



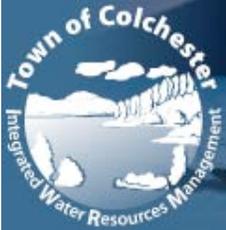
# Town of Colchester Integrated Water Resources Management Study

**Presented by:**

**Bryan Osborne – Colchester Public Works  
Brad Aldrich, PE - Forcier Aldrich & Associates  
David Healy - Stone Environmental**

**Funded by the United States Environmental Protection Agency**

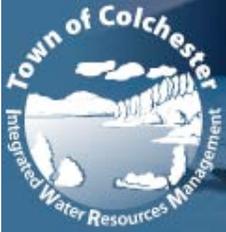
[www.colchestervt.gov](http://www.colchestervt.gov)



# Goal Statement

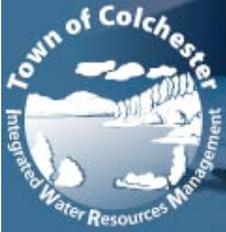
Protect Colchester's extensive water resources through an increased understanding of the relationship between:

- water uses
- land use
- stormwater management
- wastewater management.



# Purpose of the Study

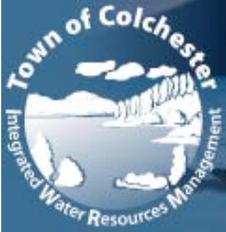
The development of an integrated plan for stormwater, wastewater and land use practices and maintenance that is universally understood and supported by Colchester's residents.



# Value of Water Resources

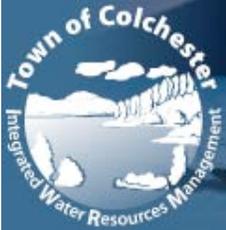
- Public Health
- Quality of Life
- Recreation
- Habitat Diversity
- Economic Vitality
- Tourism

(developed with public input at first public meeting)



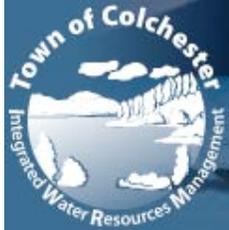
# Impacts on Water Quality

- ✓ Land use practices
- ✓ Poorly functioning wastewater systems
- ✓ Erosion/contamination from stormwater runoff
- ✓ Encroachment on wetlands and streams
- ✓ Agricultural practices



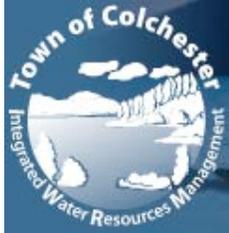
# Project Scope

- Primarily a biological study of impacts on water quality from wastewater, stormwater and land use practices.
- A limited phosphorus study has been added based on public input from last meeting.



# Project Components

- **Technical Assessment**
  - Identification and mapping of water resources and existing wastewater and stormwater infrastructure
  - DNA analysis of water quality samples
  - Assessment of wastewater/stormwater capacity and needs
- **Public Education and Input**
  - Presentation of data and findings to residents
  - Identify resident priorities and criteria for evaluating alternatives
- **IWRM Plan**
  - Recommendations for a water resources management plan
  - Community assistance funding program



# Project Schedule

**April 2009**

**April 2010**

**April 2011**

**April 2012**

**Technical Phase**

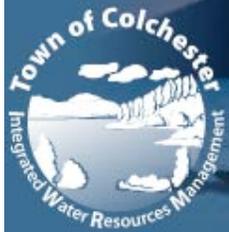


**Public Education  
and participation**



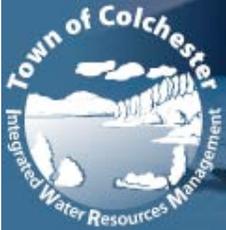
**Draft IWRM Plan**





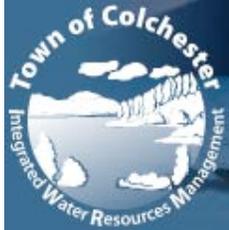
# Purpose of Stormwater Infrastructure Inventory

- Enable improved management of stormwater infrastructure by the Department of Public Works
  - Planning maintenance activities, such as vacuuming out catch basins
  - Prioritizing repair and replacement of deficient structures
  - Basis for illicit discharge detection and elimination program activities
  - Tracking operational stormwater permit status



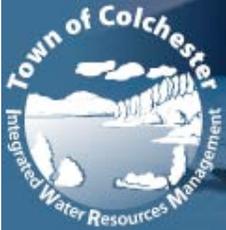
# Purpose of Inventory (cont.)

- Improve accounting of infrastructure assets in annual financial reporting, consistent with new standards by the Government Accounting Standards Board
- Water resources planning
  - prioritization of stormwater retrofits
  - revision of public works design specifications and standards



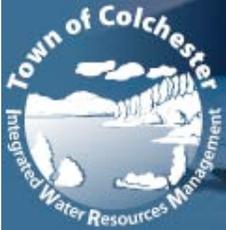
# Purpose of Wastewater Inventory and Assessment

- Enhance wastewater management and planning
  - prioritize septic system upgrade funding
  - revise permitting requirements
- Provide the database for a possible town-wide or area specific wastewater management utility.



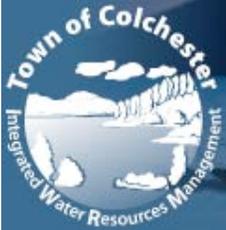
# Microbial Source Tracking

- Collect bacteria from feces of human & animal species present in the watershed to create a database of “known” sources.
- Collect bacteria from water samples.
- Compare the ribo-patterns (DNA bands) to determine the closest match and identify the apparent sources of bacteria.



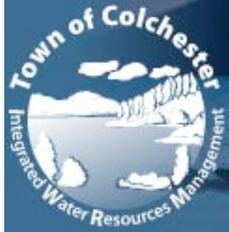
# IWRM PLAN

- From wastewater and stormwater assessments and water quality sampling develop a statement of the condition of water quality in Colchester.
- Develop possible alternatives for improved land use practices to positively impact water quality



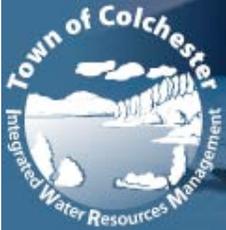
# IWRM PLAN (cont.)

- Consider the need for both a stormwater utility and wastewater utility
- Through public input and involvement, prepare recommended steps for enactment of new land use standards as appropriate.



# Town-Wide Assessment

- Stormwater
- Wastewater
- Water Supply

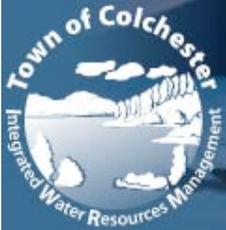


# Stormwater Infrastructure



Type	#
Outfalls	254
Catch Basins	1,526
Dry Wells	357
Manholes	138
Retention Ponds	44
Other Structures	22

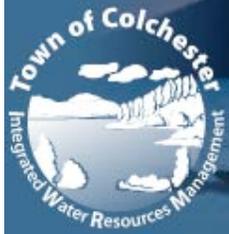
Source: Stone Environmental Field Inventory, Summer 2009



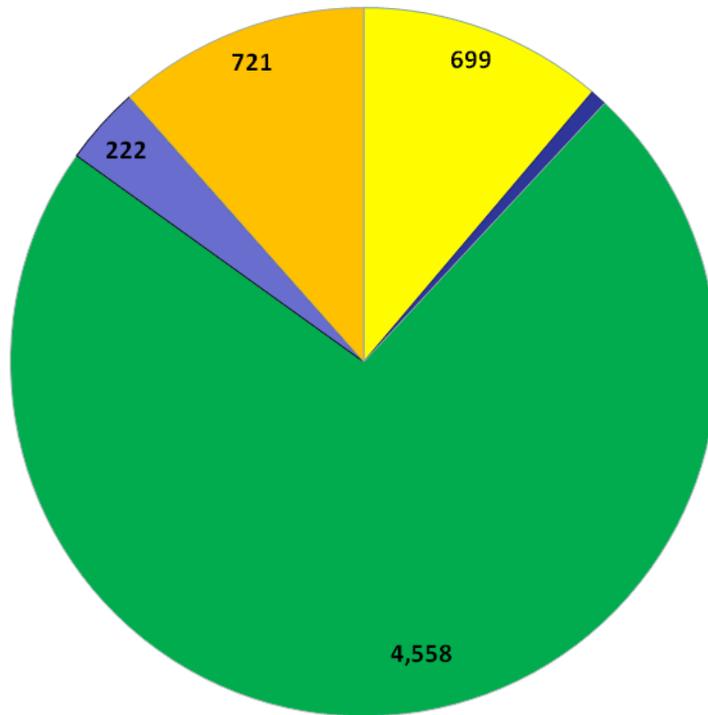
# Water Supplies Inventoried

Water Supply Type	#
Individual Drilled Well	221
Individual Shallow Well or Spring	37
Lake Water	6
Shared Drilled Well	18
Spring	2
<b>Total</b>	<b>284</b>

Source: Stone Environmental Field Inventory, Summer 2009

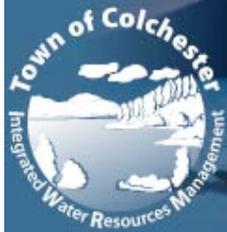


# Water and Wastewater Services by Type



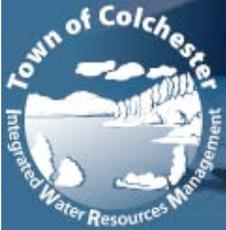
- Onsite Water with Onsite Wastewater
- Lake Water with Onsite Wastewater
- Municipal Water with Onsite Wastewater
- Municipal Water with Sewer
- No Development

Source: Town of Colchester Assessor File, 2009



# On-site Wastewater Needs Assessment Criteria (1)

Area Limiting Features	Required Setback (ft)
Surface waters (ponds and streams)	50
Wetlands	50
Top of embankment, or slope greater than 30%	25
Bedrock Escarpments	25
Property line	25
Zone 1 Source Protection Area-School Well	Extent of defined WHPA
Private Water Supplies	100-500
Main or Municipal Water Lines	50
Foundation, Footing, or Curtain Drains	35



# On-site Wastewater Needs Assessment Criteria (2)

## Environmental Limiting Features

Onsite Suitable Soils

Depth to Bedrock

Depth to Groundwater

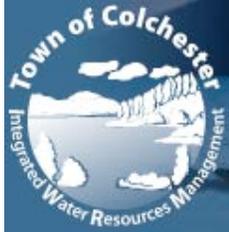
Floodplain

## Percolation Rates and Long-term Acceptance Rates (LTAR)

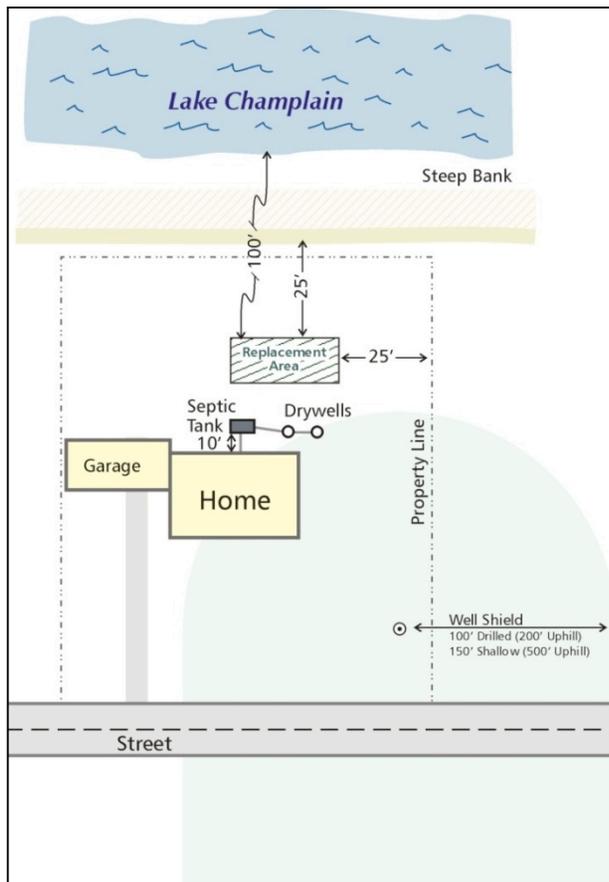
Number of Bedrooms

Average Percolation Rates for Soil Textures from the NRCS Soils Data

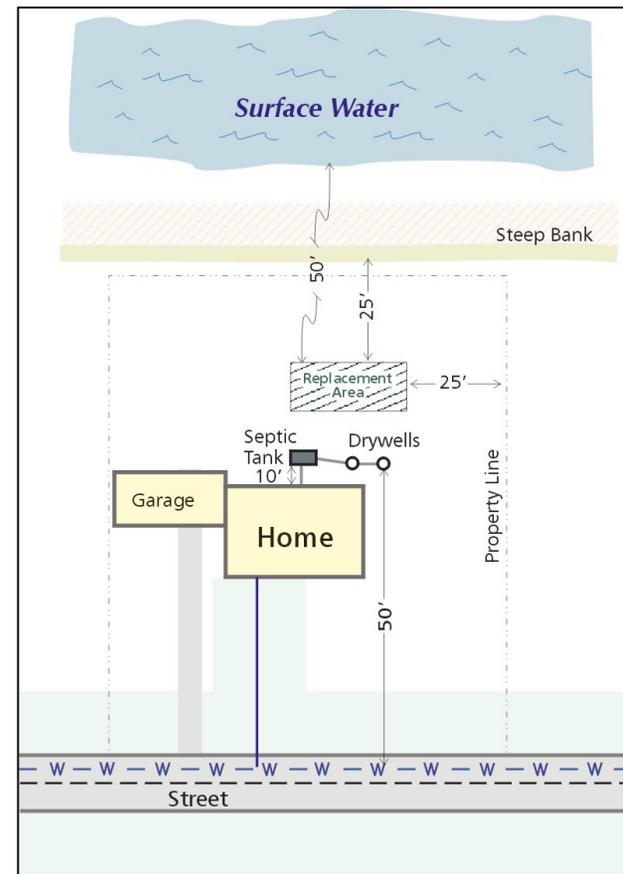
Average Percolation Rates from Vermont Indirect Discharge Rules



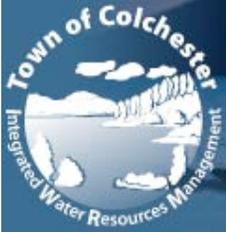
# Setback Illustrations



Onsite Water Supply Well



Municipal Water Supply



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**...and please tell a friend.**