Town of Tisbury
Comprehensive Wastewater Management Plan

Alternatives Analysis Public Presentation

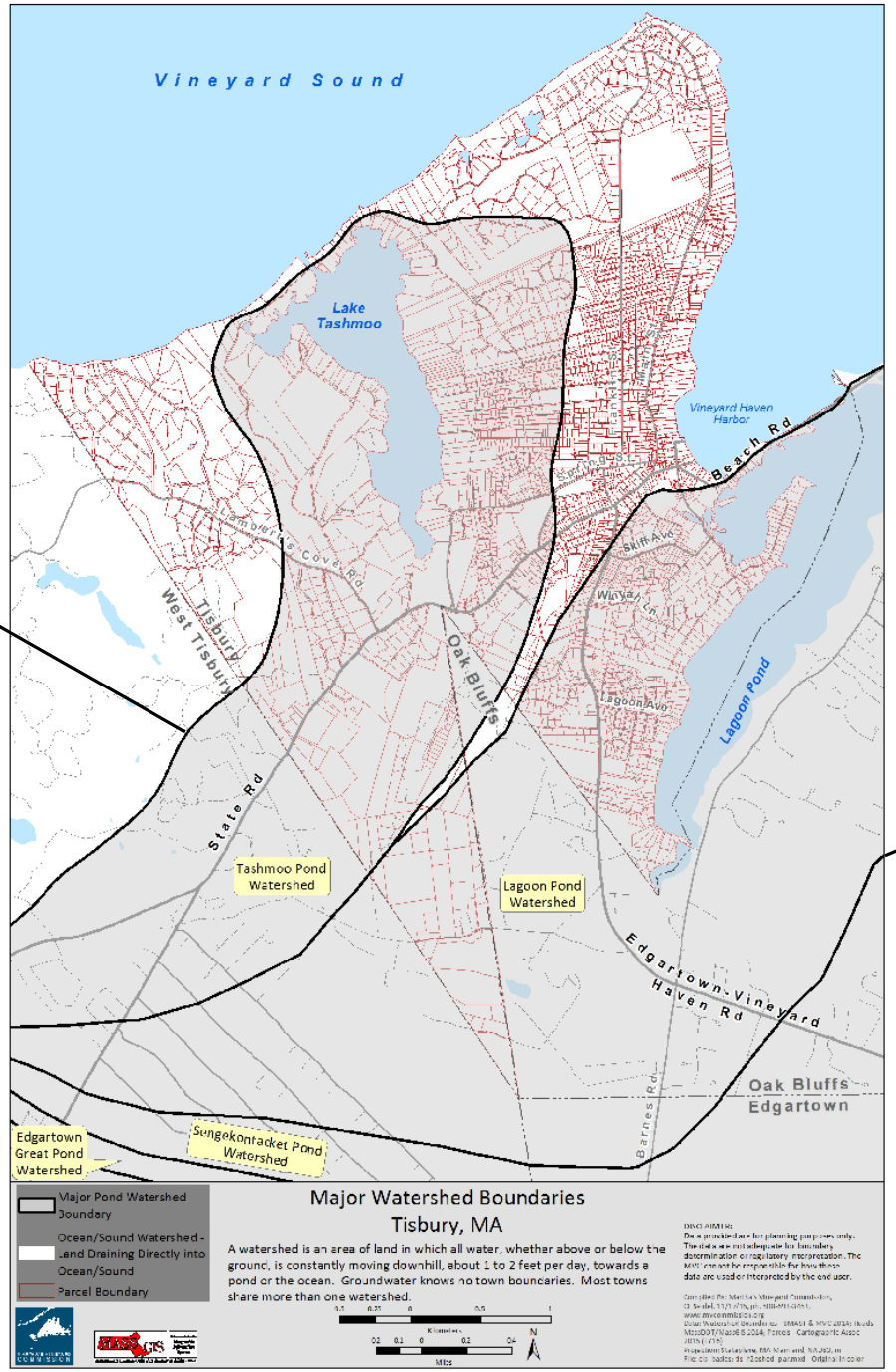
ENVIRONMENTAL PARTNERS
— An Apex Company —

Workshop Goals

- Review why we are here
- Recap the CWMP process
- Introduce preliminary technologies chosen by the Water Resource Committee (WRC)
    - Provide a quick overview of the tools
        - How they work
        - Why they were selected

Tisbury's Watersheds

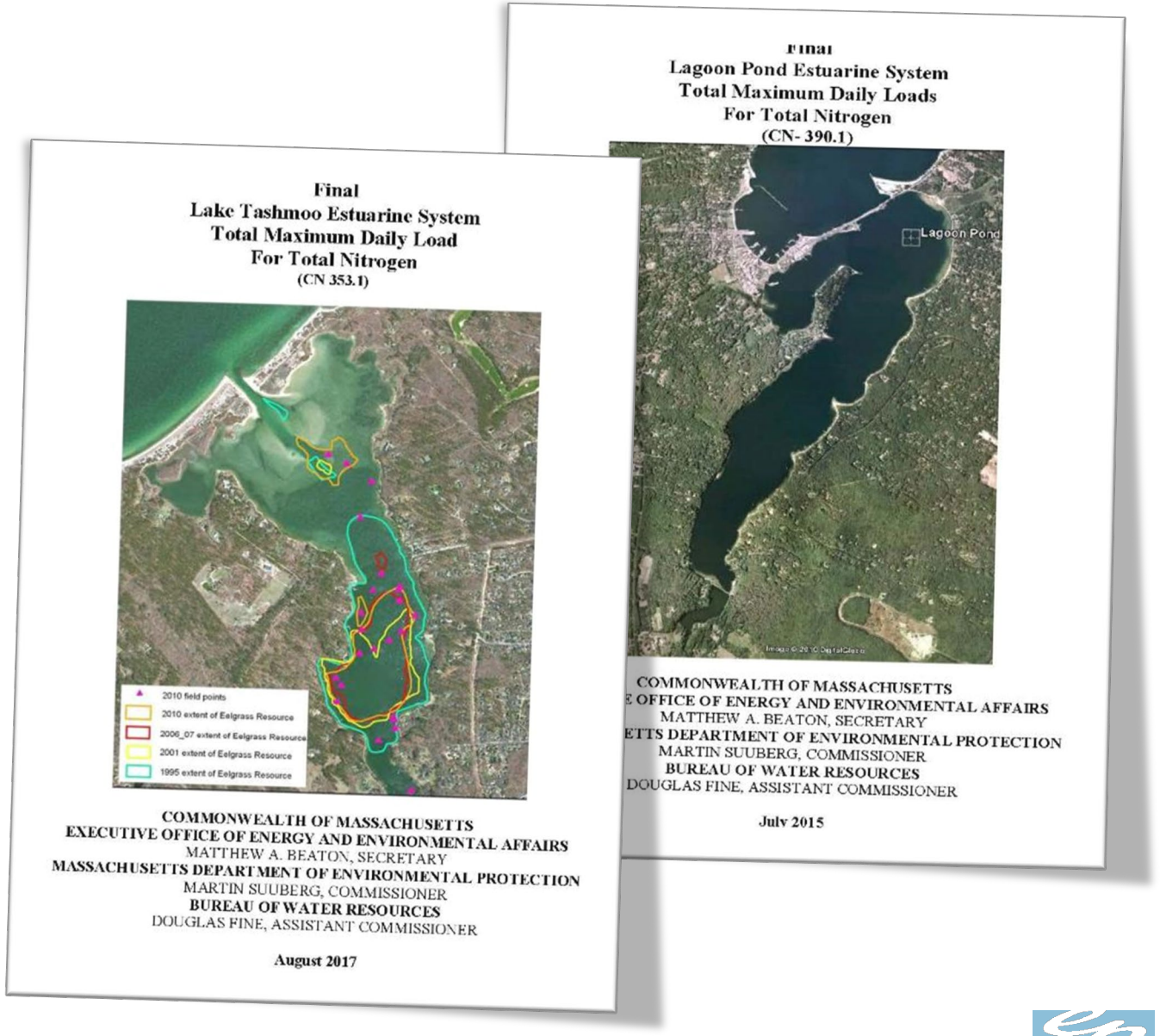
Lake Tashmoo Watershed



Lagoon Pond Watershed

A Quick Recap

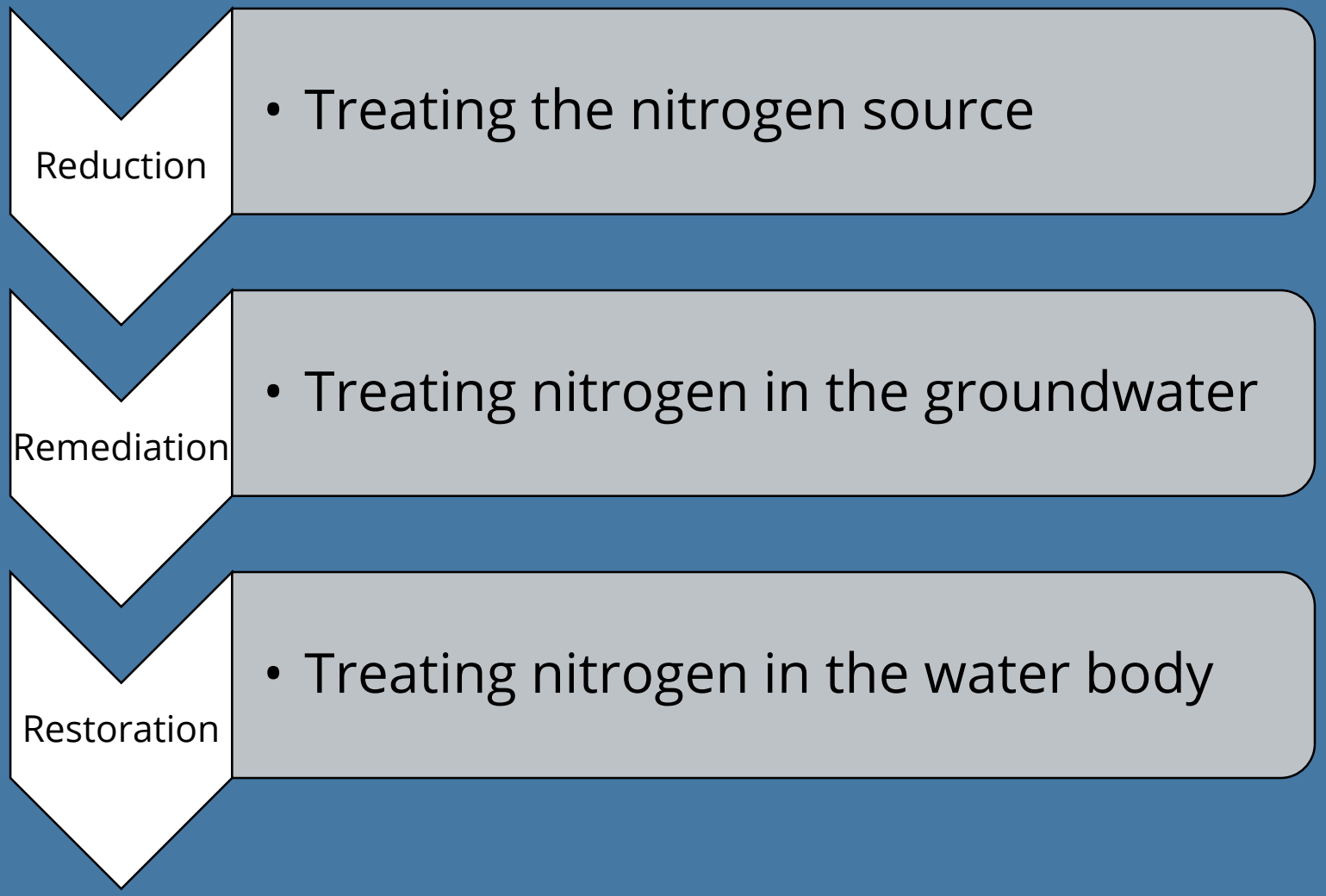
- Lagoon Pond Nitrogen Total Maximum Daily Load (TMDL) removal goals:
  - 13,000 pound per year
  - 34.6% / 50%
- Lake Tashmoo Nitrogen Total Maximum Daily Load (TMDL)
  - 6,500 pounds per year
  - 31.9% / 42.5%



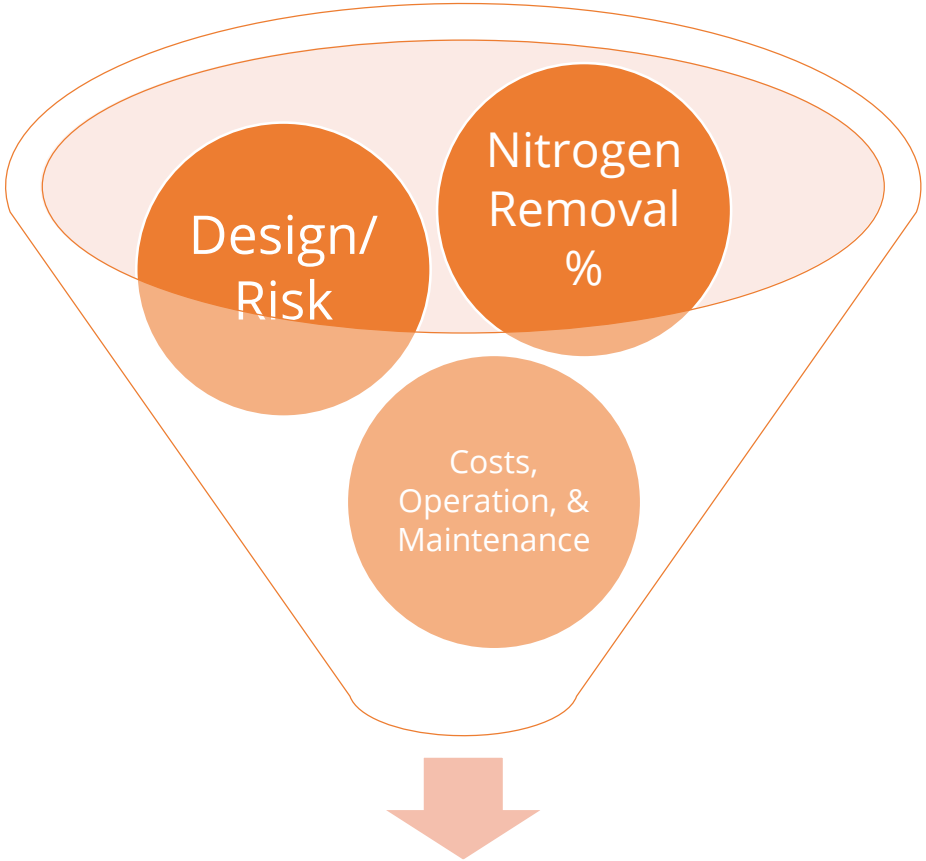
The CWMP Planning Process

- Town-wide water quality solutions
- 20-year planning to meet water quality goals

Toolkit Background – Cape Cod Commission Technology Matrix



Water Resource Committee – Evaluated & Targeted Technologies



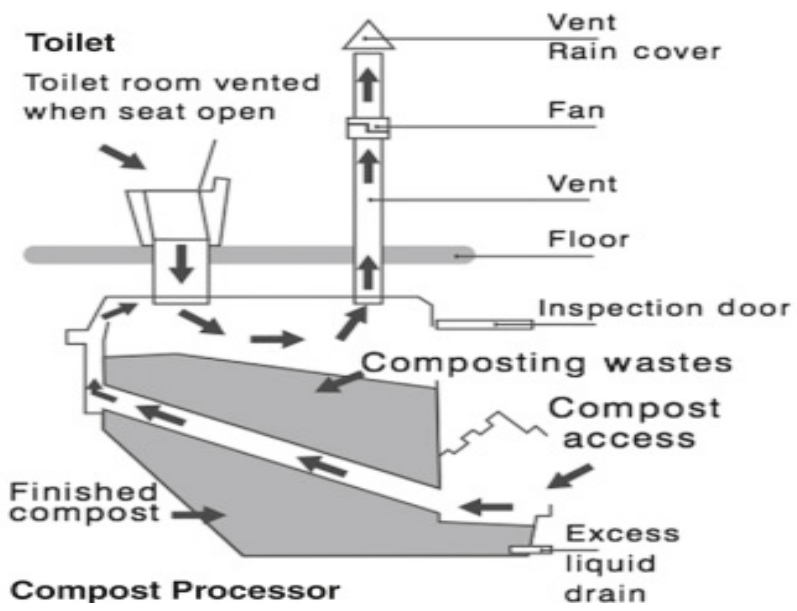
Tisbury's Toolkit

Source Reduction Technologies

Primary

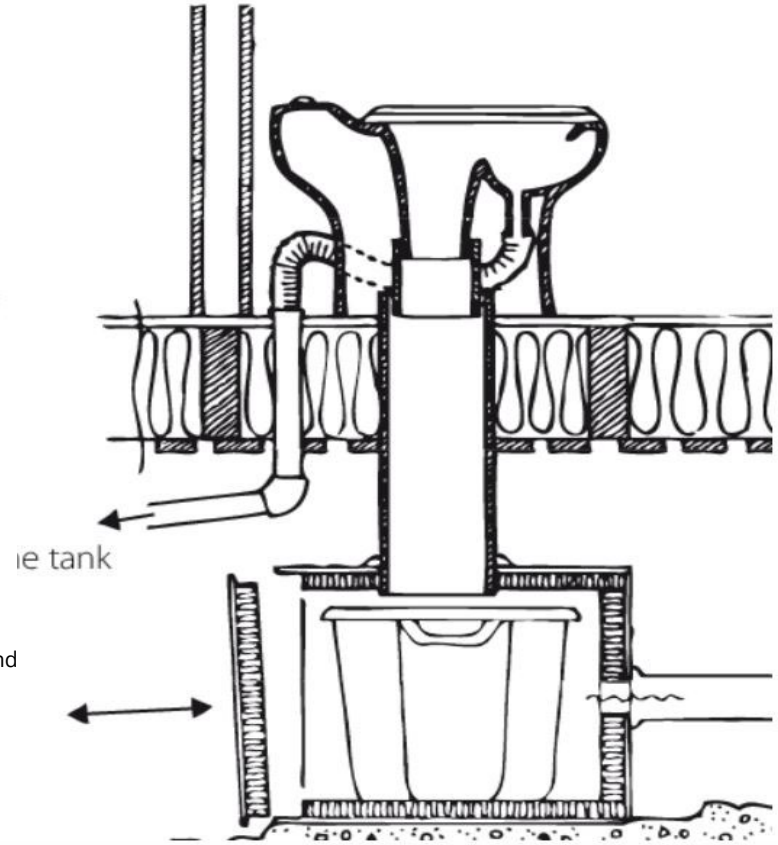
Waste Reduction Toilets

Composting Toilets



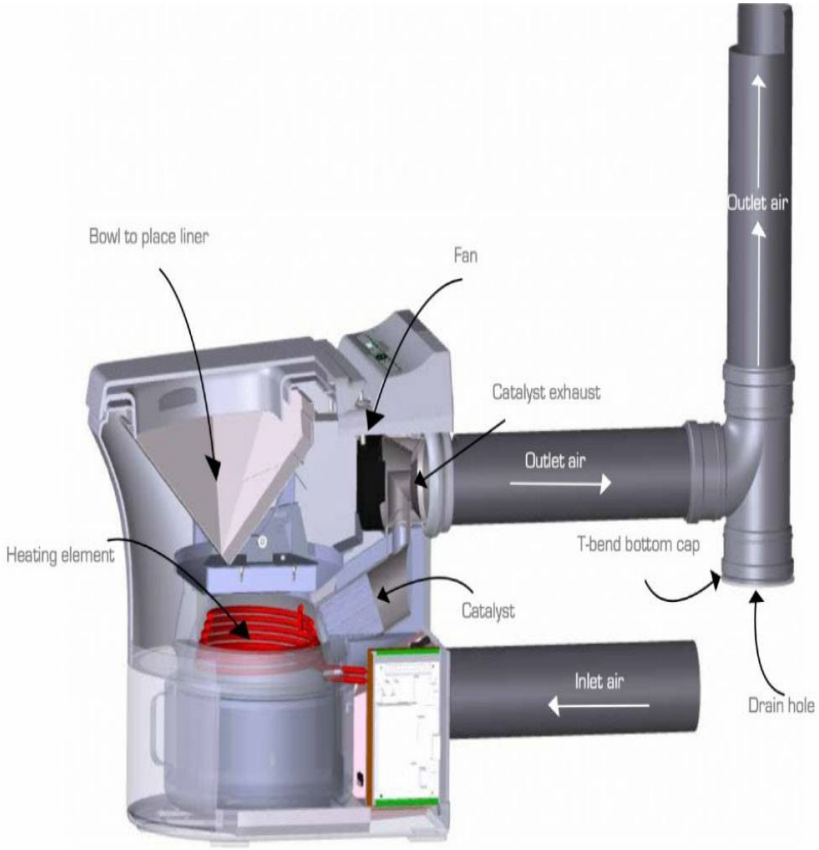
Source: Sam Kubba, Composting Toilets- Handbook of Green Building Design and Construction, 2017

Urine diversion



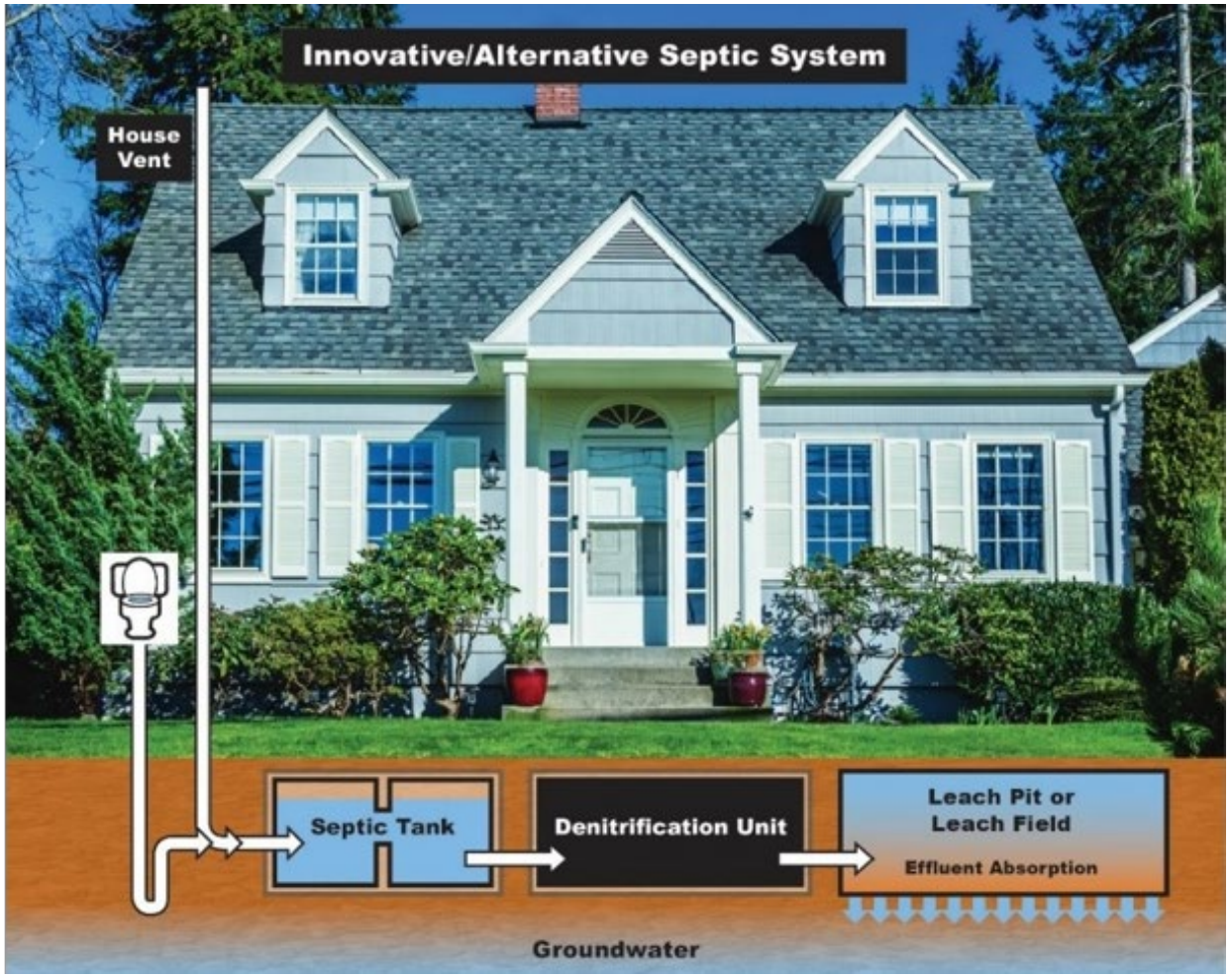
Source: Jönsson, Håkan et.al., "Urine diverting toilets in climates with cold winters : Technical considerations and the reuse of nutrients with a focus on legal and hygienic aspects." (2007).

Incinerating Toilets

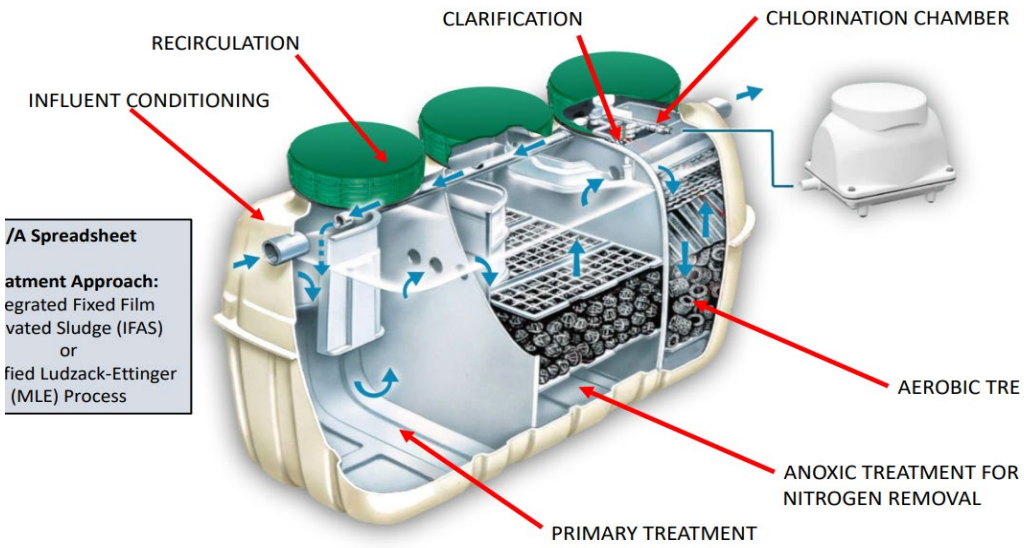


Source: Incinerating Toilets, Inc

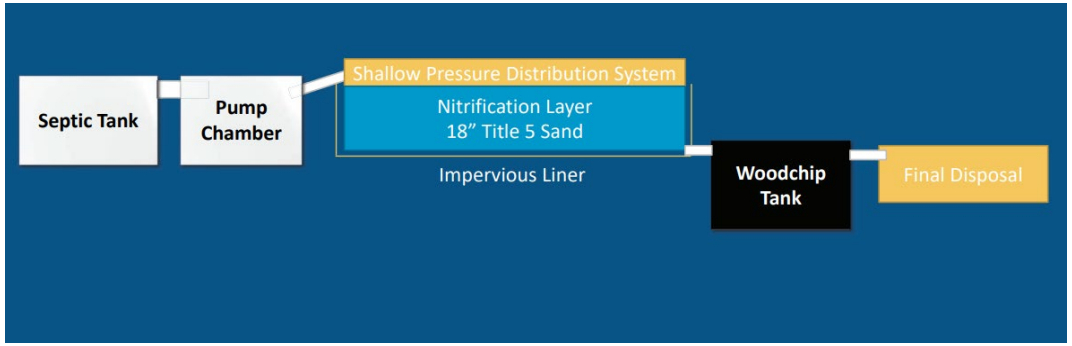
Innovative/Alternative Onsite Systems



Source: EPA



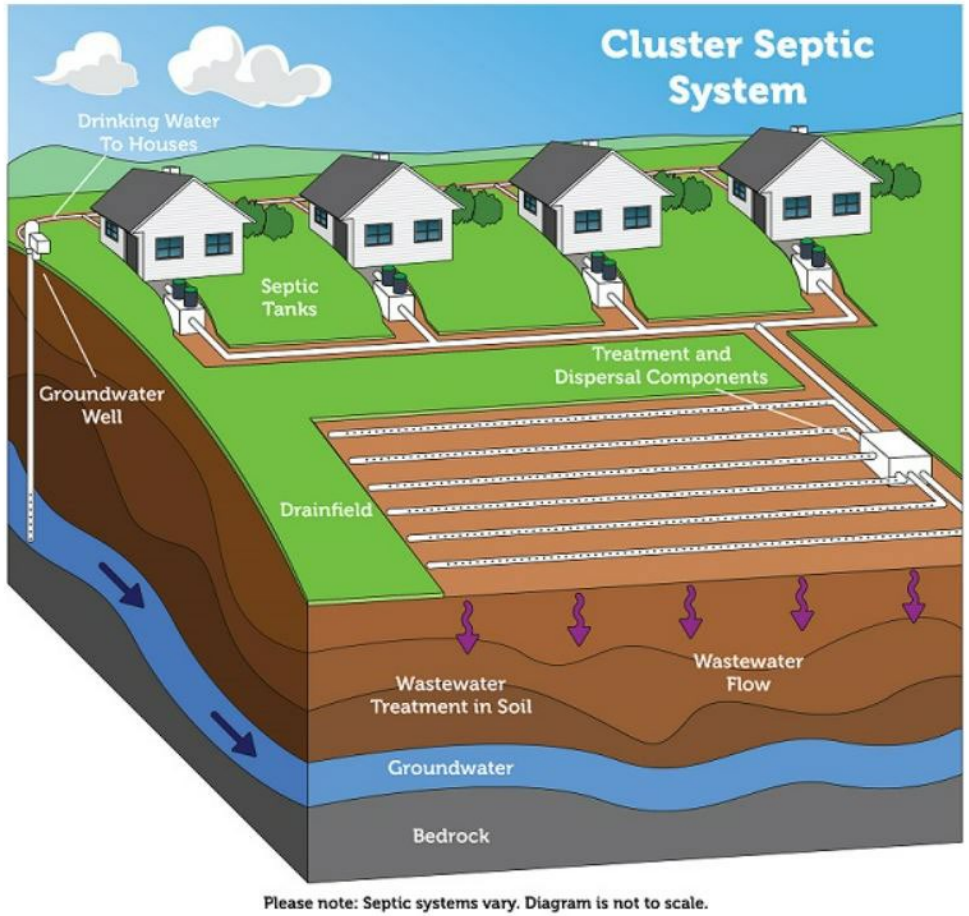
Source: Fuji Clean



Source: "Layer Cake" passive system

Decentralized Systems

Cluster Treatment Systems

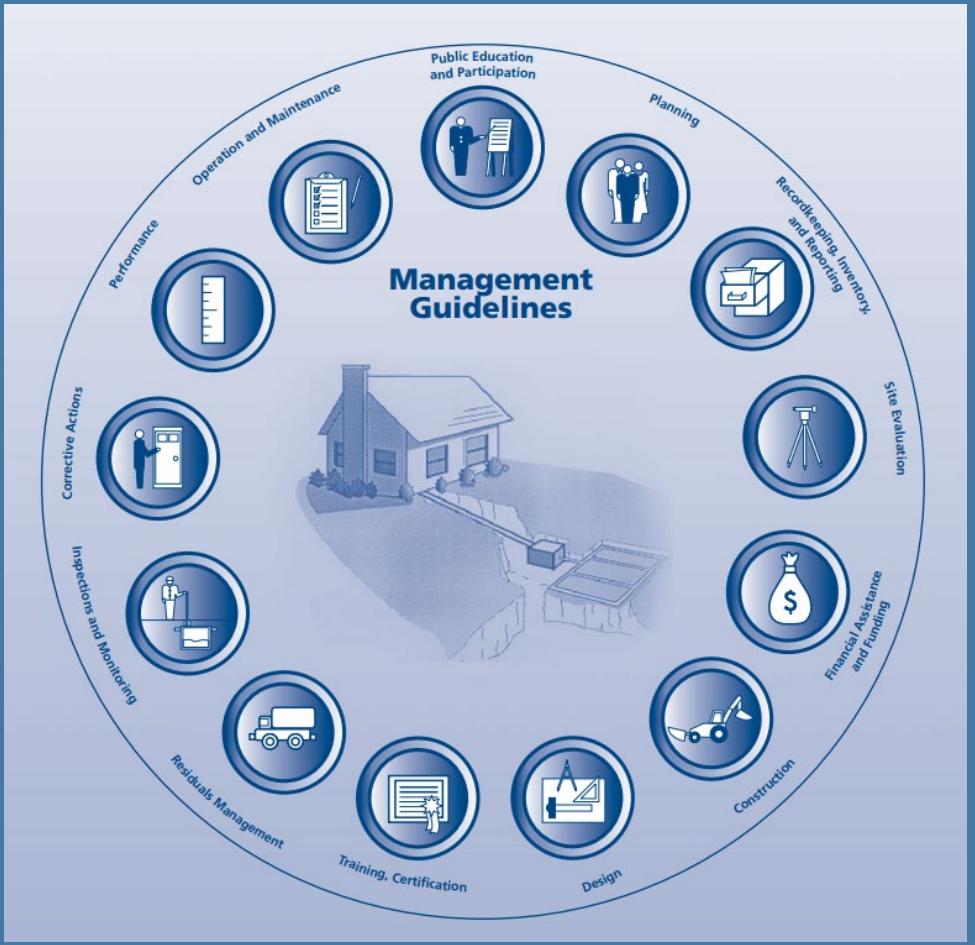


Source: EPA- Types of Septic Systems

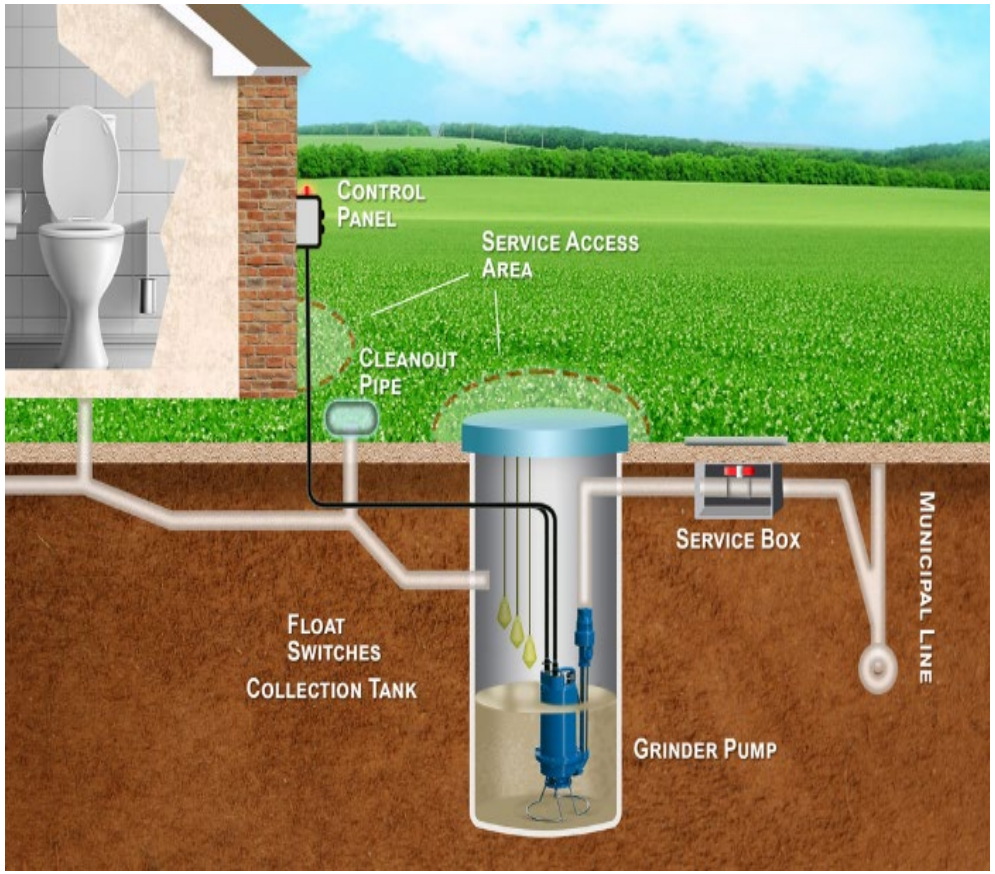
Source: Nitrex recirculating sand filter

Responsible Management Entities (RMEs):

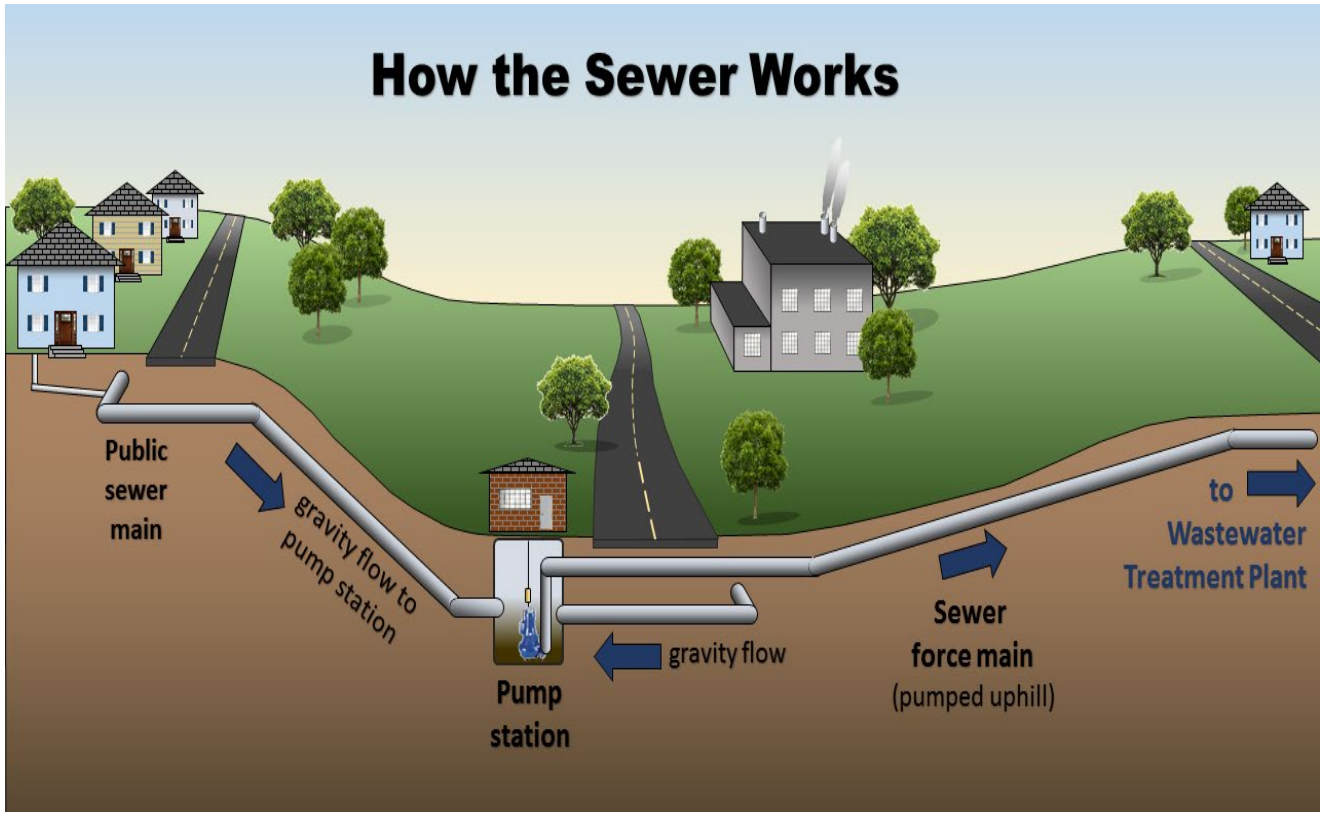
- Requires a regulatory agent/avenue for oversight
- Provides monitoring and oversight for each individual system
- Think – Septic Utility



Collection Systems



Source: Empowering Pumps & Equipment



Source: City of Caldwell

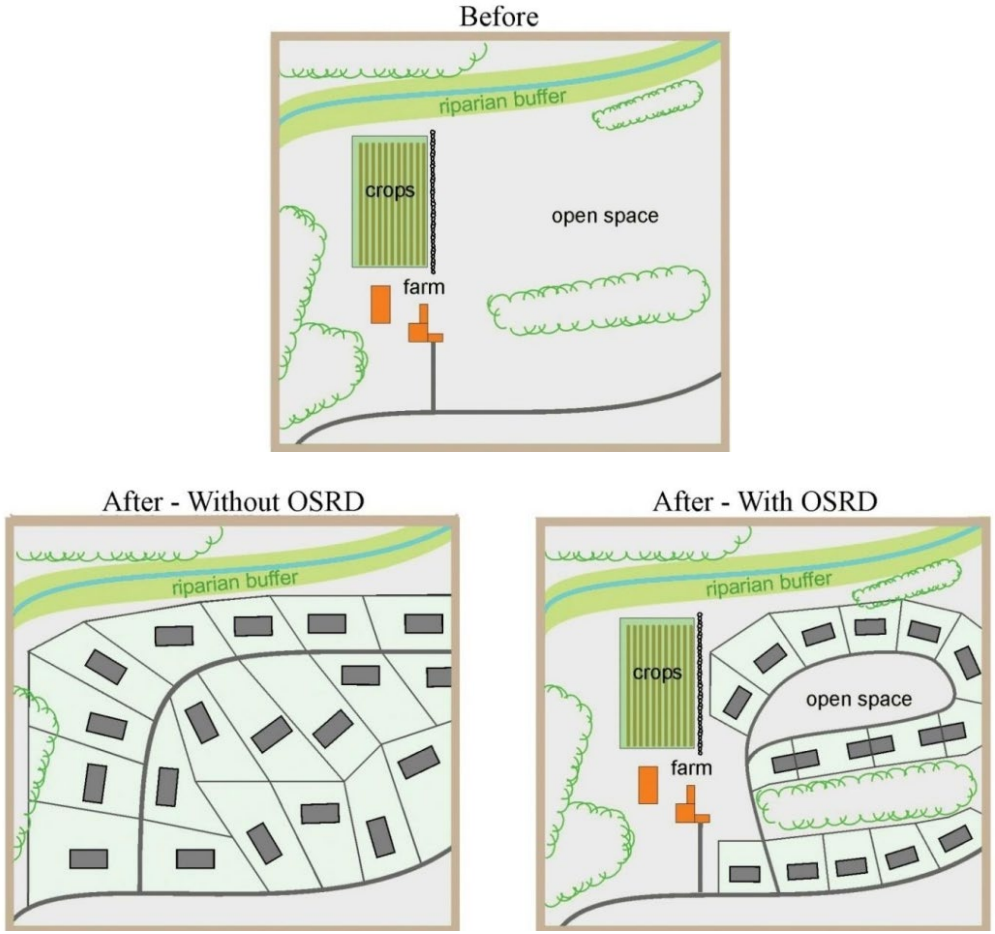
Wastewater Treatment

Source: Daniel Ackerman, CAI

Source: Carlin Contracting, Inc.

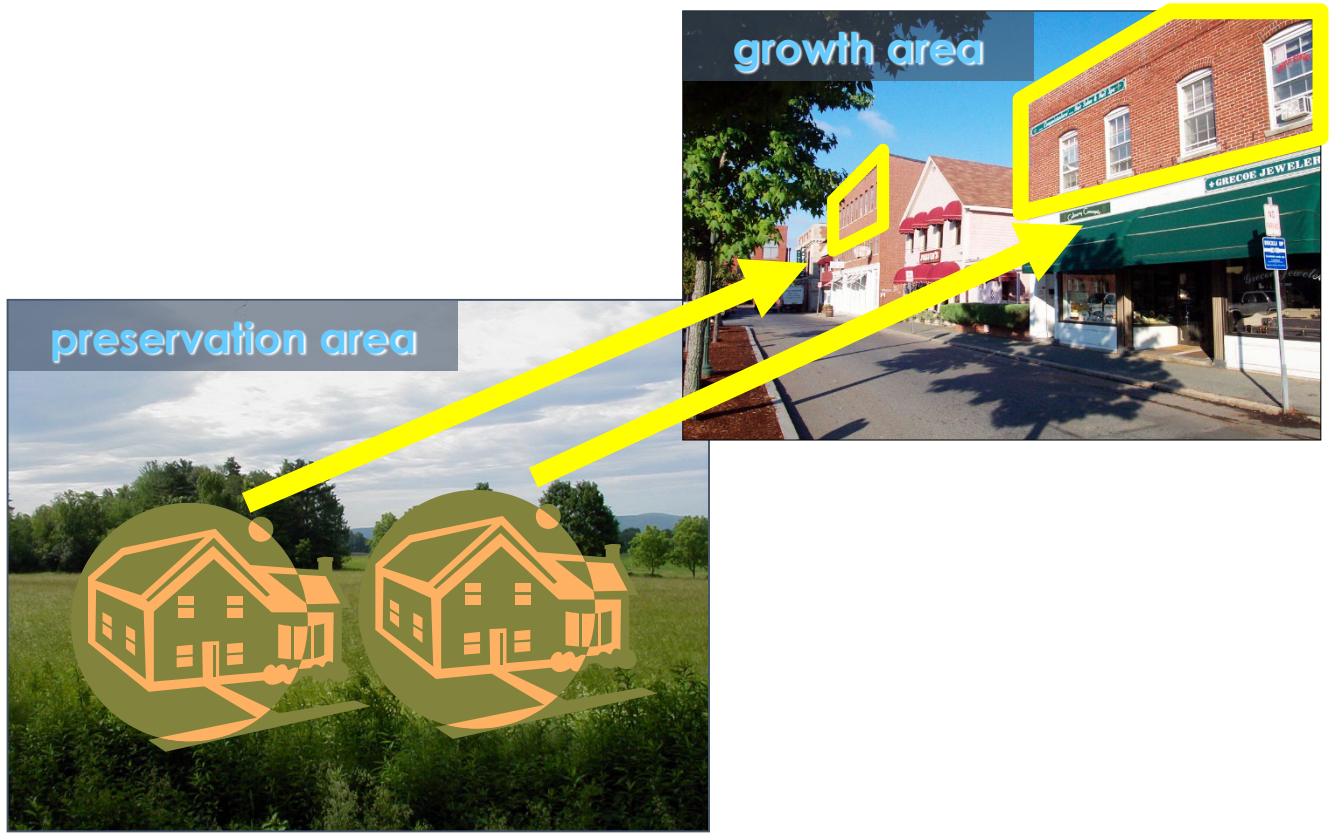
Non- Structural Technologies

Compact Open Space Development



"An Introduction to the State's New Open Space Design/Natural Resource Protection Zoning Model Bylaw," Kurt Gaertner, Massachusetts EOEEA https://www.mass.gov/smart-growth-smart-energy-toolkit-information-and-resources

Transfer of Development Rights



Transfer of Development Rights Concept, Smart Growth/Smart Energy Toolkit, Massachusetts EOEEA https://www.mass.gov/smart-growth-smart-energy-toolkit-information-and-resources

Compact Open Space Development: Kuehn's Way

- 20 year-round apartments clustered into 10 duplexes
- Island Housing Trust received a collective $1.5 million in funding from all six towns' Community Preservation committees, with Tisbury being the biggest contributor
- Utilizes I/A Technology for onsite wastewater treatment

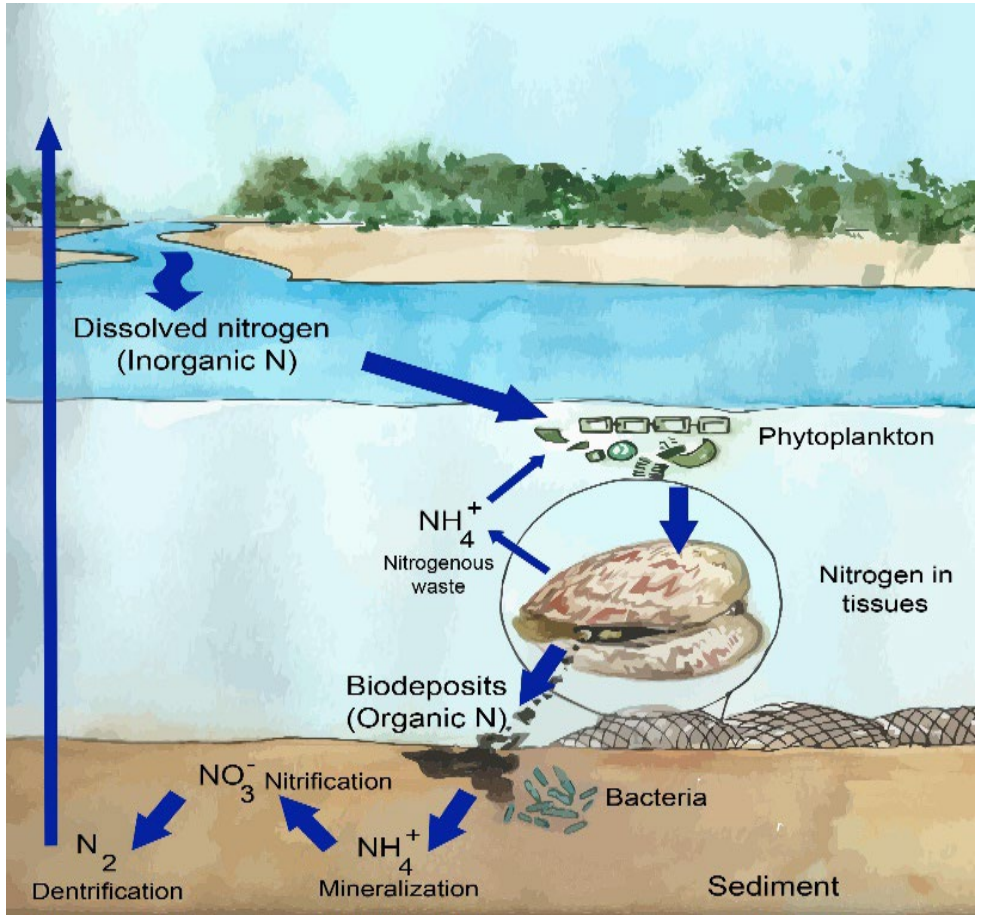
Source: MCLA,
Martha's Vineyard Magazine

Restorative Technologies

Secondary

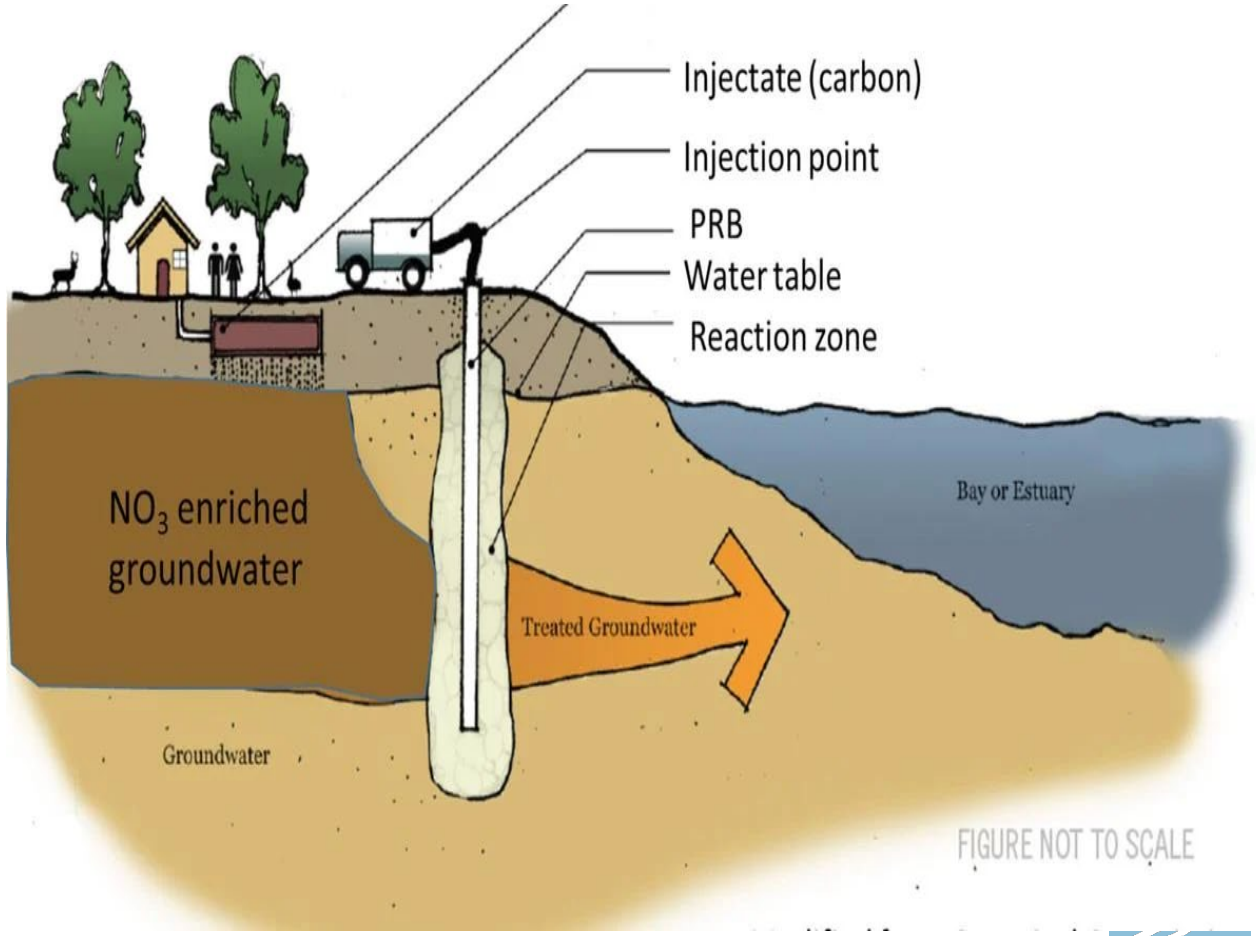
Innovative Resource Management Technologies

Aquaculture



Source: University of Florida- Shellfish Aquaculture

Permeable Reactive Barriers (PRBs): Trench & Injection Method



Source: Cape Cod Commission

PRB Injection Wells: Lagoon Pond Study

- Funded by EPA through Southeast New England Program (SNEP) Coastal Watershed Restoration grant (2018)
  - Administered by MVC and monitored by the Coastal Studies Program at UMass Dartmouth (School of Marine Science and Technology)
- Installed in 2020
  - 30 feet deep
  - Mix of soy-based solution and water (15,000 gallons)

Source: MV Times, 2020

Stormwater Best Management Practices (BMPs)

Bioretention Areas & Rain Gardens

Next Steps

Action Items and Schedule

Next Steps: Project Team

- Based on feedback from the community, prioritize and develop alternative scenarios for meeting each TMDL
  - E.g. How many of X technology would it take?
- Present Draft Summary of Alternatives
- Begin Next Phase to assign costs and timetables for recommended plan

Next Steps: Community Stakeholders

- Explore Cape Cod Commission Technology Matrix website
- Review Water Resource Committee webpage on the Town website
- Send feedback to Water Resources Committee Chair, Ben Robinson
- Stay tuned for the next Water Resource Committee meeting

THANK YOU

ENVIRONMENTAL PARTNERS

— An Apex Company —

Additional Resources

- Lagoon Pond Permeable Reactive Barrier:
  - "Commission Installs First Ever Permeable Reactive Barrier on Lagoon Pond," Vineyard Gazette, 11/11/20
- Kuehn's Way Compact Open Space Development:
  - "Island Housing Trust Cuts the Ribbon on Kuehn's Way," Vineyard Gazette, 11/8/22
- Barnstable County Responsible Management Entity Grant Project
  - Barnstable County Health Department Press Release, September 26, 2022