate entity under Massachusetts General Law that deals only with wastewater treatment and effluent recharge. Each community remains in control of its own collection system which is about 75% of the cost of their program.
Partnership Governed by Commission

- Proposed Seven (7) Member Commission:
  - Three (3) from Yarmouth (BOS)
  - Two (2) from Dennis (BOS and Moderator)
  - Two (2) from Harwich (BOS)

- Board of Selectmen or designated authority acting as sewer commissioners would appoint commissioners in both Yarmouth and Harwich. Board of Selectmen and Moderator would each appoint one commissioner in Dennis.

- Executive Director to oversee day to day operations.
Partnership Commissioners

- Commissioners appointed from:
  - Town Administrator
  - DPW Director
  - Wastewater superintendent or equivalent
  - Sewer Commissioner
  - Board of Selectmen
  - Finance Committee
  - Qualified Town Resident

- Three-Year terms (rotating).
- Commissioner can be removed by their appointing authority.
Budget Process

- November 1\textsuperscript{st} Draft Fiscal Year budget (majority vote) distributed to three communities. Also 5-yr budget plan.
- Commission discusses budget with communities during November/December.
- Commission and member towns conduct a joint three-town Board of Selectmen meeting to approve Draft Partnership budget by majority vote of those present or reject for further Commission review. A quorum for this meeting shall be at least two selectmen from each town and at least eight selectmen present from the three towns.
- January 15\textsuperscript{th} Final Fiscal Year budget (2/3rds vote) adopted by Commission based on Selectmen vote and send to town treasurers by February 1st. Also 5-yr budget plan.
- Commission issues three bills to Member Towns (quarterly). Can seek payment through Cherry Sheet if nonpayment.
Quorums

- Non-Financial Issues – Requires four (4) Commissioners be present with a representative from each community.
- Financial Issues (over $30K) – Requires five (5) Commissioners be present with a representative from each community.
- Executive Director has authority to act on financial matters less than $30K.
Apportionment of Costs

- Capital and Operating Costs
  - Capital costs apportioned based on percent of average daily flow capacity owned in the treatment plant.
  - Operating costs split into two components:
    - Semi-Fixed Costs – apportioned based on percent of average daily flow capacity owned in treatment plant (staff, overhead, etc.).
    - Flow Variable Costs – apportioned based on percentage of actual wastewater flow from a community treated at the treatment plant (electricity, chemicals and solids disposal).
  - Cost increases not subject to Prop 2 ½.
Phase 1 Cost Estimates

- Yarmouth only option COST ESTIMATE approximates $112 million for treatment plant, collection system and recharge facilities
  - Opportunities for cost reduction through: Regional opportunities; Road work coordination; and design.
- Zero interest loan/30 year amortization = $3.73 million annual debt service
  - 0% vs. 2% interest provides interest savings of up to $35m over the life of the loan.
- Developing a plan to fund these costs without a general tax rate impact
  - For frame of reference purposes only, if it were on tax rate:
  - impact would be 64 cents per thousand, or $64 per one hundred thousand of valuation.
Phase 1 Cost Recovery Options

What is Yarmouth’s path to funding without tax rate impact?

We have done this before with our water infrastructure!

- Grant opportunities – including potential project subsidy (10%)
- Municipal Water Infrastructure Investment Fund
  - Up to 3% ($1.7 million) property tax surcharge, similar to CPA
- Cape & islands water protection trust
- Flow-based betterment program
- 25% capital surcharge on operating rate
- Dedicate Short-term rental bill revenues
- Other local revenues – i.e. solar pv receipts or savings
- Septage plant receipts or water operation cost sharing
- BOS Financial management policies regarding new growth
- Debt drop off
Summary of potential wastewater capital cost funding plan

All amounts are estimates and carry variable levels of certainty

Assumptions: Phase 1 costs of $112,000,000, payable over a 30 year, zero interest loan (represents a savings of up to $35,000,000 on interest costs)

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>AMOUNT</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Annual debt service cost</td>
<td>$3,733,333</td>
<td>100%</td>
</tr>
<tr>
<td>Estimated Funding:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Generated Revenues:</td>
<td>1,113,400</td>
<td>30%</td>
</tr>
<tr>
<td>Septage plant funding; 25% capital surcharge on sewer rates; Betterment program on 20% of collection system costs. High level of certainty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Infrastructure &amp; Investment Fund:</td>
<td>1,063,821</td>
<td>28.5%</td>
</tr>
<tr>
<td>1.5% property tax surcharge. High level of certainty as to amounts, moderate as to passage of surcharge.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedicated Local Receipts:</td>
<td>695,000</td>
<td>16.5%</td>
</tr>
<tr>
<td>New Short-term rental tax revenues ($570,000) and estimated savings on solar PV projects ($125,000). Moderate level of certainty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cape &amp; Islands Water Protection Trust:</td>
<td>933,333</td>
<td>25%</td>
</tr>
<tr>
<td>Yarmouth’s participation in the Trust, estimate of 25% of project costs covered. Low level of certainty.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary of potential wastewater capital cost funding plan

All amounts are estimates and carry variable levels of certainty

Contemplated Phase 1 Funding Plan

- **User Generated Revenues**: 1,113,400 (29%)
- **WPT Funding**: 933,333 (25%)
- **WIIF Surcharge**: 695,000 (28%)
- **Local Receipts**: 1,063,821 (18%)
Other matters and considerations

- Begin pre-funding of plan in FY 2021 to establish a capital reserve to smooth out any shortfalls in plan funding in any one year due to actual costs & revenues differing from the estimates.
- Contemplating a combined water resource enterprise fund to allow for carrying over of surpluses and maintenance of capital reserves.
- Surplus capital contributions that are unused would be set-aside to seed funding of future phases.
- Additional cost avoidance/recovery opportunities:
  - Real estate transfer tax; debt drop-off; “new growth” due to economic development
  - Grant and subsidy opportunities resulting from having a “shovel ready” project.
  - How do we “back stop” the plan in the event actual results do not meet estimates.
Schedule and Potential Next Steps

- Three Town DHY Meeting September 19, 2019
- Subgroup meetings continue to be held monthly
- Some communities holding informational meetings
- October 2019: Fall Town Meetings
  - Dennis: 10/29/2019 – Potential wastewater cost recovery articles
  - Harwich: Waiting till spring 2020
  - Yarmouth: 10/29/2019 – Potential wastewater cost recovery articles
- May 2020: Each community to address DHY at Town Meeting and funding for first phase of design.
- June/July 2020: DHY Agreement signed
- June/July 2020: Communities submit Final CWMP/Notice of Project Change to MEPA Office
- June/July 2020: Communities appoint DHY Commissioners
- Summer 2020: Access to $1,000,000 Environmental Bond Bill
- Summer 2020: DHY Commissioners select a part-time Executive Director
- Two-year design followed by three years of construction/connections
Summary Thoughts

- Keep your focus on the big picture of regionalization versus the special interests of each community.
- Focus on 90% you can agree upon versus the 10% you may never agree upon.
- DHY Clean Waters Community Partnership is an exciting opportunity and should prove very beneficial to each of the communities.
- Each community will have different benefits and will view the various benefits differently.............but that is okay.
QUESTIONS?

To view informational documents and reports related to the Town’s wastewater planning efforts please visit:

https://www.yarmouth.ma.us/1754/Water-Resources

QUESTIONS?

Visit our WRAC webpage for information, meeting minutes/materials, and a link to our YouTube Channel for meeting videos:

https://www.yarmouth.ma.us/1754/Water-Resources

Contact: Rich Bienvenue at 508-398-2231 ext. 1297 or via email at rbienvenu@yarmouth.ma.us