Hunt River Watershed Bacteria TMDL Studies

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TMDL Process

1. Assign Water Quality Criteria to all Waters
2. Monitoring Data
3. Assess Waters (compare data to criteria)
4. 303(d) Impaired Waters List
5. Implementation
6. TMDL Development
TMDL Studies

• A Total Maximum Daily Load (TMDL) is a prescription designed to restore the health of polluted waters by:
  – Calculating the amount of a pollutant that a waterbody can receive and still meet its water quality standards.
  – Allocating the allowable amount of the pollutant to its sources.

\[
\text{TMDL} = \text{Point Source} + \text{Nonpoint Source} + \text{Background Source} + \text{Margin of Safety}
\]
TMDL Studies

- End goal of TMDL process is a waterbody that meets Rhode Island Water Quality Standards.
- Provides a plan and guidance to concerned parties for implementation efforts to meet water quality goals.
- TMDL studies are both waterbody and pollutant specific.
RI Statewide Bacteria TMDL
57 Waterbody Segments - 2011

RI Statewide Bacteria TMDL Updates
6 Waterbody Segments - 2014
# 2014 RI Statewide Bacteria TMDL Updates

<table>
<thead>
<tr>
<th>Impaired Water</th>
<th>Impairment / Pollutant</th>
<th>Municipality</th>
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</thead>
<tbody>
<tr>
<td>Watershed Planning Area 6: Hunt River</td>
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<tr>
<td>Pierce Brook (RI0007028R-07)</td>
<td>Enterococci</td>
<td>East Greenwich, Warwick</td>
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<tr>
<td>Watershed Planning Area 23: Wood - Pawcatuck Rivers</td>
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<td>Pawcatuck River (RI0008039R-18D)</td>
<td>Enterococci</td>
<td>Hopkinton, Westerly</td>
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<td>Acid Factory Brook (RI0008040R-01)</td>
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<td>West Greenwhich</td>
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<td>Baker Brook (RI0008040R-18)</td>
<td>Enterococci</td>
<td>Richmond</td>
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</table>
Statewide Bacteria TMDL Components

- Background and Reference

- Individual Waterbody Summaries
  - Waterbody specific details
  - TMDL Goals
  - Current Activities
  - Recommended Actions
Waterbody Summary (Appendix) Content

- Watershed Description
- Maps
- Monitoring Data Description
- Actual/Potential Sources of Bacteria in the Watershed
- Existing Management and Recommended Next Steps
- Data Summary Tables and Necessary Pollutant Reductions
Pierce Brook

- Developed: 60%
- Non-Developed: 39%
- Water / Wetlands: 1%
Water Quality Standards

Rhode Island uses enterococci to determine risk associated with primary and secondary contact recreation activities in all the state’s fresh and salt waters.

**Enterococci Criteria**

<table>
<thead>
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<th>Geometric Mean colonies/100 mL</th>
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<td><strong>Saltwater</strong></td>
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<td><strong>Freshwater</strong></td>
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<td>Class A, B, B1</td>
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Data Calculations

- Geometric Mean
- Percent Reduction to Meet TMDL Target

\[
\text{Percent Reduction} = \frac{\text{Geometric Mean} - \text{Criteria}}{\text{Geometric Mean}} \times 100
\]
2013 Pierce Brook Monitoring
**Data Calculations**

**Table 1: Pierce Brook Bacteria Data**

*Waterbody ID:* RI0007028R-07  
*Watershed Planning Area:* 6 – Hunt River  
*Characteristics:* Freshwater, Class B, Primary and Secondary Contact Recreation, Fish and Wildlife Habitat  
*Impairment:* Enterococci (colonies/100mL)  
*Water Quality Criteria for Enterococci:* Geometric Mean: 54 colonies/100 mL.  
*Percent Reduction to meet TMDL:* 95.8% (Include 5% Margin of Safety)  
*Data:* 2012 and 2013 from RIDEM

<table>
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<tr>
<th>Station Name</th>
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<th>Result</th>
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<th>Geometric Mean</th>
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</table>

Shaded cells indicate an exceedance of water quality criteria. Value in red was reported as greater than the detection limit. For the purpose of mathematical calculations, the value was increased one significant number (NSSP, 2007).
Potowomut River - Shellfish Closure Lines
Potowomut River - Shellfish Closure Lines

May 2010 – May 2011

May 2011 – Present
Potowomut River Bacteria Source Investigation
Bacteria Sources

Hunt River Headwaters

Fry Brook

Scrabbletown Brook
Sandhill Brook
Frenchtown Brook
Fry Brook

Entire Watershed
Wastewater
Stormwater

Entire Watershed

Municipal Stormwater Management Plans

Six Minimum Measures

TMDL Requirements
Municipal Stormwater Management Plans
Six Minimum Measures

- Public Education
- Illicit Discharge
- Construction
- Good Housekeeping
- Public Involvement
- Post Construction
Municipal Stormwater Management Plans

Statewide Bacteria TMDL Requirements

• <10% Impervious Cover
  – Unless watershed-specific information, bacteria impairments assumed caused by sources other than urban stormwater
  – No change to Phase II Permit Requirements

• Between 10% and 15% Impervious Cover
  – Revise post-construction ordinances

• >15% Impervious Cover
  – Revise post-construction ordinances
  – Evaluate the sufficiency of the minimum measures

• Structural BMP Requirements
  – Determined on a case-by-case basis, generally where specific information identifies significant sources or where previous TMDL has required structural BMPs.
Municipal Stormwater Management Plans

TMDL Requirements

Pierce Brook, Hunt River (3D), Sandhill Brook

Revise Stormwater Management Program Plan (SWMPP) in a TMDL Implementation Plan (TMDL IP).

- Revise local ordinances to require:
  - new development sites to use stormwater controls to prevent any net increase in bacteria
  - re-development sites to use stormwater controls to reduce bacteria to the maximum extent feasible
- Use of LID (Low Impact Development) techniques wherever feasible
- Evaluate the sufficiency of the minimum measures
Municipal Stormwater Management Plans

TMDL Requirements

Hunt River (3A), Hunt River (3B), Hunt River (3C), Scrabbletown Brook, Fry Brook

• TMDLs Approved in 2001 before Municipal Stormwater Permits were Required.
• Revise Minimum Measures
• Structural BMPs
Public Comment Period Ends
June 20, 2014

DEM TMDL Program Website
http://www.dem.ri.gov/programs/benviron/water/quality/rest/index.htm

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