Taunton River Watershed Study Presentation - part 2: Progress Report/Data Collection/Analysis (June 13, 2007 Public Meeting)

Horsley Witten Group, Inc.

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Title 5
Septic Systems

Municipal
Wastewater Plants

Private
Wastewater Plants

Impervious Surfaces
Stormwater Runoff

USGS Precip Recharge
Based on Geo, Impervious, Land Use

Taunton River Subwatershed Water Budget

Private Wells

Public Wells
**Taunton River Watershed**  
**Coweeset Brook Subwatershed**  
(Sub ID 25032)

### Summary of Changes in Recharge from Natural to Existing Conditions

<table>
<thead>
<tr>
<th></th>
<th>Natural Conditions</th>
<th>Existing Conditions</th>
<th>Net Change</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sewage treatment plants (MGY)</strong></td>
<td>+ 0</td>
<td>+ 9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td><strong>Septic systems (MGY)</strong></td>
<td>+ 0</td>
<td>+ 793</td>
<td>793</td>
<td></td>
</tr>
<tr>
<td><strong>Estimated natural recharge (MGY)</strong></td>
<td>+ 2,021</td>
<td>+ 1,465</td>
<td>-556</td>
<td></td>
</tr>
<tr>
<td><strong>Total Inputs</strong></td>
<td>+ 2,021</td>
<td>+ 2,267</td>
<td>246</td>
<td></td>
</tr>
<tr>
<td><strong>Private wells (MGY)</strong></td>
<td>- 0</td>
<td>- 0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Public wells (MGY)</strong></td>
<td>- 0</td>
<td>- 1,025</td>
<td>1,025</td>
<td></td>
</tr>
<tr>
<td><strong>Total Outputs</strong></td>
<td>- 0</td>
<td>- 1,025</td>
<td>1,025</td>
<td></td>
</tr>
<tr>
<td><strong>Net recharge (Baseflow Estimate) (MGY)</strong></td>
<td>+ 2,021</td>
<td>+ 1,242</td>
<td>-779</td>
<td>-39%</td>
</tr>
<tr>
<td><strong>Net recharge (Baseflow Estimate) (CFS)</strong></td>
<td>+ 8.6</td>
<td>+ 5.3</td>
<td>-3.3</td>
<td>-39%</td>
</tr>
</tbody>
</table>
Taunton River Watershed Management Plan
Draft Phase II Outline

1. Additional Data Collection and Analysis Needs
2. Management Approaches and Tools
3. Implementation Plan
MANAGEMENT STRATEGIES & TOOLS
INTEGRATED WATER MANAGEMENT

- Water Supply
- Withdrawals
- Stormwater Treatment and Recharge
- Wastewater Treatment and Recharge

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Water Table Map With Groundwater Flow Arrows
Water Supply Options

• Stop using drinking water to water gardens and lawns
• Protect drinking water protection areas (source water protection areas)
• Transfer development rights from source water protection areas
Collection of roof runoff in rain barrels for irrigation
Stormwater Options

• Use roof runoff as irrigation source (rain barrels & cisterns)
• Treat and infiltrate runoff from roads & parking lots (recharge drinking water supply and baseflow)
Infiltration of Roof Runoff = baseflow to stream
Precipitation 44” / year

Evapotranspiration 22” / year

Runoff 2” / year

Recharge to Groundwater 20” / year

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Stormwater Recharge

• Each acre of impervious =
• 1000 gals/day of surplus water
Wastewater Options

- Treat and return wastewater flows as recharge within the basin
- Treat pharmaceuticals/nitrosamines
- Treat and re-use wastewater for irrigation (golf courses, etc)
- Village-scale treatment systems
Inlet from septic tank

Insulation

Pea gravel

Inlet chamber  Liner  Outlet chamber

To water level control structure, then drainfield, polishing lagoon or wildlife habitat pond.
Smart Growth Options

- Transfer of Development Rights (TDR)
- Village Centers/Growth Incentive Zones
- Low-Impact Development (LID)
- Chapter 40R/40S
Impervious Cover Reduction
Preserved Historic Sandwich Road
What If? 

- Each new development minimized impacts
  = slow deterioration

- Each new development caused no new net impacts
  = no improvement/status quo

- Each new development produced a positive impact
  = restoration
Water Management Practices & Perceptions
Conservative Estimates of U.S. Polluters

- Hosers: 15 million
- Pesticide Sprayers: 43 million
- Bad Mechanics: 3 million
- Septic Slackers: 15 million
- Chronic Car Washers: 27 million
- Bad Dog Walkers: 16 million
- Over-Fertilizers: 38 million

Source: Center for Watershed Protection

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Frequent Fertilizers

- There are 20-30 million acres of lawn in the U.S.
- If lawns were a crop, they’d rank fifth on the basis of area
- Nutrient runoff from lawns can cause eutrophication in streams, lakes & estuaries
- 52% of people who fertilize OVER-fertilize
- Only 10-20% of lawn owners perform soil tests first
Regional Residential Insecticide & Herbicide Use

Center for Watershed Protection

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Poor Pooch Poop Scoopers

- 41% of people own dogs
- Of dog walkers, 41% admit they rarely or never clean up
- Of these, 44% would not clean up even with a fine, complaints, collection or disposal methods
- However, 63% agreed that pet wastes contribute to water quality problems

Center for Watershed Protection
Chronic Car Washers

- 55-70% of households wash their own cars
- 60% are “chronic car washers” who wash their car at least once a month
- 70-90% report that their wash water drains directly to the street and eventually, the storm drain
Septic Slackers

- 1 in 4 U.S. households has a septic system
- Septic system failure rates are 5-35%
- 50% of owners are “septic slackers” who have not cleaned or inspected their system in the last three years
- 12% have no idea where their system is located on their property

Source: Septic Protector

Center for Watershed Protection

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Bad Mechanics

• Only 30% of car owners change their own fluids
• Of these, 80% claim to dispose/recycle their fluids properly
• Only 1-5% dump oil and antifreeze into the storm drain