



Cornell University  
College of Human Ecology  
Cornell Cooperative Extension

# Homeowner Education Workshops on Wastewater Management in Two Lakeshore Communities

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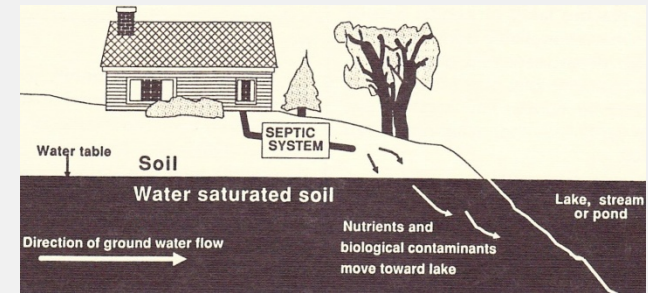
# Why education on septic systems?

- **Public Health** – pathogens, groundwater contamination
- **Environment** – nutrients (N, P), pathogens, contaminants
- **Consumer finance** (privately owned)
- **Community planning** – investment in centralized vs. decentralized wastewater management options
- **Individual behavior makes a difference** – daily use and maintenance

# Why focus on lakeshore communities?

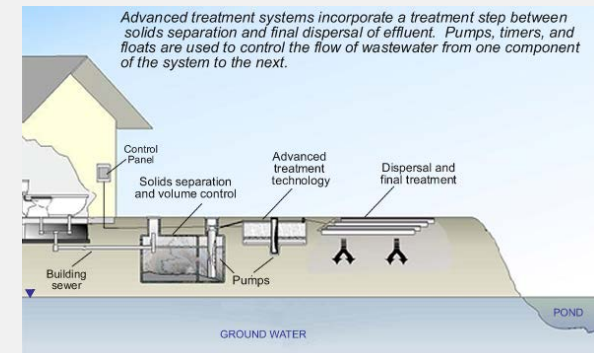
- **Less ideal sites for traditional septic systems**

- Near surface water
- Shallow depth to groundwater
- Shallow soils near bedrock
- Small, narrow, or steep lots



- **Higher risk of surface and groundwater impacts**

- Seasonal and rental properties
- Advanced onsite technologies may be appropriate but new to residents and local regulators





## Workshop Funding



State funding through NYS Pollution Prevention Institute  
Community Grants Program [www.nysp2i.rit.edu](http://www.nysp2i.rit.edu)



Grant to NYS Water Resources Institute at Cornell  
University (Sri Vedachalam, Susan Riha, Amy Galford)

“Homeowner Education Workshops on Wastewater  
Management in Two Lakeshore Communities”

2 workshops each in 2 interested communities

December 2012 – May 2013



## 2 Lake Associations

### Chautauqua Lake Management Commission

- Lake management plan
- County government involvement
- TMDL for Phosphorus
- Drinking water source



### Canadarago Lake Improvement Association

- Recent detailed lake studies
- Developing management plan





## Workshop Goals

- Convey basics of septic system function and maintenance
- Introduce advanced treatment technologies
- Relate septic systems to lake management plans
- Involve local group in picking topics, recruiting speakers
- Ask about current septic maintenance behavior
- Update and share educational materials; available on WRI website [wri.eas.cornell.edu](http://wri.eas.cornell.edu)





# Workshop Topics

## Chautauqua

### Mar 6:

Local wastewater treatment history

Conventional & advanced septic systems

Chautauqua Co. Health Dept. Septic Program

### May 11 (proposed agenda):

TMDL for phosphorus

Fate and transport of P in septic systems

Canandaigua Lake Wastewater Enforcement Program

Alternative septic systems and P removal



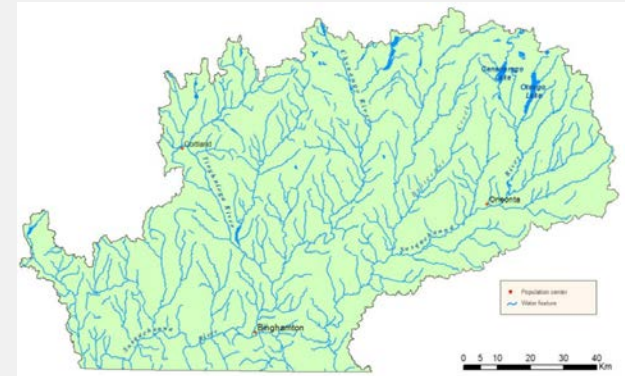


# Workshop Topics

## Canadarago

### Feb 2:

Conventional septic systems  
Otsego Lake Watershed Management Plan  
Advanced septic systems  
Process of protecting local lakes



### Apr 20:

Conventional and advanced septic systems  
Otsego Lake Watershed Onsite Wastewater Management  
Program  
Options and resources for individuals and communities





# Workshop Attendance

## Chautauqua

Recruitment: press release to local media, public access TV, local legislative office, email lists



Mar 6 (Wed eve.): 26 attendees  
May 11 (Sat morn.)

## Canadarago

Recruitment: press release to local media, email lists, Otsego Co Conservation Assoc.



Feb 2 (Sat aft.): 35 attendees  
Apr 20 (Sat aft.): 31 attendees

3 hour workshops



## Workshop Attendance

For voluntary workshops, remember attendees may not be representative of population

- Able to attend
- Motivated to attend
- Already concerned about septic system, environment?
- Already maintaining properly?
- Or already experiencing problems?



# Surveys and Workshop Evaluations

Questions about:

- Septic system characteristics (before)
- Maintenance behaviors (before)
- Opinions about septic systems (before and after)
- Maintenance intentions in next year (end)
- Evaluation of the workshop (end)

Caveats:

- Limited number of responses
  - Surveys too long?
  - IRB language intimidating?

Next slides are some data so far, pooled across 3 workshops



# Surveys and Workshop Evaluations

“Have you ever pumped your septic tank?”

**“When was the last time you pumped the tank?”**

< 1 yr ago	5
1-3 yrs ago	10
3-5 yrs ago	4
> 5 yrs ago	2
No	17

3-5 years = general rule of thumb for family residence

**So half look good, half (19/38) might be too long interval, depending on property use**



# Surveys and Workshop Evaluations

## Cost to pump the septic tank

14 responses, range \$125-\$400, **mean = \$250**

**Cheap compared to thousands for repair/replacement**





# Surveys and Workshop Evaluations

## Estimated age of septic system

0 - 5 yrs	3
5 - 10 yrs	4
10 - 15 yrs	5
15 - 20 yrs	6
20 - 25 yrs	8
> 25 yrs	8
don't know	4

Often ~30 year original design life

**So 12 / 38 may be nearing end of design life,  
depending on use, maintenance, location**





# Surveys and Workshop Evaluations

“Do you use any commercial or homemade  
**septic tank additives?**”

14 yes

23 no

Not sure what “homemade” includes

But this is a problem – 38% may be spending money on products that may be useless, harmful (suspending solids), or instilling false confidence



## Some Thoughts on Workshops

- Participants rated their knowledge of septic systems and available technologies higher after the workshop.
- Regardless of planning stage, individual behavior matters, so there is a need for education.
- Recruitment to educational events is always a challenge but people are very interested in the topic and protecting their lake.
- Good to have multiple events to reach more people and/or cover more topics.
- Education on advanced on-site systems is needed.
- Money may be a limiting factor on improvements.



# Options and Resources for Property Owners

## Low-Cost Improvements (free to few hundred \$)

**Organize records**

**Routine inspection and pumping**

**Organize with neighbors to negotiate inspection  
and pumping rates**

**Add features such as effluent filter (outflow from  
tank), access risers to make maintenance easier**

**Water conservation**



# Options and Resources for Property Owners

## Options for a Failing System

### Emergency measures

Have system inspected and pumped immediately  
Conserve water, use water elsewhere

**Work with local agencies and design professionals to determine options**

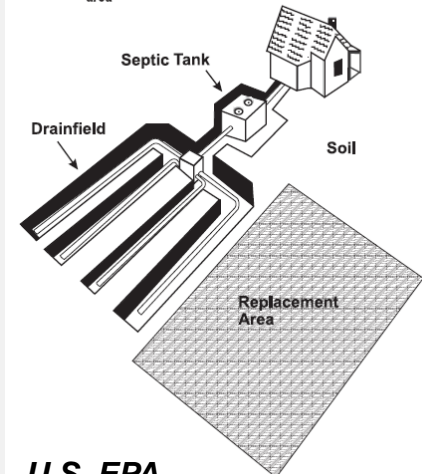
**Siting** – can you use another location on the property?

**Rehabilitation** – replace, add, or upgrade parts

**Install an advanced treatment component?**

**Join a larger system?**

Figure 5-7. Conventional system layout with SWIS replacement area



U.S. EPA



# Check Local Agencies Before Making Changes

- State regulations and design guidance recently updated
- Which changes allowed locally?
- What forms, permits, inspections, or fees are required?

**Town/County Code Enforcement Officer** – forms may be online

## **Local Health Department**

Some County Health Depts. have an Environmental Health Division

Some counties are served by District offices of NYS Dept. of Health

**NYS DEC** – check with regional office for activity near wetlands, shorelines; may have additional permits but streamlined permitting

**Other local/watershed regulations may apply**



# Check Local Agencies Before Making Changes

- **Who can do the work?**

NYS DEC regulates waste disposal and transport

Need professional engineer or architect for larger work

(See NYS DOH Factsheet “Need for Licensed Design Professionals  
– Residential Onsite Wastewater Treatment Systems”)





# Possible Sources of Financial Assistance

## Property Owners

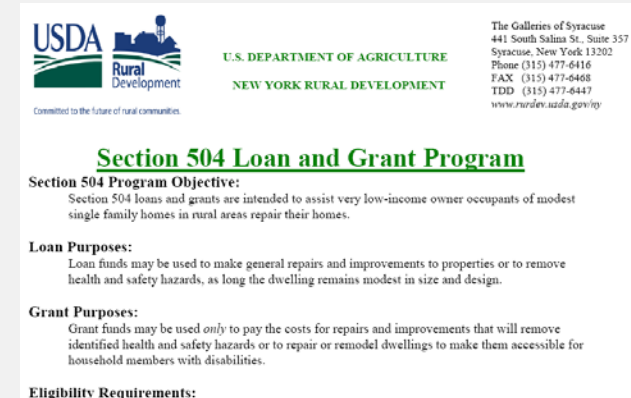
### USDA Home Repair Loans and Grants

[www.rurdev.usda.gov/ny](http://www.rurdev.usda.gov/ny)

low-income, rural, property type, your age

### RCAP Solutions

[www.rcapsolutions.org/financial\\_services.htm](http://www.rcapsolutions.org/financial_services.htm)



## Municipalities

There are also funding sources for municipalities for wastewater treatment  
– decentralized solutions *are* eligible

NYS Environmental Facilities Corporation

(EPA Clean Water State Revolving Fund for NYS)

USDA Rural Development

Syracuse Univ. Environmental Finance Center

RCAP Solutions



## Wastewater Treatment Options

**Best solution will vary locally**

**Continuum of centralization and technology**

**Variety of combinations**

Conventional septic system (decentralized, on-site)

Advanced on-site treatment system (alternative, enhanced)

Cluster system (e.g., septic tanks but shared absorption field)

Management combinations

Package plants

Central wastewater treatment plant

All need state, local, watershed regulation and/or oversight

All need investment to last over time



# Range of Community Management Options

Septic Systems | Septic (Onsite / Decentralized) Systems | US EPA - Mozilla Firefox

File Edit View History Bookmarks Tools Help

water.epa.gov/infrastructure/septic/

US EPA Septic Systems | Septic (Onsite / Decentralized) Systems

**EPA** United States Environmental Protection Agency

LEARN THE ISSUES SCIENCE & TECHNOLOGY LAWS & REGULATIONS ABOUT EPA

**Water: Septic (Onsite / Decentralized) Systems**

You are here: [Water](#) » [Water Infrastructure](#) » Septic (Onsite/Decentralized) Systems

**Septic (Onsite/Decentralized) Systems**

EPA's Decentralized Case Studies Describe What Communities Across the U.S. Are Doing to Effectively Manage their Wastewater Infrastructure

> Learn more

1 2 3 4

Home Homeowners **Government Officials** Industry Professionals Partners

**State, Tribal, and Local Officials**

State, tribal, and local officials are responsible for regulating onsite wastewater treatment systems. EPA offers a wide variety of resources to assist state and local governments in their efforts to manage these systems.

EPA's **Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems (PDF)** (2 pp, 55K, About PDF) are a principal resource for state and local officials. EPA has issued these guidelines to raise the quality of local management programs, suggest minimum levels of activity, and encourage institutionalizing the concept of decentralized wastewater management. Implementation of the guidelines can help communities meet water quality and public health goals, provide a greater range of options for cost-effectively meeting wastewater needs, and protect consumers' investment in home and business ownership.

The [National Association of Counties](#) [EXIT Disclaimer](#) has also developed a fact

Join the Conversation

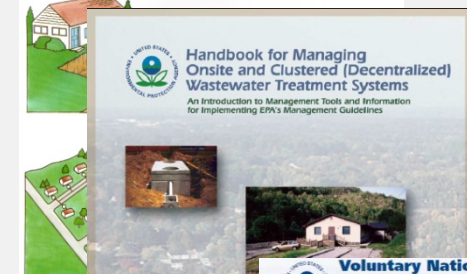
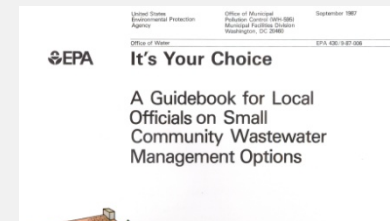
- Septic Wiki

Septic Quick Links

Home

- SepticSmart
- Case Studies & Demo Projects
- Frequent Questions
- Funding
- Guidance, Manuals, & Policies**
- Related Programs
- Technical Information
- Training Centers
- Glossary
- Contacts

[water.epa.gov/infrastructure/septic](http://water.epa.gov/infrastructure/septic)





# Community Decentralized Management Models

1. **Homeowner Awareness**
2. **Maintenance Contracts**  
*(may be required by NYS or county health dept.)*
3. **Operating Permits**
4. **Responsible Management Entity (RME)**
5. **RME Ownership**

*US EPA 2003 Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems*



# Community Decentralized Management

## Case Studies

NYS: Skaneateles, Keuka, Otsego, Owasco, etc.

U.S. EPA has a number of case studies.

Cornell WRI developing more NYS case study reports,  
applied for grant to work with several communities

Which options technically feasible?

Which options practical, affordable, preferred?



## **Your input on how can Cornell help lake associations? Suggestions now or contact us!**

- **Publications**
- **Workshops**
- **Webinars**
- **Planning process**
- **Other ideas?**

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