Otsego Lake Watershed Management Plan
Onsite Wastewater Management Program

Lake & Watershed Characteristics
Management Plan Development
Onsite Management Program
  Inspections
  Administration
  Upgrades & Replacements
  Enforcement
Demonstration Project & Monitoring
Lessons Learned

Holly Waterfield
SUNY Oneonta Biological Field Station
Cooperstown, NY
Otsego Lake Watershed

- Watershed Area = 46,483 ac (73 square miles)
  - Agriculture
  - Dense settlement along western shoreline
- 371 systems within Lake Protection Zone
- Watershed includes 5 towns and Village of Cooperstown
- Drinking water for Village of Cooperstown
Management Needed

• 1990’s: Lake health in question
  - Decreased clarity
  - Decreased hypolimnetic oxygen
  - Invasive species
  - Disappearance of native species

• 1994: Otsego Lake Watershed Council forms
  - Identify and describe lake problems
  - Develop acceptable solutions
Otsego Lake Management Plan: 1998

- **State of the Lake Report** by BFS in 1996
- Nutrient loading is greatest threat
  - Address onsite wastewater treatment
  - Work with road maintenance
  - Agricultural projects

2. WASTEWATER. Conduct an inventory of onsite wastewater systems and sanitary surveys on a regular basis. Inspect systems when property is sold. Upgrade shoreline systems not in working order.
Watershed Supervisory Committee

• Manage land & water activities impacting water quality
• Review septic system designs
• Grant variances to ‘grandfathered’ systems within lake protection zone
Watershed Authority - WSC

2002 - Began development of OWTS management program

2003 - New regulations and procedures drafted

2004 - Enacted into law

2005 - Began inspections
Lake Management Plan

• Progress since 1998
  – $1mm+ on agricultural Best Management Practices
  – 200’ no-wake zone for shoreline protection
  – Boat inspection program for exotic species control
  – Wetland restorations
  – Riparian buffers
  – Lakeside septic systems
Onsite Management Program
Implementation Plan

2003 – Funding
- State and private grants – DEC, Otsego County Conservation Association and Clark Foundation
- Village of Cooperstown

2004 – Preparation
- Public Education
- Inventory
- Training

2005 – Start of inspections
Onsite System Management Program

All septic systems should be maintained in proper working order

- Lake Protection Zone established
  - 500’ from lake
  - 100’ from tributary streams

- 5-year inspection plan
  - All systems within protection zone
  - Replace failing systems within 1 yr

- Administration funded locally
  - Clark Foundation
  - Otsego County Conservation Assoc.
  - Village of Cooperstown
Inspections

- Arranged with homeowner
- Conducted using Onsite Training Network (OTN) format
- Tank(s) pumped
- Visual inspection of components
- Inspection report to WSC with recommendations
Inspections
Inspections
Inspections
Inspections
Inspections
Inspections
Inspections
Administration

• Program administered by Watershed Coordinator
• A customized version of ArcView GIS is used to track program
  – Aerial photos
  – Topographic maps
  – Tax maps
  – Waterbodies
  – Survey data
Administration

- Certified letters sent to property owners
- WSC determines pass/fail
- Criteria for acceptable system:
  - Structurally sound and watertight tank(s)
  - No septage breakout at surface
  - All waste discharges connected to the system
Administration

- Passed: CERTIFICATE OF COMPLIANCE

- Failed: NOTICE OF VIOLATION
Administration

- FAILED SYSTEMS
  - Guidance provided to property owners
  - Extensive follow-up
  - Database tracks status
  - Replacement systems inspected prior to final approval
Program Status: January 2013

Cycle 1 (2005-2009)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inspections Completed</strong></td>
<td><strong>371 (99% of total 375)</strong></td>
</tr>
<tr>
<td>Passed Systems</td>
<td>180</td>
</tr>
<tr>
<td>Failed Systems</td>
<td>191 (51%)</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upgrades</strong></td>
<td><strong>164 (86% of failed)</strong></td>
</tr>
<tr>
<td>Planned for 2013</td>
<td>13</td>
</tr>
<tr>
<td>Under DEC Control</td>
<td>10</td>
</tr>
<tr>
<td>On Hold/Decommissioned</td>
<td>4</td>
</tr>
</tbody>
</table>
# Program Status: January 2013

## Cycle 2 (2010-2012)

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspections Completed</td>
<td>167</td>
<td>99% of total 375</td>
</tr>
<tr>
<td>Passed Systems</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>Failed Systems</td>
<td>13</td>
<td>8%</td>
</tr>
<tr>
<td>Upgrades</td>
<td>9</td>
<td>69% of failed</td>
</tr>
<tr>
<td>Planned for 2013</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Replacement Systems

Alternative designs / Advanced technologies

– Aerobic Treatment Units (ATU’s)

– Media filters
  • Foam
  • Textile
  • Peat
  • Sand

– Phosphorus removal

– Raised beds

– Gravelless drain fields (e.g. Eljen In-Drain, chambers)
Demonstration Project: DEC Grant

- Six advanced technology systems
- Phosphorus removal
- Monitored for 2-3 yrs
- Shared systems

- Purpose -
to demonstrate the innovative use of treatment technologies and document their performance
Samples taken between each component
Monitoring of demonstration systems

- Goals: determine treatment performance, identify ideal pairings of various treatment technologies and site conditions

- Sample weekly
  - BOD
  - Total Phosphorus
  - Nitrogen fractions
Management Program Learnings

- Do as much up front public education as possible
- Have very clear, written acceptance criteria for inspections, and do not make exceptions
- Program administration is extensive. For each 1-hour inspection, there are ~8 hours of admin time
- Convincing people to share a septic system is not easy
- Strong legal standing at Town level is essential for enforcement
Monitoring Program Results & Lessons

- Performance is variable under normal use
- Performance suffers with seasonal use
- Major operation & maintenance issues identified
  Communication!
- Less-than-ideal phosphorus removal
  - Improper pairing of technologies/settings
  - Short life-span of adsorptive media
Questions…

Holly Waterfield
holly.waterfield@oneonta.edu
607.547.8778

Win McIntyre
Water Resources Management
winmcintyre@gmail.com
518.882.9880