The Decentralized Approach: Evaluation in Chatham's Comprehensive Wastewater Management Plan

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Decentralized Systems

- Individual On-site Systems
  - Flows generally less than 10,000 gpd
  - Regulated under Title 5
- Cluster Treatment Systems
  - Flows may be less than 10,000 gpd (Title 5) or greater (Groundwater Discharge permit)
- Small Wastewater Treatment Facilities
  - Flows generally greater than 10,000 gpd
  - Regulated under Groundwater Discharge Permit

Evaluation Criteria

- Regulatory Requirements
- Effluent Quality
- Maintenance Req. & Complexity of Operation
- Flexibility
- Energy Use
- Land Requirements
- Potential for Air Emissions (odors)
- Anticipated Public Acceptance
- Ease of Implementation
- Relative Capital Costs Relative O&M Costs

- Considered for Use in Chatham

Land Area Considerations

- Land needed for process equipment/buildings
- Land needed for treated water recharge facilities
- Land need for buffer from adjacent properties

10,000 gpd	(30 homes*)	2 acres
35,000 gpd	(106 homes)	3 acres
110,000 gpd	(333 homes)	4 acres

* 3 bedrooms each

- Greater land area needed for facilities located in/discharging into Zone II

TABLE 6-1

EMBAYMENT AOCS
ESTIMATED NUMBER OF VACANT [1, 2]
PROPERTIES (BY STATE CLASS CODE)

AOC	EMBAYMENT	1-3 ACRES	3-5 ACRES	>5 ACRES
Stage Harbor System	Oyster Pond	13	1	2
	Oyster River	15	1	4
	Stage Harbor	5	3	3
	Little Mill Pond/ Mill Pond and Mitchell River	12	2	0
Sulphur Springs System	Bucks Creek	6	0	3
	Cockle Cove Creek	3	1	2
	Sulphur Springs	6	1	4
Taylors Pond System	Mill Creek	7	0	3
	Taylors Pond	9	0	0
Bassing Harbor System	Crows Pond	5	0	0
	Ryder's Cove	21	2	4
	Bassing Harbor	7	3	0
	Frost Fish Creek	2	0	1
Muddy Creek System	Muddy Creek Lower	0	0	0
	Muddy Creek Upper	11	0	4

Note:

1. Does not include those properties identified in the Industrial Parks or Eliphamets Lane.
2. Vacant properties may not be available for use for wastewater treatment facilities, and may have significant costs associated with acquiring and siting facilities.

CWMP Alternative #2

- Five (5) watersheds selected for decentralized alternative evaluation with septic removal values of 50 to 75%
- Utilized effluent concentration of 19 mg/l as DEP accepted performance level
- Maximize use of I/A systems while minimizing sewer

TABLE 9-9

TOTAL PRESENT WORTH COMPARISON
FIVE WATERSHEDS ALTERNATIVE #2
VS.
CONNECTION TO THE WWTF

ALTERNATIVE	TOTAL PRESENT WORTH[1][4]				
	RYDER'S COVE	MITCHELL RIVER	MILL POND	SULPHUR SPRINGS	TAYLORS POND
Alternative #2 -All new components	$28,000,000	$7,000,000	$11,000,000	$27,000,000	$21,000,000
Alternative #2 -Reuse of septic tank and leaching area	$26,000,000	$6,100,000	$9,500,000	$25,000,000	$18,000,000
Alternative #3 -Connection to the WWTF [2][3]	$23,000,000	$7,900,000	$10,000,000	$20,000,000	$15,000,000

Note:

1. Costs based on May 2007 (ENR index of 7942)
2. Costs include collection systems. Costs do not include development of a management district or structure for individual I/As.
3. Connection to the WWTF includes the costs associated with upgrade at that facility (as a percentage of flow contributed from that watershed).
4. All values rounded to two significant figures

Findings

- Few large site available for siting decentralized facilities
- Smaller sites means a greater number of facilities/sites needed
- Grinder pumps needed at each property
  - Utility costs
  - Portable generator needed during power outages
- Management entity needed to ensure proper O&M and oversight
- Inconsistent performance of I/A technologies
- Performance insufficient to achieve TMDLs
- TMDLs could not be met under buildout with I/A systems alone in any watershed
- Do not address phosphorus
- Difficult to upgrade to address more stringent standards and emerging contaminants

For more information the CWMP is available at the Eldredge Public Library and on the Town's Website:

www.chatham-ma.gov