

5. REGULATION AND MANAGEMENT

Regulation and management are intertwined with public outreach, consensus and political will. The later has to happen before changes will occur. Repetition of message is needed to gain consensus. Data back-up and scientific studies will give leaders the needed basis upon which they can make decisions when introducing new programs and regulations. Christopher Gobler at Stony Brook University and The Nature Conservancy have produced presentations and studies that define the level of degradation and document onsite wastewater role as a primary source of excess nitrogen in aquifers and marine waters. Armed with recent studies and planning data, regulators can act in good conscience. There is understandable caution relative to the introduction of enhanced wastewater treatment, due to the inevitable increase in cost to both individuals and governments. Feedback from PGG's survey indicates overwhelmingly that people feel wastewater treatment is a function that is suitable for subsidy (80.8%). Traditionally, people assume that central sewers are the only method of addressing this issue. This study helps dispel that notion, as decentralized options are viable on Long Island. Developers and commercial interests favor sewer districts, as increased densities usually are allowed, sometimes without limit. In reaction to this, many of the environmentally sensitive areas have eschewed sewer districts due to fear of the overdevelopment that is often associated with their introduction. This can be overcome by shifting the focus on flow rates to actual pounds of nitrogen loading, defining environmentally sensitive areas with nitrogen mitigation targets in support of TMDL's, and adhering to strong zoning regulations that do not allow planned development districts or variances in sensitive areas. The LI Sound watershed has an overall goal of a 58.8% reduction in nitrogen load. This study is concerned with the 10% reduction goal attributed to nonpoint sources, which includes decentralized wastewater treatment. A decentralized approach to wastewater treatment is suitable for an approach that provides infrastructure for existing mitigation needs only.

5.1 SCCWRMP Suggested Actions

The SCDHS generated the Draft Suffolk County Comprehensive Water Resources Management Plan, which is the source of strong data documenting rising nitrogen levels in groundwater. Applicable recommendations for action include:

1. Within the 25-year travel time to streams and sensitive surface waters and 50-years to public supply wellfields:
 - a. Prioritize open space protection
 - b. Evaluate TDR programs (so not a receiving area)
 - c. Avoid siting Sewage Treatment Plants (STP) in zone unless mass loading of nitrogen discharge is reduced (assume within the sub-watershed) from non-STP scenario
2. Target nitrogen flows to 4-6 mg/l instead of the drinking water standard of 10 mg/l in areas with unsewered, subsized lots.
3. Amend Article 6 of the SC Sanitary Code to require that densities do not exceed one dwelling unit (DU)/acre for all unsewered areas, with Groundwater Management Zone 4 being a first priority (Orient is in Zone 4)
4. Protect the drinking water supply by reducing demand, (odd-even lawn watering days and sprinkler rain sensors recommended)
5. Consider the development of watershed rules and regulations and source water protection standards.

5.2 Action Items

To further discussion on the issues of decentralized wastewater treatment and help identify feasible action plans to allow and promote enhancements, three forums were held by PGG in addition to numerous presentations. Descriptions of the events are found in Section 1 – Summary. The resulting list Table 5-1, led to Table 5-2, which was submitted to Suffolk County for consideration.

Table 5-1 Peconic Green Growth Suggested Action Items - List

1	Dedicated Staff Member for decentralized wastewater
2	Cesspool prohibition for further installation
3	Cesspool phase-out – prioritized/failure
4	Onsite inspection program
5	Enhanced Treatment Units (ETU)with nitrogen mitigation-establish PILOT PROGRAM, use NSF Standard 245 certified systems + department approved
6	Enhanced treatment w/ pressurized, shallow, narrow fields (PSNDs from URI) Establish a PILOT PROGRAM
7	Committee to recommend changes to codes /guidelines for Decentralized Wastewater Treatment and nitrogen mitigation including both single onsite and cluster/community systems
8	Funding to incentivize ETU's
9	Funding for decentralized cluster design and installation
10	Increase minimum lot size equivalent to 1 acre everywhere
11	Develop info/guidance on flow vs. pollutant loading with max. limits. Develop Info/guidance to counter fear of over-development that comes with sewer extensions; id alternatives (reuse)
12	Introduce new minimum lot size in critical watersheds, otherwise nitrogen mitigation required
13	Develop faster, clearer approval process for alternative systems SC, NYSDEC + NYSDOH, esp. in priority areas/failing conditions.
14	Develop a coordinated certification system for Responsible Management Entities
15	Establish priority areas
16	Develop coordination with research facilities (URI, Stony Brook, MASSTC, NSF, EPA's ETV
17	Develop nitrogen mitigation program for existing large-scale onsite systems with densities greater than 1 dwelling unit per acre.
18	Pursue reuse options for treated wastewater
19	Incorporate water conservation improvements with each wastewater project for existing buildings
20	Pilot a urine diversion/composting project

			<p>are required, the real estate industry may oppose this.</p> <ul style="list-style-type: none"> - Generates jobs <p>Related actions:</p> <ul style="list-style-type: none"> - Onsite inspection program - SCDHS staffing - Website Management System - Inspector Training Program - Fund for financially disadvantaged (CDC?) - Nitrogen mitigation program
3	<p>Re-categorize Groundwater Management Hydrogeologic Zone IV to the more stringent requirements applicable to Zones III, V and VI</p> <p>This will help protect areas of the five eastern towns, triggering a need for denitrification at lot sizes of 40,000 sf. This area is environmentally sensitive, relying on isolated aquifers for drinking water, as well as being in critical watersheds</p> <p>Note: this suggestion could be trumped by a more stringent one regarding nitrogen mitigation in watersheds (See XXX below) Also, all hydrogeologic zones could be upgraded to the 40,000 standard, further simplifying the code.</p>	<p>SCSC 760-605 A. 3 and 4 760-605 B. 1 and 2 760-6 05 C 760-605 D 760-607 A 1 and 2 760-607 B 1 and 2 760-607 C 1 a and b 760-607 E and F</p>	<p>Switches the categorization of Zone IV in all references.</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Allows the environmentally vulnerable forks to be equably regulated, as portions fall in zones III and V. - Increases costs to developers who want denser development than allowed currently. - Much of the area is already up-zoned, so impact is minimal. - Sets standard for retrofits to higher level if retrofit program is introduced <p>Related actions:</p> <ul style="list-style-type: none"> - Retrofit program - Nitrogen mitigation program in watersheds
4	<p>Community systems in existing neighborhoods</p> <p>Currently community systems tend to be installed in new developments proposing densities that exceed current guidelines. This would allow denitrification in existing neighborhoods, with a priority given to communities in environmentally sensitive areas with systems that do not meet current guidelines..</p>	<p>SCSC 760-502 4 a(need for pilot exemptions, new guidance on joining muni/cty projects) 760-605 title 760-605A 5 (new) 760-607 A 5 (new) 760-607 B 4 760 – 607 C 4,5,10(new)</p>	<p>Add “or retrofits to existing neighborhoods” to relevant passages or create a separate section. At issue in existing regulation is allowance to cross property lines and placement in areas without public water. (In fact, areas on individual wells with lots smaller than one acre should be a priority.) Increasing system size from 15,000 to 30,000 would be compatible with a SCDHS study and serve a need for large systems in existing neighborhoods. Some setbacks may possibly be relaxed for existing conditions and some interpretations clarified in guidance documents (Such as open waters vs. vegetated sand filters) . At issue is a requirement that if a community system is present/planned, people would have to hook up. Will pilots be the same? First attempt is to gain voluntary</p>

			<p>participation. Alternative is to do something similar to SCWA, where need a % of property owners to agree, than all need to join. Also would need to offer exemption to properties that invested in enhanced single treatment units. Will also need to develop easement/access agreements (similar to LIPA for transformers?)</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Increase cost for existing owners - Increase need for oversight and maintenance - Emergency resilience (both positive and negative) - Improved water quality in existing neighborhoods with conditions substandard to current regulations - Increased jobs <p>Related actions:</p> <ul style="list-style-type: none"> - Onsite inspection program - SCDHS staffing - Website Management System - Inspector Training Program - Fund for financially disadvantaged (CDC?) - Master plans depicting locations for community systems and shared treatment - Nitrogen mitigation program - Development of RME (each Town? Private?) - Pilot for single onsite systems
5	<p>Nitrogen Mitigation Program</p> <p>In 50-year influence zone of groundwater to either surface waters in critical watersheds or to public water wells, introduce nitrogen mitigation.</p> <p>For existing neighborhoods, this could be phased in, with new solutions as part of pilots. Initial focus should be in the 0-5 year zones</p>	<p>SCSC 760-605 A 5 (new) 760-605 C and D 760-607 A 5 (New) 760-607 C 1 c (new) 760-706 760-706 A 3 New section/directive Add reuse to options in guidelines/standards</p>	<p>This program would support both retrofit and new development treatment. At issue is deciding the appropriate level of mitigation needed to maintain healthy waters. This is also where some of the controversy will be evident. Targets can be a percentage with many programs starting at 50%, while others aim for 90%. Also a relative nitrogen loading/acreage minimum should be defined as both flow and pound load, guiding when nitrogen mitigation is required (80,000-120,000 for 2 mg/l, up to 8 acres for marine water targets, coupled with usage loads). Targets could be set with an initial default or current TMDL goals that would be replaced by sub-watershed targets once defined by studies and approved policies.</p>

			<p>This program would trump suggestion #3, making it ineffective. For denitrification, but still effective for allowable building densities. The same code sections still need to be addressed.</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Increase cost for owners and developers - Increase need for oversight and maintenance - Emergency resilience (both positive and negative) - Improved water quality in existing neighborhoods with conditions substandard to current regulations - Increased jobs <p>Related actions:</p> <ul style="list-style-type: none"> - Onsite inspection program - SCDHS staffing - Website Management System - Inspector Training Program - Fund for financially disadvantaged (CDC?) - Watershed plans defining/amending TMDL levels - Development of RME (each Town? Private?) - Community systems for existing neighborhoods - Pilot for single onsite systems - New guideline sections for alternative systems and reuse
6	<p>Pilot Program for Alternative Individual Systems, Enhanced Treatment Units and/or Leaching Systems</p> <p>Three-phased program for alternative onsite systems</p> <ul style="list-style-type: none"> - Pilot - Probation - Accepted Use 	<p>SCSC 760-607 A 5 (new) 760-607 B 6</p> <p>Residential Standards 5-114A, require maintenance contract</p>	<p>This program would allow the continuous evaluation and installation of new technology for enhanced wastewater treatment. Reuse and extraction should be a subset of this program. It could be coordinated with programs such as EPA’s ETV, URI and MA Septic Testing Facility (Who are jointly applying for a grant to develop apps on performance, etc.) Any system with operating parts should require a maintenance contract.</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Increase cost for owners and developers - Increase need for oversight and maintenance - Emergency resilience - Stimulate new industries/products - Improved water quality Increased jobs

			<p>Related actions:</p> <ul style="list-style-type: none"> - Onsite inspection program - SCDHS staffing - Website Management System - Inspector Training Program - Fund for financially disadvantaged (CDC?) - Watershed plans defining/amending TMDL levels - Development of RME (each Town? Private?) - Community systems for existing neighborhoods - New guideline sections for alternative systems and reuse
7	Inspection program	New Directive	<p>Require single onsite wastewater systems to be inspected once every five years until a recommended pattern emerges based on data (first one may require pump-out and be more extensive than subsequent inspections). At the beginning, sample homes could be tested more frequently to evaluate seasonal issues/pump-out intervals. Wastewater haulers can be incorporated into program so that input is obtained at the same time as maintenance appointments, reducing overall costs.</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Onsite system data collected - Supply data for web-based reporting system - Slight increase in cost for home owners - Educates both owners and government on type and condition of infrastructure <p>Related actions:</p> <ul style="list-style-type: none"> - Cesspool phase-out - Web-based management system - Pilot and enhanced onsite systems - Education/certification program
8	Web-based Management System for Decentralized Wastewater	New Effort	<p>Program aimed to help owners, designers, inspectors, responsible management entities and government oversight. Web-based system will ultimately cut costs, speed data evaluation, provide for timely maintenance program, and track effectiveness of systems. Together with the inspection program, could also combine historical data and site GPS records to create reliable data base and interactive maps. This would also help speed and reduce costs</p>

			<p>for the design and permit process.</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Accurate data to inform inspection, design and decision-making process - Reduce costs and time for permits permit streamlining/data access - More responsibility for homeowners <p>Related Actions:</p> <ul style="list-style-type: none"> - Inspection program - Accelerated approval process - Pilot for enhanced onsite program
9	Faster, clearer approval process for alternative systems by the County, NYSDEC, and NYSDOH		<p>Program would be responsive to needs, such as cesspool failure, priority areas, while maintaining quality control when coupled with a web-based reporting program. There would be continuous evaluation/installation of new technology when coupled with the pilot/probation program. (his was identified as having the highest need from meeting participants, together with the cesspool prohibition/phase-out programs.)</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Enable more installations of enhanced systems - Greater positive impact to water quality at times of system failure - Supports the pilot/probation program - Advances the cesspool phase-out and nitrogen mitigation program - Reduces costs to owner, designer and manufacturer <p>Related Actions:</p> <ul style="list-style-type: none"> - Inspection Program - Pilot for enhanced onsite program - Web-based management system - SCDHS staff dedication to decentralized
10	Education/Certification Program for Inspectors, Responsible Management Entities, designers, installers, as well as develop general information for homeowners		<p>Program will prepare all for new reporting and design standards. Certification will allow for tracking and information dissemination, and coordinated data/system management.</p>

			<p>Impacts:</p> <ul style="list-style-type: none"> - Better performance of installations through oversight - Better tracking of projects - Increased job opportunity <p>Related Actions:</p> <ul style="list-style-type: none"> - Inspection Program - Pilot for enhanced onsite program - Web-based management system
11	<p>Nitrogen mitigation program for existing commercial systems that do not incorporate denitrification but have equivalent densities of more than 300 gpd per acre in the 50-year influence zone in watersheds</p>		<p>This program would accelerate denitrification in priority areas, as one project could mitigate significant loading. Pilot of interventions as components to the systems will help evaluation of the cost/benefit of varied approaches.</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Accelerated denitrification - Evaluation of larger-scaled solutions - Improved water quality - Increase in maintenance/oversight costs <p>Related Actions:</p> <ul style="list-style-type: none"> - Expansion of pilot program - Watershed denitrification program - Web-based management
12	<p>Resilience for Climate Change – Decentralized Systems</p>	<p>Standard: Residential 5 105 B 1 5- 105 B 3 5- 110 2 5 113 exemption for STEP/G Add back flow protectors? Issue re: septic tank depths, waterproofing specification (also contamination), and salt water immersion</p>	<p>This would combine actions from other programs with three main goals:</p> <ol style="list-style-type: none"> 1. Increased minimum depth to groundwater from 3’ to 4 or 5 feet 2. Waterproof and/or removal of treatment from the flood/SLOSH zones 3. Support redundancy/rebound from natural disasters <p>Impacts:</p> <ul style="list-style-type: none"> - Less pollution to groundwater and surface water bodies - Reduced failure due to rises in groundwater levels - Increased cost <p>Related Actions:</p>

			<ul style="list-style-type: none"> - Community systems in existing neighborhoods - Cesspool phase-out and prohibition - Design standard adjustments
13	Study to evaluate pump-out frequencies based on occupancy type, number and system size		<p>Guidance on pump-outs is disparate. We also have a wide range of household and usage type. Rhode Island has raw data that could be a start if we had access. Otherwise information could be generated as part of the inspection program</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Provide more accurate guidance for inspections/pump-outs, so that inspection/maintenance program is more effective. - Lowers costs for certain user types and inspection programs - Anticipates real points of failure, which triggers maintenance before failure occurs <p>Related Actions:</p> <ul style="list-style-type: none"> - Inspection program
14	Natural Systems		<p>As part of pilots, include vegetated systems and/or shallow, narrow drain fields. (Southold would like to try a planted recirculating sand filter as nitrogen mitigation for an existing community septic system on Fishers Island.)</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Reduces costs - Seasonal variation in effectiveness (parallels tourist season) - Human interaction/use/coverage guidance <p>Related Actions:</p> <ul style="list-style-type: none"> - Pilot single onsite systems - Nitrogen mitigation for watersheds - Nitrogen mitigation for commercial systems - Web-based management

15	<p>Cesspool or leaching pit reuse</p> <p>When infrastructure is in good repair, it may be repurposed for use in either the rehabilitated wastewater treatment system or for stormwater management</p>	<p>SC 760-502 4.f SC 760-711</p>	<p>Add “or re-purposed for approved reuse (permitted) as part of a leaching or stormwater system (EPA injection well consideration)</p> <p>Note: Needs guidance documentation</p> <p>Impacts:</p> <ul style="list-style-type: none"> - Save money during upgrades/add redundancy for emergencies <p>Related Actions:</p> <ul style="list-style-type: none"> Cesspool Phase-out Community systems Onsite Enhanced Systems Resilience for Climate Change
16	<p>Town Program that is More Restrictive than County Regulations</p>		<p>Clear guidance and process is needed for when municipalities choose to have a more restrictive policy than county standards. (For instance EH does have a cesspool prohibition, but other towns have not been successful when trying to obtain improved treatment, density evaluations or TDR restrictions. Also, the County code is less restrictive rather than more restrictive relative to some of the State guidelines.</p>

MISCELLANEOUS ITEMS/QUESTIONS			
	<p>Clarify definitions of Community Sewerage System. Also limitations of use .</p>	<p>760-601C 760-7 760 607 c 4</p>	<p>Redefine for size, type, as well as ownership. Define community system consistently Cesspool</p>
	<p>Residential and Commercial Standards</p>		<p>Compatible with Septic Tank Effluent Pump (STEP) systems Pump references Vacuum details Component Design for flexibility Reuse of wastewater Repurpose of leaching/cesspools</p>
	<p>“Requires conventional subsurface in addition to xx”</p>	<p>50115 A</p>	<p>Composters: only in addition to regular systems. Should we have exceptions to this? If have maintenance contract, sensors? For shallow locations? Otherwise good as adds resiliency – but will never happen due to cost.</p>
	<p>Alternative drain fields / recycling sand filters</p>		

5.2.1 Dedicated Staff Member for Decentralized Wastewater Issues/Programs

Ideally this position would be in the Suffolk County Department of Health Services (SCDHS), the Division of Environmental Quality, responsible for decentralized wastewater treatment for both individual onsite systems and clusters.

If the County does not wish to support this position, another alternative would be to have a person jointly supported by participating towns, such as the five East End towns, or by a watershed coalition. Since the East End has surface water issues in three major watersheds and home rule status exists, the municipal coalition might be preferred.

Possible duties include:

1. Oversee design contracts for decentralized clusters and enhanced treatment units
2. Develop and oversee pilot projects for decentralized systems, both single and clustered systems
3. Manage lists of accepted, piloted, and excluded technologies for use in Suffolk County
4. Devise and supervise educational and certification programs for septic system inspectors (most likely haulers)
5. Devise and supervise education and certification of Responsible Management Entities and/or any contracts to accomplish these tasks
6. Develop reporting process, including GIS
7. Supervise reporting system for decentralized inspections
8. Develop public educational materials
9. Supervise incentive programs for implementation
10. Track and facilitate approval process for alternative systems and clusters for existing communities, including coordination with SCDPW

Currently there is no staff dedicated to a proactive program addressing decentralized wastewater treatment issues. Review of permit applications is the only active function.

While existing and proposed studies evaluate the establishment of sewer districts, they do not compare or evaluate the need for community clusters in existing neighborhoods. While densities in western Suffolk County may support the high costs of sewer districts (densities of 2,403 persons per square mile), Eastern Suffolk has densities of 395 persons per square mile. (P 1-4 SCCP). The Suffolk County Department of Health Services intends to let a contract to investigate enhanced treatment units for small onsite systems and conduct planning tasks.

Cost: up to \$100,000 per year

Responsibility: Either County or municipalities

(Note: Subsequent to the May 22 meeting, SCDHS hired back a retired employee on a part-time basis to address decentralized issues and work on final version of SCCWRMP.

5.2.2 Proposal for Cesspool Phase-out and Prohibition (Short, medium and long-term)

5.2.2.1 Cesspools will no longer be allowed to be installed in Suffolk County

When a cesspool is replaced it will be with one of the following:

- a. connection to an existing or new sewer district
- b. connection to a community system
- c. compliant onsite septic system
- d. if in a location requiring a more stringent design, an enhanced system as described separately

5.2.2.2 When a cesspool fails it must be replaced as soon as possible within a time limit of one year for failure type i- iii, three years for iv-vi, and five years for vii – viii.

Failure is defined as one of the following:

- i. the cesspool fails to accept or dispose of sewage, as evidenced by sewage on the ground surface above or adjacent to the cesspool, or in the building served.
- ii. the liquid depth in a cesspool is less than six (6) inches from the inlet pipe invert
- iii. pumping is required more than two (2) times a year
- iv. the cesspool is within 200 feet of a public drinking water well or surface water body
- v. the cesspool is within 150 feet of a private drinking well
- vi. the bottom of the cesspool is less than three feet to groundwater
- vii. the cesspool is in a flood or SLOSH zone
- viii. the cesspool is on a lot of less than one-half acre in size

5.2.2.3 Within one year of a sale of a home, any cesspool will be required to be replaced.

5.2.2.4 When a home is renovated where the renovation costs are at least 30% of the value of the home or \$100,000 whichever is less, any existing cesspool must be replaced.

5.2.2.5 Any cesspool larger than 1000 gal must be replaced within one year

5.2.2.6 When upgrading a cesspool, enhanced treatment for nitrogen mitigation shall be required in designated watersheds:

- Long Island Sound Watershed
- Peconic Estuary Watershed
- South Shore Estuary Reserve Watershed
- Forge River Watershed
- Within 200 feet of any surface water body
- Any specially designated communities or locations where more stringent municipal regulations apply.

5.2.2.7 Exemptions:

- i. Systems planned to be incorporated within a proposed sewer district or expansion of an existing system by _____.
- ii. Systems to be incorporated within a community system by _____
- iii. Systems on lots where the estimated nitrogen levels are calculated to be no more than 0.5 mg/l (this can be anywhere from 0.5 to 2 mg/l) after area dilution through lot size is considered.
- iv. A land conservation program designed to counter nitrogen mitigation on adjacent lands abutting surface waters.
- v. Proven hardship, allowed five years for compliance

Note: Requirements other than failure could be phased in by targeting systems in phases based on the travel time it takes groundwater to reach surface water bodies.

	Year
Cesspools in 0-2 year influence zones	_____
Cesspools in 2-5 year influence zones	_____
Cesspools in 5-10 year influence zones	_____
Cesspools in 10-25 year influence zones	_____
Cesspools in 25-50 year influence zones	_____

The nitrogen mitigation program should be coordinated with pilot, system inspection or evaluation, installer/inspector certification, Responsible Management Entities certification, and incentive programs.

5.2.2.8 Discussion:

In Suffolk County cesspools were allowed for onsite wastewater treatment until 1973, when septic systems were required for new construction. Unless an alteration increases wastewater loading, cesspools are still allowed to be reinstalled when replacing an existing cesspool. Cesspools allow untreated sewage to percolate directly to soil and groundwater. They dispose of wastewater, rather than treat it. Disease-causing pathogens can exit the system and enter groundwater. Dissolved particles can leach into the soil, filling voids, hindering percolation, and impacting the natural oxidation process. According to a major research program, nowhere else in the United States allows the replacement of a cesspool with another cesspool.

Seventy-five percent of County buildings utilize onsite septic systems. “Out of the 325,777 homes in Suffolk County that predate the Sanitary Code (1973), there are approximately 252,530 homes that are not on sewers and do not have a sanitary system that conforms to Standards.” For the five eastern towns the estimated number is 24,138. (Based on 1970 census data, P 8, Suffolk County Decentralized Wastewater Needs Survey SCDWNS)

Many of these cesspools are in vulnerable locations. For instance in Southampton, 15.2% of all buildings are cesspools in the 0-2 year influence zone where groundwater contributes to surface water bodies. In Southampton 4206 buildings are assumed to have cesspools and are sited on one-quarter (1/4) acre lots or smaller.(PGG) Most of the five eastern towns are expected to experience a rise of one-to-two feet in groundwater levels due to climate change by 2080, and this is a conservative number. As a result it can be expected that all cesspools at elevations of 13’ or below are likely to fail due to depth to groundwater issues. Providing solutions to vulnerable cesspool and septic systems in flood, surge or shallow depths to groundwater will add resiliency to the vital communities lining the coast.

2.2.2.9 Costs

As described in the SCDWNS, the average cost for a 1,500 gallon septic system is \$6,880 including abandonment of the cesspool. Special conditions raise this price to \$19,346 for a deep system and \$53,230 for a raised, shallow system. An enhanced system can cost between \$20,000 and \$35,000.

If 25,000 units were targeted (10% of the county total), assuming the same overall percentage breakdown as the County Needs Report, 95 units could be upgraded for every million dollar investment. It may be possible to lower unit costs by reusing existing cesspools, contracting for bulk prices for approved systems, or installing community solutions to units on small lots.

Standard:	53.3%
Deep:	25.5%
Shallow:	21.2%

\$533,000	77
\$255,000	13
\$212,000	4
\$1,000,000	95

If the program prioritizes projects along the coast and in flood zones, if one considered all having enhanced treatment, costing \$25,000, 40 could be installed per one million dollars.

2.2.2.10 Financing

A revolving loan program and/or incentive/grant program needs to be available for people upgrading. Below are several charts showing funding scenarios for a revolving loan program. All assume a five-year

payback period, servicing full costs for 95 units per million dollars or an average cost of \$10,526 per unit. This simple analysis assumes that interest rates equal inflation, so no accounting for this differentiation was made. If the loan program were limited to residents with incomes below the median, private capital investment is leveraged. Assuming half the target property owners meet income criteria, and 25% of those are second home owners due to the tourist nature of coastal properties, 9375 owners would be expected to need access to the revolving loan fund. A larger fund amount at the start of the program will help realize impacts sooner.

This program should be coupled with a grant program for enhanced treatment and nitrogen mitigation. Assuming an incremental cost of \$10,000 per dwelling unit, 100 upgrades would be accomplished for every \$1,000,000 invested. With both the revolving loan fund and grant program, the same ratios for upgrades and enhanced treatment could be offered for community systems as well as single onsite systems. There is also a need for funds to cover engineering fees for community systems. Attached is a ranking sheet to assess priorities of applications. Income criteria should also be considered.

Table 5-3 Funding Scenarios

	Scenario 1			Scenario 2			Scenario 3		
	Cash Added	Return	#	Cash Added	Return	#	Cash Added	Return	#
Year 1	\$5,000,000		475	\$5,000,000		475	\$3,000,000		475
Year 2		\$1,000,000	95	\$1,000,000	\$1,000,000	190	\$3,000,000	\$600,000	342
Year 3		\$1,200,000	114	\$1,000,000	\$1,400,000	228	\$3,000,000	\$1,320,000	410
Year 4		\$1,440,000	137	\$1,000,000	\$1,880,000	274	\$3,000,000	\$2,184,000	492
Year 5		\$1,728,000	164	\$1,000,000	\$2,456,000	328	\$3,000,000	\$3,220,800	591
Year 6		\$2,073,600	197	\$1,000,000	\$3,147,200	394	\$3,000,000	\$4,464,960	709
Year 7		\$1,488,320	141	\$1,000,000	\$2,976,640	378	\$3,000,000	\$5,357,952	794
Year 8		\$1,585,984	151	\$1,000,000	\$3,371,968	415	\$3,000,000	\$6,309,542	884
Year 9		\$1,663,181	158	\$1,000,000	\$3,766,362	453	\$3,000,000	\$7,307,451	979
Year 10		\$1,707,817	162	\$1,000,000	\$4,143,634	489	\$3,000,000	\$8,332,141	1077
Year 11		\$1,703,780	162	\$1,000,000	\$4,481,161	521	\$3,000,000	\$9,354,409	1174
Year 12		\$1,629,816	155	\$1,000,000	\$4,747,953	546	\$3,000,000	\$10,332,299	1267
Year 13		\$1,658,116	158	\$1,000,000	\$5,102,215	580	\$3,000,000	\$11,327,169	1361
Year 14		\$1,672,542	159	\$1,000,000	\$5,448,265	613	\$3,000,000	\$12,330,694	1456
Year 15		\$1,674,414	159	\$1,000,000	\$5,784,646	645	\$3,000,000	\$13,335,342	1552
Year 16		\$1,667,734	158	\$1,000,000	\$6,112,848	676	\$3,000,000	\$14,335,983	1647
Year 17		\$1,660,524	158	\$1,000,000	\$6,439,185	707	\$3,000,000	\$15,332,297	1742
Year 18		\$1,666,666	158	\$1,000,000	\$6,777,432	739	\$3,000,000	\$16,332,297	1837
Year 19		\$1,668,376	158	\$1,000,000	\$7,112,475	771	\$3,000,000	\$17,333,323	1932
Year 20		\$1,667,543	158	\$1,000,000	\$7,445,317	802	\$3,000,000	\$18,333,848	2027
	\$5,000,000	\$30,556,414	3378	\$24,000,000	\$83,593,300	10221	\$60,000,000	\$177,444,507	22747

	Scenario 4			Scenario 5			Scenario 6		
	Cash Added	Return	#	Cash Added	Return	#	Cash Added	Return	#
Year 1	\$10,000,000		950	\$3,000,000		285	\$15,000,000		1425
Year 2		\$2,000,000	190	\$1,000,000	\$600,000	152		\$3,000,000	285
Year 3		\$2,400,000	228	\$1,000,000	\$920,000	182		\$3,600,000	342
Year 4		\$2,880,000	274	\$1,000,000	\$1,304,000	219		\$4,320,000	410
Year 5		\$3,456,000	328	\$1,000,000	\$1,764,800	263		\$5,184,000	492
Year 6		\$4,147,200	394	\$1,000,000	\$2,317,760	315		\$6,220,800	591
Year 7		\$2,976,640	283	\$1,000,000	\$2,381,312	321		\$4,464,960	424
Year 8		\$3,171,968	301	\$1,000,000	\$2,737,574	355		\$4,757,952	452
Year 9		\$3,326,362	316	\$1,000,000	\$3,101,089	390		\$4,989,542	474
Year 10		\$3,415,634	324	\$1,000,000	\$3,460,507	424		\$5,123,451	487
Year 11		\$3,407,561	324	\$1,000,000	\$3,799,649	456		\$5,111,341	486
Year 12		\$3,259,633	310	\$1,000,000	\$4,096,026	484		\$4,889,449	464
Year 13		\$3,316,231	315	\$1,000,000	\$4,438,969	517		\$4,974,347	473
Year 14		\$3,345,084	318	\$1,000,000	\$4,779,248	549		\$5,017,626	477
Year 15		\$3,348,829	318	\$1,000,000	\$5,114,880	581		\$5,023,243	477
Year 16		\$3,335,468	317	\$1,000,000	\$5,445,754	612		\$5,003,201	475
Year 17		\$3,321,049	315	\$1,000,000	\$5,774,976	644		\$4,981,573	473
Year 18		\$3,333,332	317	\$1,000,000	\$6,110,765	676		\$4,999,998	475
Year 19		\$3,336,752	317	\$1,000,000	\$6,445,125	707		\$5,005,128	475
Year 20		\$3,335,086	317	\$1,000,000	\$6,778,300	739		\$5,002,629	475
	\$10,000,000	\$61,112,828	6756	\$22,000,000	\$71,370,735	8870	\$15,000,000	\$91,669,242	10134

A COMBINED PROGRAM:

The following is a recommended program combining an upgrade loan program, grants for enhanced treatment and funds for decentralized cluster design. The intent is to provide a decentralized program appropriate for the lower-density communities in vulnerable, environmentally sensitive locations, typical of the East End. This is proposed to augment, not replace the sewer design projects being planned in western Suffolk County. The program assumes \$6,000,000 per year for the first two years, \$7,000,000 in years three through five, and five million per year afterwards. Any money not used would be rolled over for use in the following years to accommodate education, pilot programs, design and permitting lags.

	Scenario 7 Revolving Loan Section			Scenario 7 Grants for enhancement \$10,000 per dwelling unit			Scenario 7 Design funds for decentralized clusters or expansions of existing systems		
	Cash Added	Return	#	Cash Added	Return	#	Cash Added	Return	#
Year 1	\$3,000,000		285	\$1,500,000		150	\$1,500,000		750
Year 2	\$3,000,000	\$600,000	342	\$1,500,000		150	\$1,500,000		750
Year 3	\$3,000,000	\$1,320,000	410	\$3,000,000		300	\$1,000,000		500
Year 4	\$3,000,000	\$2,184,000	492	\$3,000,000		300	\$1,000,000		500
Year 5	\$3,000,000	\$3,220,800	591	\$3,000,000		300	\$1,000,000		500
Year 6	\$1,000,000	\$4,464,960	519	\$3,000,000		300	\$1,000,000		500
Year 7	\$1,000,000	\$4,957,952	566	\$3,000,000		300	\$1,000,000		500
Year 8	\$1,000,000	\$5,429,542	611	\$3,000,000		300	\$1,000,000		500
Year 9	\$1,000,000	\$5,851,451	651	\$3,000,000		300	\$1,000,000		500
Year 10	\$1,000,000	\$6,184,941	683	\$3,000,000		300	\$1,000,000		500
Year 11	\$1,000,000	\$6,377,769	701	\$3,000,000		300	\$1,000,000		500
Year 12	\$1,000,000	\$6,760,331	737	\$3,000,000		300	\$1,000,000		500
Year 13	\$1,000,000	\$7,120,807	771	\$3,000,000		300	\$1,000,000		500
Year 14	\$1,000,000	\$7,459,060	804	\$3,000,000		300	\$1,000,000		500
Year 15	\$1,000,000	\$7,780,582	834	\$3,000,000		300	\$1,000,000		500
Year 16	\$1,000,000	\$8,099,710	864	\$3,000,000		300	\$1,000,000		500
Year 17	\$1,000,000	\$8,444,098	897	\$3,000,000		300	\$1,000,000		500
Year 18	\$1,000,000	\$8,780,851	929	\$3,000,000		300	\$1,000,000		500
Year 19	\$1,000,000	\$9,112,860	961	\$3,000,000		300	\$1,000,000		500
Year 20	\$1,000,000	\$9,443,620	992	\$3,000,000		300	\$1,000,000		500
	\$30,000,000	\$113,593,334	13641	\$57,000,000	\$0	5700	\$21,000,000	\$0	10500

Considerations:

- Suffolk County Department of Health Services guidelines and standards should be updated to reflect new policy and standards supportive of the program.
- The opportunity to upgrade needs to be more attractive than non-action.
- Evaluation, oversight, and disciplinary action of noncompliance need to be incorporated.
- An inspection program should be developed simultaneously.

To counter fears of uncontrolled development if wastewater is advanced, the following will help counter this:

- i. Incorporate total pounds of nitrogen as well as flow into regulations, standards and guidance.
- ii. Incorporate TMDL and watershed nitrogen mitigation goals in standards with comparable minimum lot sizes (enlarged).
- iii. Focus efforts/funding on existing noncompliant installations as well as new loads

5.2.2.11 Examples from other programs:

EPA

The U.S. Environmental Protection Agency (EPA) regulates large capacity cesspools as a Class V well to inject non-hazardous fluids underground under the Underground Injection Control (40 CFR part 144, Subpart G, published December 7, 1999). Large-capacity cesspools are considered, along with motor vehicle waste disposal wells to pose the highest risk to underground sources of drinking water. (http://water.epa.gov/type/groundwater/uic/class5/classv_study.cfm) In 1999, the EPA prohibited the installation of new large-capacity cesspools nationwide. The rule also phased out existing cesspools nationwide serving 20 or more people by April, 2005.

Rhode Island

The text of the existing R.I. Cesspool Act of 2007 can be found at: <http://webserver.rilin.state.ri.us/Statutes/TITLE23/23-19.15/INDEX.HTM>

This is the law they are currently operating under that requires cesspools within 200' of the coastal shoreline, public wells, or reservoirs to be removed from service by January 1, 2014. The act includes a waiver provision for up to five years for hardship as well as exceptions if planned connections to sewer districts meet deadline criteria. They also require all systems in certain watersheds to have nitrogen mitigation.

To further accelerate upgrades, a proposed revision of the Act is under review. It would require upgrades at a point-of-sale and is based on the Massachusetts program. Rhode Island requires each municipality to develop a plan for improvements to onsite wastewater. Each municipality supervises the applicable revolving loan fund.

Massachusetts

<http://www.mass.gov/eea/agencies/massdep/water/regulations/310-cmr-15-00-septic-systems-title-5.html>

Massachusetts, starting in 1996, requires all septic systems or cesspools to be inspected within two years prior to a home being sold, change in title, use change, foreclosure, or expanded. Failing conditions must be rectified within two years and brought to full compliance. Failure includes backup, ponding, liquid depth less than six inches from inlet, pumping more than 4 times a year (RI is two), made of metal or cracked, extends to groundwater, for cesspools within 100 feet of surface water supply, within 50 of wetland or surface water, within 100 feet of a private well (with testing allowed between 50-100), Tax credits provide financial relief (up to \$1,500 per year with a maximum of \$6,000 over a four-year period.), as well as low interest loans.

5.2.3 Recommended Changes to Article 6 of the Suffolk County Sanitation Code and Guidelines for Issuing Approval of Sewage Disposal Systems and Water Supplies for Existing Residences

See Appendices D-5 & 6

5.2.4 Suggested Municipal Action

PGG partnered with the North Fork Environmental Council (NFEC) and Group for the East End (GFEE) to develop a letter asking the Town of Southold to create a committee and eventually a town-wide watershed district that will manage improvements. This takes advantage of the fact that Southold is in the midst of creating a comprehensive plan. We are also requesting other groups to be cosignatories. The Nature Conservancy, Orient Association, and the North Fork Audubon Society have agreed, and we are waiting to hear from additional groups. We expect to submit this to the Town in early 2014. Appendix D-7.