Community Financing for Septic System Management in the Inland Bays Watershed

A White Paper Report

Prepared for Delaware Department of Natural Resources and Environmental Control

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Executive Summary

Background and Purpose

This report is the culmination of a year-long outreach and technical assistance effort managed by the Environmental Finance Center at the University of Maryland (EFC), in coordination with the Delaware Department of Natural Resources and Environmental Control (DNREC) and First State Community Action Agency (FSCAA) for the Inland Bays Watershed, located in Sussex County, Delaware. The project was designed to identify sustainable financing strategies to support community financing needs related to upcoming septic system inspection and performance requirements. New septic system requirements are planned as part of a Pollution Control Strategy (PCS) developed to reduce nutrient loads to the Inland Bays Watershed to a level that would meet Total Maximum Daily Load (TMDL) requirements. The project stemmed from DNREC's concern regarding the financial impact of the proposed septic system requirements on low-income populations. The project had two objectives – first, to clarify costs and financing needs of affected residents related to the proposed regulations and second, to identify creative financing opportunities to address these needs.

The project was guided by a steering committee consisting of DNREC staff representing various departments; FSCAA staff; state funding agency representatives including Delaware State Housing Authority; technical assistance organizations including Delaware Rural Community Assistance Program (RCAP); and others. Outreach and information was conducted via meetings, telephone interviews, and a series of leadership dialogues that culminated in a single Financing Forum held in Georgetown, Delaware on October 25, 2007. The Forum involved "guest experts" who shared ideas and perspectives with more than 50 participants. Representatives from state and federal agencies, Sussex County staff, and key stakeholder groups explored potential financing opportunities. A summary of the financing needs, along with sustainable financing ideas and approaches collected through the project process, are highlighted here.

Financing Need

<u>Costs for individual septic system owners</u>

Proposed septic regulations for the Inland Bays Watershed published on May 1, 2007, which are undergoing revision at the time of writing this report, call for two new programs related to onsite wastewater disposal technologies (septic systems, size less than 2,500 gpd):

1. an inspection and pump-out program required for all systems every three years; and
2. a performance requirement that all new and replacement systems use nutrient reducing technologies effective 2015.

For existing septic system owners, costs related to the proposed inspection and pump-out required every three years are estimated at $325 to $600 (on average **$463 every three years or $14 per month**). The additional cost of repair or replacement of any identified malfunctioning systems, estimated at 18% for the watershed, is wide-ranging, depending on system type and surrounding environmental conditions (e.g., soil type, depth to water table, space, slope). System replacement costs can be as low as $3,000 for standard gravity systems to as high as $25,000 for alternative systems, and on average are estimated at **$10,000** for the purposes of financing need estimates. Note, replacement does not include the additional costs of technologies needed to bring a system to performance standards.

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Effective 2015 for all new and replacement systems, installation of Best Available Technologies (BATs) needed to meet performance requirements would cost an additional $3,500 to $6,000, or on average **$4,750 per unit** above installation of the base septic system. All BATs would also require annual maintenance contracts which cost $200 to $500 per year, or an average of **$350 per year**.

Estimated financing need

An estimate of financing needs created by the proposed septic system regulations for both low- and moderate-income populations from 2010 to 2014 is shown in Table 2, on page 17. In summary, the total assistance needs over the first phase of implementation **from 2010 to 2014 would be $1.9 to $3.8 million, or $370,000 to $750,000 annually for low-income system owners**. There would be an additional assistance need in the range of **$2.0 to $4.0 million annually** or **$10.0 to $20.0 million through 2014 for moderate-income septic system owners**. Of most concern throughout this report is the identification of methods of assisting low-income system owners, which would clearly require generation of sustainable revenue sources.

Effective 2015, it is assumed that all systems being replaced would incur an additional cost of installation of BATs, (200 to 400 moderate-income-owned units per year and an additional 19 to 37 low-income-owned units per year) at an estimated **$1 to $2 million per year**, of that $90,000 to $180,000 would be needed to support low-income households. This does not include any ongoing financing needs of low-income owners with annual service contracts that would be required with BATs.

Addressing the Financing Needs

Based on the financing need evaluation, it is clear that a sustainable dedicated source of funding would be needed to address the financing needs of low- and moderate-income septic system owners. As a result of the interviews, meetings, and Financing Forum, several key financing approaches came forth for consideration by DNREC and key partners for implementation to address needs. Highlights are described below:

Cost reduction and institutional opportunities

Several cost reduction and institutional opportunities were identified. When developing a financing plan at any level, reviewing cost reduction opportunities and better understanding the existing institutional capacity will support development of an efficient financing approach. The following cost reduction and institutional opportunities present the greatest opportunities:

- Begin a comprehensive planning approach to wastewater management that considers both central and onsite septic systems collectively to address nutrient reduction goals, public health goals and cost efficiencies on a watershed scale.
- Expand or model the Sussex County Wastewater/Water Relief Fund.
- Expand or model the RC&D Emergency Home Repair Project.
- Tap into assistance in the form of direct funding or institutional capacity from commercial banks and credit unions, utilizing Community Reinvestment Act (CRA) requirements as an incentive.
- Utilize investment and service opportunities from private utilities where possible and practicable.

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Funding from existing programs

Although funding for many state and federal programs are generally in decline, existing funding programs do offer opportunities to partially address financing needs. These opportunities include:

- Increase funds allocated to the Clean Water State Revolving Loan Fund (CWSRF) Septic Rehabilitation Loan Program (SRLP) from current levels of $400,000 through increases in the overarching CWSRF Nonpoint Source program currently set at $1.5 million.
- Fully utilize 1% loan funds through the USDA RD 504 Home Rehab Program.

Opportunities for Sustainable Funding

Opportunities for creating sustainable funding are critical for establishing base funding to support low-income families with septic financing needs.

- Leverage the Clean Water State Revolving Loan Wastewater Facility Loan Program to increase available low interest financing by 2.25 to 2.75 times.
- Create a public Regional Management Entity or septic utility to offer services to septic system owners at the lowest possible costs and greatest opportunity to leverage grant or low interest loan dollars.
- Implement a general septic fee on septic system owners – watershed-wide, county-wide or state-wide.
- Implement a septic impact fee on new septic systems – watershed-wide or county-wide.

Recommendations

The following recommendations are intended to assist DNREC in their efforts to meet the needs of local communities attempting to comply with the proposed septic system regulations.

1. Regulations with adequate enforcement must be implemented first.
2. Clarify proposed septic regulation goals with regard to nutrient reductions and public health protection.
3. Conduct a watershed-wide septic study that includes thorough cost analysis of alternatives for reducing nitrogen from existing systems. Alternatives evaluated should include connection to central sewer over the longer term (beyond five years), installation of cluster systems, installation of nutrient reducing technologies on septic systems, versus inspection and maintenance of existing systems.
4. Increase formal communication on wastewater management and financing issues between DNREC Groundwater Discharge Section and the County Engineering Department from biannual to quarterly meetings. Solicit involvement of municipal wastewater facility representatives and the Public Service Commission at meetings as needed and provide opportunities for citizen participation on an annual basis.
5. Establish a Septic Financing Task Force to facilitate necessary coordination between County and State officials to advance opportunities.
6. Take advantage of existing institutions and programs in the Inland Bays Watershed.
7. Expand community participation and engagement.

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Implementation

Application of a multiple financing approaches that include existing resources and institutions, combined with revenue opportunities is imperative if the septic financing needs are to be met. Continued communication and coordination with key agencies, organizations, and the community is essential. An inclusive process is imperative to identify priority financing approaches and implement strategies. Equally important is the continued outreach and dialogue with affected communities on alternatives being considered. As the ultimate payers and benefactors of any programs developed, the community significantly influences decision-makers choices. In addition, community understanding of the issues would increase compliance levels, which is a necessary component for success.

It is hoped that the EFC project process was successful in raising awareness of the community financing issues related to proposed septic regulations in the Inland Bays Watershed. Moreover, that this report is informative in its assessment of existing resources and institutional capacity, and offers alternatives for consideration, further evaluation and debate helpful in the establishment of a financing plan.

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Introduction

The Inland Bays Watershed is a valued and sensitive ecosystem in Sussex County, Delaware. It is one of three national designated estuaries in the US Environmental Protection Agency's Mid-Atlantic Region and encompasses 320 square miles of land area and 32 square miles of open water. Its beaches and wildlife draw thousands of visitors and recreational enthusiasts each year, making it a prominent natural and economic resource for the state of Delaware.

Nutrient over-enrichment of the Inland Bays has been an on-going problem for more than 30 years. The continued decline in the watershed's water quality has led the state's Department of Natural Resources and Environmental Control (DNREC) to adopt Total Maximum Daily Load (TMDL) requirements for nutrients. In response to the TMDL requirements, DNREC and a wide range of stakeholder groups began development of a Pollution Control Strategy (PCS) in 1998. After more than nine years, the PCS is now in the process of being adopted as a regulation.

As clear steps are underway to reduce point source loads to zero, the challenge becomes successfully addressing nonpoint-sources which contribute 78% of the baseline nitrogen load and 69% of the baseline phosphorous load[1]. Onsite septic systems are one of four primary nonpoint-sources contributing to degradation of the Inland Bays including agriculture, urban land use, and stormwater. Collectively, the nearly 19,000 small onsite water systems in the watershed contribute approximately 11% of the total nitrogen load. To achieve reduction goals, the PCS requires that reductions are made in all primary sources, including these onsite septic systems.

As a part of the PCS, inspection and pumping requirements for existing small decentralized onsite systems less than 2,500 gallons per day (also called "septic systems"), as well as performance requirements for new and replacement systems, are proposed to reduce nutrient loadings from onsite systems. In addition to meeting TMDL requirements for the Inland Bays, these regulations are expected to bring the many failing and substandard septic systems (a statewide problem) into compliance.

DNREC is particularly concerned with the capacity of low and moderate income populations to comply with the upcoming septic regulations. The University of Maryland Environmental Finance Center (EFC) was asked to help DNREC identify creative financing solutions that would assist this population in meeting proposed requirements. Some of the proposed septic requirements have strong potential to eventually be adopted statewide, as many other watersheds in the state are facing similar nutrient over-enrichment and share similar problems with failing and sub-standard systems. The Inland Bays Watershed is a testing ground for implementation of many programs, and DNREC hopes to replicate successful Inland Bay programs and approaches to nutrient management in other communities and watersheds throughout Delaware.

[1] Inland Bays Pollution Control Strategy, April 2007.

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Report Structure

To identify creative financing approaches to assist low-income populations with compliance of the proposed septic regulations, the Environmental Finance Center (EFC) conducted interviews, meetings, and leadership dialogues, culminating in a Septic Financing Forum, held on October 25, 2007, with more than 50 stakeholders participating. The EFC worked closely with a Steering Committee comprised of representatives of DNREC programs, the First State Community Action Agency (FSCAA), the Delaware State Housing Authority, and others to guide and inform the project. The report highlights five primary areas of research and evaluation undertaken by the EFC as part of the project. These include the following:

1. Evaluation of financing needed for low and moderate income populations to comply with proposed septic regulations;
2. Recommendations related to effective regulation and planning to reduce implementation costs and promote cost efficiencies;
3. Evaluation of existing funding programs and institutional resources available to low and moderate income populations to address septic system concerns;
4. Review of revenue opportunities to address the financing gap; and
5. Review of incentive-based opportunities.

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Overview of Inland Bay's Watershed Septic Financing Concerns

At the Septic Financing Forum[2], several key concerns were raised as important considerations when evaluating financing approaches. Key issues are described below.

1. Implementation of the Pollution Control Strategy (PCS) and enforcement of septic system regulations is necessary to set the stage for attracting capital and resources to address financing needs of low and moderate income system owners.

Implementation of the proposed septic regulation is necessary if nutrient loadings from septic systems are to be addressed, and cost-effective approaches identified and implemented. The regulation and its enforcement would attract capital from government funding agencies, private entities, and nongovernmental organizations (NGOs). An enforced regulation creates a demand for services. In this case, the septic regulations are expected to create a demand for financing services for low- and moderate-income households, as well as approaches that help system owners achieve compliance at the lowest possible cost. Existing funding agencies are less likely to see a demand for funds if the regulation exists with limited enforcement. Other approaches such as comprehensive wastewater planning that addresses nutrient management from septic and central wastewater collectively although of considerable value, is not likely to occur without presence of a septic regulation.

2. Clear goals regarding nutrient reduction and public health protection must be articulated.

A clear purpose and intent of the regulations must be articulated by DNREC to the public regarding the new septic system requirements. Throughout the course of this project, the nutrient reduction goals are referenced as driving the need for the proposed regulations; public health protection needs and benefits also should be addressed as a result of the regulations. A program developed for the dual purpose of public health protection and nutrient reduction goals may require a different preferred financing approach, compared with a program with the sole purpose of nutrient reduction.

3. A combined approach that incorporates adequate regulation, use of existing programs and institutions, and implementation of a variety of financing tools is needed to address the financing gap.

No single approach will adequately address the financing needs of low-income communities that result from the proposed septic regulations. All tools – including adequate regulations, existing programs and institutions, and revenue-generating mechanisms -- are needed to effectively develop long-term sustainable financing and deliver resources efficiently.

[2] This half-day event was held on October 25, 2007. The more than 50 participants included two state legislators, five county-level representatives, a host of state and federal agency contacts, and a panel of financing and resource protection experts.

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4. Shared responsibility among the State, County, and citizens to address the costs of septic regulations on low-income households is critical.

The value of this single statement cannot be underscored. Delaware is unique regarding its regulation and permitting of the septic program at the state level. Although regulatory parameters are often set forth by state environmental agencies, implementation of the regulations and permitting of small onsite systems in other states is typically handled by a local jurisdiction, often a county or local public health department. Local jurisdictions have institutional capabilities, financial and other tools not typically available to state entities, including implementation of special taxing districts, utility billing and collection experience, capacity, and authority. At the county or municipal level, public works or engineering departments have first-hand knowledge regarding wastewater expansion or new developments that would be helpful when considering alternatives to septic system replacement, such as hookup to central sewer. As a combined force, the State and County have the necessary authority, capacity and capability to address the financing and nutrient management. It is also important to note that ultimately, whether financed at the State or County level, it is the citizens and the community at large that must support local and state decision makers in their efforts to protect the Inland Bays. Continued education and partnership with citizens and local stakeholder groups on financing alternatives is critical.

5. Sustainable financing approaches are essential to address ongoing assistance needs with septic operation, maintenance and replacement.

The need for financial assistance would be ongoing under the proposed regulations, driving the need for sustainable revenue sources. Very low-income households would continue to need assistance with the proposed inspection and pump-out required of system owners every three years. Inspections would trigger the need for repairs and replacements as well. The greatest financial need is expected in the initial years of the program, given that more than 50% of these systems were constructed before 1986 and have reached the typical system life expectancy of 20 years. Based on Geographic Information Systems (GIS) data on the existing systems, after the completion of the first round of inspections, system age is expected to be more evenly distributed. Funding programs developed in other communities around the country that did not consider ongoing grant needs of low-income homeowners, have been unable to adequately sustain needed programs. For example, in 1997, the Madison County Straight Pipe Elimination Revolving Loan Fund and Grant Program in North Carolina evolved from a survey and education effort promoted at the state level to identify and address straight piping or failing onsite systems[3]. The evaluation found more than 552 systems in need of repair or replacement, yet more than 60% of these households relied on an income of $26,000 or less per year. Funding in the amount of $750,000 received in 1997 was depleted by 2003, leaving an estimated 300-400 homeowners still in need and the state struggling to identify a sustainable financing source.

[3] Hughes, Jeff and Adrienne Simonson, "Government Financing for Onsite Wastewater Treatment Facilities in North Carolina." Popular Government, Fall 2005, pp. 37-45.

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6. Ongoing communication and education to those affected by the regulation and a transparent process for the development of new programs to address financing needs is important.

Regardless of the path taken, continued communication and education of the community is important to obtain the highest levels of compliance. Buy-in, approval, and use of new and existing programs by affected septic system owners in need of assistance must be part of the discussion. In addition to outreach to septic system owners, continued education and communication among State and County contacts, potential public and private funding program representatives, and nongovernmental organizations working with low income populations, as well as state and local elected officials who would drive the decision-making process is important. Addressing septic concerns is a complex process and although not commonplace yet, is among the highest priority nonpoint source issues to be tackled in the region.

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Assessment of Financing Need

Overview of Proposed Septic Regulations and Costs for Septic System Owners

DNREC published proposed regulations for septic systems in the Inland Bays Watershed as part of the PCS in the Delaware Register of Regulations on May 1, 2007. Public hearings were held in June 2007. Although undergoing revision at the time of this report, the proposed regulations as published in May 2007 call for two new programs related to onsite wastewater disposal technologies (septic systems):

1. an inspection and pump-out program required for all systems every three years, and
2. effective 2015, a performance requirement that all new and replacement systems use nutrient reducing technologies. Each is described below.

Inspection and pump-out requirements for all systems

The proposed regulation for septic systems in the Inland Bays would require all system owners to complete a system inspection and pump-out every three years. A phased implementation approach is planned. One-third of total existing systems would be required to meet inspection requirements, starting with those systems of greatest threat to the watershed, such as those located closest to surface waters and groundwater. Upon receipt of a notice, owners would have three years to complete the first pump-out and inspection. Inspectors must be licensed by the state and an inspection licensing program is already in place. For residential systems, inspections must be performed by a licensed Class H system inspector or certified property owner. The results of completed inspections are forwarded to the state by inspectors.

Proposed regulations also outline inspection requirements at time of property transfer. An inspection with pump-out would not be required if it has been completed within 36 months of the time of property transfer and the owner can supply proper documentation.

The cost of inspection and pump-out is estimated at $325 to $600, or on average approximately **$463 every three years, or $14 per month**[4]. In addition to the cost of inspection and pump-out, inspections are expected to identify malfunctioning systems discharging untreated effluent into the ground and surface waters, which would trigger additional repair and replacement requirements. It is anticipated that **18% of the systems would be found to be malfunctioning** based on a small pilot inspection program conducted in the watershed[5]. In addition, DNREC suspects that a number of substandard systems (such as seepage pits and cesspools) may exist among the approximately 50% of systems installed prior to 1986. Repair and replacement costs for owners would very greatly, depending on system type and surrounding environmental conditions (e.g., soil type, depth to water table, space,

[4] Inspection and pump-out cost range based on contacts with pumpers in October 2007 made by Jim Cassidy and Dave Schepens.

[5] Funds from the 6217 Coastal Nonpoint Source Program and the 319 Nonpoint Source Program were used to pilot a compliance and inspection program for onsite wastewater disposal systems. The program provided cost-share funds for homeowners to have their septic systems pumped and employed an inspector to inspect individual residential systems and educate the homeowner about their system and how it should function and be maintained. A total of 210 septic systems were pumped out and inspected. Septic system failure rate was 18%, as indicated by personal communication with Dave Schepens, DNREC Groundwater Discharge Section Manager.

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slope). For example, replacement costs can be as low as $3,000 for standard gravity systems to as high as $25,000 for alternative systems (See Table 1)[6]. Average replacement cost, not including advanced technology to meet performance requirements, is estimated at **$10,000**.

Performance standards for new and replacement systems

Currently, each standard small onsite system discharges an estimated 50 mg/l of nitrogen into the groundwater. Proposed effective 2015, the new performance standard would require all new and replacement septic systems to utilize best available technologies (BATs) to achieve average annual total nitrogen (TN) loadings of 20 mg/l or a 60% reduction. Service contracts would be required with installation of advanced technologies. With proper system operation and maintenance, this technology is expected to increase the life of drainfields due to the production of a cleaner effluent.

To meet performance requirements, the cost of BATs for nitrogen reduction is estimated at $3,500 to $6,000, or an average of **$4,750 per unit.**[7] This would be in addition to the cost of replacement or installation of the base system. Also, the proposed regulations would require service contracts with the installation of nutrient reducing technologies to ensure proper operation and maintenance of the system. Annual service contracts cost $200 to $500 per year and on average would pose a cost of $**350 per year**[8].

[6] Range of replacement cost by system type based on contacts with installers in October 2007 by Jim Cassidy and Dave Schepens of DNREC's Groundwater Discharge Division.
[7] Inland Bays Pollution Control Strategy, April 2007.
[8] Service contract estimates based on contacts with installers by Jim Cassidy and Dave Schepens. DNREC Groundwater Discharge Division, October 2007.

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TABLE 1: Septic System Type and Estimated Replacement Cost

System Type	Cost Range	Application
Gravity systems	$3,000 - $6,500	>47 inches to limiting zone, 6-60 mpi perculation rate 0 - 15 % slopes
Low pressure pipe	$5,000 - $8,000	27 to 47 inches to limiting zone, 0-120 mpi perculation rate 0-10% slopes permitted with a single manifold > 10% slopes require a split manifold
Elevated sand mound	$9,500 - $20,000	20 to 47 inches to limiting zone, 0-120 mpi perculation rate Slopes: - For rates slower than 60 mpi, 0 - 6% - For rates faster than 60 mpi, 0-12%
Innovative and alternative	$14,000 - $25,000	Consists of an advanced treatment unit followed by either subsurface drip irrigation, peat filter or elevated sand mound. Currently alternative systems may or may not meet proposed performance standards.
Best available technology (BATs) to meet performance requirements	$3,500 - $6,000	Additional treatment technology that reduces nitrogen levels dispersed to soils. Proposed for new and replacement systems in the Inland Bays Watershed.

Financing Need for Low and Moderate Income

As part of the project, the EFC looked to further evaluate the financing needs of low and moderate income residents in the Inland Bays Watershed. This was a difficult task due to lack of income-point data for individual properties. The evaluation provided here provides ballpark estimates at best. After initial program implementation, it is expected that better information on financing needs and system conditions would be available to more adequately estimate costs. The EFC's evaluation considered short-term financing needs from 2008 to 2014 during the first phase of proposed program implementation. By the year 2014, it is assumed that all systems would be inspected and pumped-out, and met repair or replacement requirements. Long-term evaluation that considers performance requirements was also evaluated to understand additional costs related to the nutrient reducing technologies.

There are 18,943 septic systems operating at less than 2,500 gallons-per-day capacity in the watershed. The EFC's estimates do not consider the costs related to the connection of 2,359 septic system users to central sewer as part of county wastewater service plans for the next five years. These systems would not be required to meet proposed requirements and assistance for connection of households with financial needs is considered

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part of county efforts. Rather, the EFC focused on the **remaining 16,584 systems that would be impacted by the proposed septic requirements**.

To evaluate the level of need, median household information for the 42 census tracts in the watershed was overlaid with point data on septic systems in the watershed using GIS. Due to the large number of households with septic systems covered in a single census tract (up to 1,586 systems), and use of median household income (MHI) data per tract as an indicator, the estimated number of low- and moderate-income septic system owners is expressed as a range. The range is half of the total number of septic systems in the census tracts meeting income criteria to the total number of households with septic systems in the given census tract. This range is based on the logic and assumption that at a minimum, half of the households in the census tract are below the listed MHI (and half are above). Ownership and income estimates using the census tract and MHI data are described here:

- ***Low income septic system owners: Estimated at 663 to 1,327*** (4 to 8% of all impacted systems). GIS data analysis shows 1,327 septic systems are located in census tracts with MHI less than $32,200 (2000 HUD low income requirements for a three-person household in Sussex County[9]);

- ***Moderate income septic system owners: Estimated at 5,556 to 11,111*** (33.5 to 67% of all impacted systems). GIS analysis show 11,111 systems are located in census tracts with MHI less than $46,230 (2000 moderate income requirements for a 3% loan for a three person household from the State Revolving Loan Fund, Septic Rehabilitation Loan Program)

The following assumptions were applied to the evaluation of financing need:

1. Proposed septic inspection and pump-out regulations and performance standards as outlined in the May 2007 PCS are adopted in 2008.
2. Financing assistance needs would begin in 2010. Limited activity is anticipated in the first two years after adoption of the proposed regulations due to the three-year period given to septic system owners to meet inspection requirements and limited incentives to comply earlier in the requirement period.
3. 16,584 existing systems would be impacted by the regulations.
4. Beginning in 2010, every year one-third of total existing systems would meet requirements and complete an inspection and pump-out.
5. 18% of all inspected systems are malfunctioning and would need to be replaced.
6. Septic system owners would have 2 years to complete any repairs or system replacements.
7. A total of 663 to 1,327 of system owners are low income and would require financial assistance with inspection and pump-outs.
8. Low income households receiving grant or subsidized assistance for system replacements would be required to install BATs for nitrogen reduction and meet performance standards if located in areas sensitive to nitrogen loading, within 20 inches of the water table. An estimated 22% of all systems are located in areas within 20 inches of the water table.
9. 5,556 to 11,111 households of system owners are moderate income and would require financial assistance with system repair/replacements.

[9] Three person household level income requirements were applied given the average number of persons per household in Sussex County equal to 2.45.

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10. Cost assumptions:
    - Inspection and pump-out costs per system = $463
    - Average system replacement cost = $10,000
    - Average cost of installation of BATs to meet nitrogen reduction standards = $4,500
    - Service contract cost for units with BATs = $350 per year

Results of the evaluation are shown in Table 2. In summary, the total assistance needs over the first phase of implementation **from 2010 to 2014 is $1.9 to $3.8 million, or $370,000 to $750,000 annually for low income system owners**. Of most concern throughout this report is the identification of methods of assisting low-income system owners, which would require generation of sustainable revenue sources. There is an additional assistance need in the range of **$2.0 to $4.0 million annually** or **$10.0 to $20.0 million through 2014 for moderate income septic system owners**.

As proposed, after 2015 it is assumed that all systems being replaced would incur the additional cost of installing BATs to meet the new performance requirements. Assuming a continued 18% malfunction rate[10], the **proposed performance requirement would pose an additional financial assistance need of $1 to $2 million per year. Of this total, $90,000 to $180,000 would be needed to support low income households**. This does not consider the assistance of low income owners with annual service contracts that would be required with the installation of BATs.

[10] Where 200 to 400 moderate income owned septic system units would be required to be replaced per year and an additional 19 to 37 low income owned septic system units would required to be replaced per year due to identification of malfunctioning systems during system inspections.

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TABLE 2: Estimated Financing Need for Low Income and Moderate Income Septic System Owners, 2010 to 2014

		Annual	2010 to 2014
LOW INCOME ASSISTANCE NEED			
Inspection & Pump-out		--	
○ 663 to 1,327 existing systems total (221 to 442 needing assistance per year)	MIN	$102,323	$511,615
○ Average = $463 per inspection and pump-out	MAX	$204,646	$1,023,230
Replacement of Malfunctioning Systems			
Replacement indicator, 18% malfunction rate			
○ 119 to 239 total systems needing assistance (24 to 48 systems per year)	MIN	$238,000	$1,190,000
○ Average replacement cost = $10,000	MAX	$478,000	$2,390,000
Performance standard (required of grant supported septic replacement projects in sensitive areas)			
BAT indicator, 22% of malfunctioning systems within 20 inches of the water table			
○ 26 to 53 total systems impacted (5 to 11 system per year)	MIN	$24,700	$123,500
○ Average BAT installation cost = $4,750	MAX	$50,350	$251,750
Assistance with O&M costs by 2014			
○ 26 to 53 total systems (26 to 53 systems per year by 2014)	MIN	$9,100	$45,500
○ Annual service contract cost = $350 per year	MAX	$18,550	$92,750
TOTAL MINIMUM FUNDING NEED		**$374,123**	**$1,870,615**
TOTAL MAXIMUM FUNDING NEED		**$751,546**	**$3,757,730**
MODERATE INCOME ASSISTANCE NEED, Total 5,556 to 11,111 systems			
Replacement of Malfunctioning Systems			
Replacement indicator, 18% malfunction rate			
○ 1,000 to 2,000 total systems (200 to 400 systems replaced per year)			
○ Average replacement cost = $10,000			
TOTAL MINIMUM FUNDING NEED		**$2,000,000**	**$10,000,000**
TOTAL MAXIMUM FUNDING NEED		**$4,000,000**	**$20,000,000**

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Analysis Structure and Criteria

In the process of identifying potential institutional and funding opportunities, the EFC project team developed a format for analyzing each opportunity. The goal was to develop a report format that will allow staff at DNREC, and decision-makers at local and state levels, to compare opportunities and make effective decisions about which programs to pursue. Each of the identified funding opportunities was analyzed according to the following criteria:

Type of opportunity

Identifying appropriate funding sources was the core of the EFC's research and analysis, and efforts focused on two areas of available funding sources: (1) existing programs that offer septic financing assistance to those in need, and (2) new sustainable revenue sources. The available funding sources to be investigated can be viewed in the following four broad categories of opportunities:

1. Effective regulation and planning – which includes recommendations to reduce implementation costs and promote cost-efficient approaches to address septic issues.
2. Public and private funding and institutional opportunities – with a particular focus on those dedicated to wastewater and housing assistance programs, such as revolving loan funds, state and federal agency grants, and special appropriations. Private institutions, including banks and developers, were also examined.
3. Review of revenue opportunities – including a focus on general fees and taxes to address the financing gap, as well as development of a management entity that could serve to broker fee collections and offer a range of services.
4. Review of incentive-based opportunities – such as trading opportunities and other incentive programs, including tax credits.

Level of opportunity

The level of opportunity refers to the potential revenue associated with the program. The EFC's analysis describes the potential annual revenue of a given revenue opportunity, how that estimate was derived, and where information was available.

Potential political, legal, and administrative barriers and opportunities

Clearly any new revenue program will have associated political, administrative, and legal barriers and other concerns that must be resolved. If nothing else, there will always be at least some public opposition to any new tax, fee, or payment. And though the task here was not to provide a political analysis on environmental tax policy in the state, the barriers and opportunities associated with any new program will have real fiscal and efficiency impacts. This report, therefore, provides an assessment of the barriers and opportunities associated with each recommendation in an effort to guide state decision-makers as they develop fiscal strategy in the future. Potential administrative barriers are also an important consideration. When administrative costs are kept low, efficiency increases.

In addition to applying the above criteria to each funding opportunity, the report provides case studies and examples of how other states and communities have implemented similar programs, if applicable.

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Effective Regulation and Planning

PCS and Adequate Enforcement

Design of regulations with adequate capacity for enforcement will be critical to the overall effectiveness of the proposed policy. Performance requirements for new and replacement systems are enforceable through the permitting processes, however, adequate enforcement procedures to oversee compliance with inspection and pump-out requirements of existing systems are lacking. DNREC's current plan for enforcement is to mail notification of failure of compliance. Follow-up notices would continue to be mailed until proof of compliance with inspection and pump-out requirements is shown. The proposed regulations site enforcement authority to DNREC as outlined in Title 7, Chapter 60, Section 6005 of the Delaware Code. Options include civil penalty imposed by Superior Court of $1,000 to $10,000 for violation of rules or regulations, monetary penalties for continuing violoations, and administrative penalties. DNREC must be prepared to use this authority.

As currently written, the proposed regulations also include inspection requirements at time of property transfer. An inspection with pump-out would not be required if it was completed within 36 months of the time of property transfer and the owner can supply proper documentation. If other enforcement mechanisms are not applied, it is expected that most inspections would occur at time of property transfer, where enforcement can be built into existing legal procedures for property transfer and immediate financing opportunities can be utilized.

Type of opportunity

Although the regulation, as currently designed contains clear enforcement authority, lack of clarity regarding how the regulation would be enforced and potentially limited enforcement offers incentives for septic system owners in the watershed to forgo inspection and pump-out requirements, until time of property transfer. As a result, identification and replacement of malfunctioning systems, as well as installation of BATs to meet performance standards would take a significantly longer period of time than planned.

Pending closer review of DNREC's enforcement authority and capabilities, potential options for enforcement may include approaches often used by local government authorities and special districts such as the following:

- Set fines for delayed action;
- Refer to prosecuting attorney for court action;
- Placement of liens on property; and
- Shutting off service, in this case water service may be shut off if it is being supplied to the property.

Enforcement approaches may also include special considerations for those who can not bear the costs of compliance. However, clear documentation and policies on who qualifies for special consideration and how those qualifications would be determined must be outlined and communicated to the public.

Level of opportunity

Although the benefits are difficult to quantify, lack of adequate enforcement would significantly delay achievement of nutrient reduction goals set for onsite septic system sources. It would

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also limit the ability of the program to attract capital and resources to address the issue. For example, public and private funding organizations are less likely to place a high priority on funding septic maintenance and repair/ replacement activities – especially grant programs which are already in high demand to address housing rehabilitation, sewer and water connections, and other services with limited grant resources.

In addition, any fines set for delayed or non-compliance could be used help to cover costs related to enforcement. Mailed notifications of non-compliance could cost a minimum $1.00 per notice considering materials, postage, labor and tracking. Assuming that most of the 16,584 systems in the watershed would receive at least one letter of noncompliance, that is a minimum cost of $16,584.

Potential political, legal, and administrative barriers and opportunities

Although heavy-handed enforcement may present political barriers at the state and local levels, it is clear that without adequate enforcement the proposed inspection and pump-out regulations would offer little improvement over current regulations that stipulate pump-out every three years for all post 1985 systems. In the scenario where inspection and pump-out regulations are not applied at time of property transfer, the regulation may be moot if light handed enforcement is applied. Legal authority as well as administrative capacity and any staffing needs for DNREC to impose desired enforcement mechanisms must be evaluated when considering enforcement approaches.

Regulation of Private Utilities

Both public and private wastewater treatment systems are operated in the Inland Bays Watershed and throughout Sussex County. Public systems are operated by most cities and towns, with a number of facilities also operated directly by the County. Private companies offering wastewater service to individual communities in several county communities include Artesian and Tidewater. Service areas of private companies are mainly under the oversight of the State Public Service Commission.

The process and laws regarding private sewer service currently in place create inefficiencies in municipal and county wastewater service planning efforts, as documented in the Water and Wastewater Element of the 2007 Draft Sussex County Comprehensive Plan Update. For example, towns and cities in Delaware have the authority to pre-approve any private utility service limited to areas within its existing borders. Much of the new development is occurring adjacent or just outside existing municipal boundaries, in areas that may be targeted for annexation over the long term. As a result, private developers build small private utilities in areas where sewer service may be planned for the future, wasting time and resources.

In essence, much of the county or municipality cost-effectiveness may be lost when private sewer service is provided solely to new developments located near or in between existing developments in need (e.g., failing septic systems, inadequate sewage facilities). As a result, long service extension lines going around or through existing developments may need to be built without any customers along it supporting payment of the line. Initial capital from new developments that can help offset public connection costs and increase the customer base, which ultimately lowers the cost for all, is lost under these scenarios.

Type of opportunity

A revised process where counties and municipalities have the first right of refusal with regard to the installation of private utilities is important to maintain the most cost-efficient strategy for meeting wastewater service and management goals, as well as provide targeted service to areas without adequate service. It is an important part of the solution that supports both central

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wastewater planning and addresses onsite needs. Legislation is being drafted by the county at the time of writing of this report[11], and its passage will be critical to efficient comprehensive planning in the County that addresses both nutrient reduction and public health goals. Without this authority, Sussex County will have increased vulnerability to fragmented development.

Level of opportunity
Creation of small, exclusive private wastewater treatment facilities across a landscape of larger public ones will inevitably alter county and municipal plans, as well as the ability to expand service to targeted areas. The higher costs related to missed opportunities to provide public sewer service to new developments with private utilities will, in some cases, render public sewer service as undesirable. Expanded or new public sewer service to existing areas is often viewed as too costly or a door to unwanted growth, and any higher-than-average costs of connection will undoubtedly be scrutinized and a factor in local approval of expansion.

Potential political, legal, and administrative barriers and opportunities
A change in these regulations is apt to draw opposition from the development community. Close coordination and collaboration with the Public Service Commission who oversees private utility management will also be required. It will be up to state-level elected officials to approve or deny the county proposal. However, there is precedent for development decisions to be managed at the county level. For example, New Castle County does not allow any private sewer service in level four areas (rural areas), and Kent County has control over where and when private facilities could be built, as outlined in their County charters[12].

Sub-Regional Planning

A comprehensive approach to wastewater management that considers public and private wastewater treatment facilities, as well as onsite septic systems, is a key step toward ensuring that the most cost-effective strategies are identified and financed to support nutrient reduction goals. Options to consider with regard to nutrient loadings from septic systems should include: connection to central facilities, installation of cluster-type systems, addition of advanced nitrogen removal technologies for septic systems, and proper maintenance of conventional systems. Only after a thorough analysis is completed can the alternatives be prioritized and the most cost-efficient steps to nutrient reduction understood.

A model approach to septic system management for nutrient reduction is currently being undertaken in Anne Arundel County, Maryland. A study currently in progress will assist the county in (1) identifying, categorizing and prioritizing septic systems considering the above-mentioned alternatives; (2) providing a preliminary cost analysis of onsite septic system upgrades, cluster community wastewater systems, and sewer system extension alternatives; And finally (3) developing an implementation plan over a 20-year planning horizon consistent with the county's Comprehensive Plan.

Type of opportunity
A comprehensive planning approach to wastewater management that considers both central and onsite septic systems collectively pose opportunities to reduce costs and increase financing opportunities in a number of ways. The most obvious is improved and targeted planning for central sewer service that considers nutrient reduction goals in the watershed, with special consideration of loads from existing onsite systems. In current planning approaches, although

[11] Personal communication, Michael Izzo, County Engineer, Sussex County, November 2007.
[12] Personal communication, Bryan Hall, Office of State Planning, November 2007.

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extension of service to areas with failing systems are considered, examination of opportunities to offer service to the most sensitive areas with regard to nitrogen loadings is not. In addition, a more holistic approach would open doors to accessing traditional funding sources typically available for wastewater facilities. Funds available for wastewater projects are significantly greater than funding sources for septics, and administrative capacity to access and manage these funding sources already exists at the county and municipal levels.

Level of opportunity

The level of opportunity is significant. The proposed regulations would, over a 20-year period, ultimately require installation of advanced treatment technologies on all existing septic systems as each system reaches full system life and is determined to require replacement. A life-cycle cost analysis that evaluates nitrogen loadings in addition to full system costs may help guide decisions for future central wastewater service, and other alternatives to installation of BATs on individual septic systems. The savings from these types of approaches could be significant. For example, DNREC already plans to exempt any septic systems from requirements in areas with sewer service planned in the next five years. What might be the ramifications of exempting septic systems located in areas with planned sewer service in 10 years looking both at costs and nutrient reductions?

Potential political, legal, and administrative barriers and opportunities

Undertaking this initiative would require that the state, county, and municipalities work closely together to better understand the costs and benefits of all alternatives. Based on this information, public entities can develop comprehensive plans that work in the interest of all involved. Funding for such a study would need to be identified. The Anne Arundel County study, which evaluated more than 40,000 septic systems county-wide, was conducted by private consultants at a cost of $342,000 and is to be completed in a year. This project cost does not include development of the GIS database containing baseline information on all systems. DNREC is well positioned and has most, if not all, baseline data to carry out a similar study. A clear partnership between DNREC, the County, municipalities within the watershed, and the Public Service Commission would need to be established for this effort, and planning funds would need to be identified.

Anne Arundel County, Maryland
Onsite Sewage Disposal System Study

Study Goals and Overview

A model approach to the management of onsite sewage disposal systems (OSDS) for nutrient reduction is currently being undertaken in Anne Arundel County, Maryland. The county has initiated a study of the most cost-efficient approaches to reducing nutrients from the 40,684 systems located throughout the county. The overall goal of this effort is develop a forward-looking framework that will enable the county to implement a program for the long-term management of onsite systems pursuant to achieving nitrogen reduction goals for the Chesapeake Bay. Four primary approaches are being considered:

1. Extension of sewer service
2. Cluster type community sewer service
3. Enhanced nitrogen removal, OSDS upgrades
4. No action – leaving existing septic systems

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The study is in progress and will be conducted in three phases: (1) phase one involves identifying, categorizing and prioritizing septic systems considering the above-mentioned alternatives; (2) phase two provides a preliminary cost analysis of onsite septic system upgrades, cluster community wastewater systems, and sewer system extension alternatives; and finally (3) under phase three of the project, an implementation plan over a twenty-year planning horizon consistent with the county's Comprehensive Plan will be developed. The first two phases have been completed and are described below. The final phase of the project, development of a countywide strategy, is pending and due for completion in January 2008.

Phase 1: Identification, Prioritization and Categorization of Septic Systems

The first phase of the study completed in January 2007 involved a two step process to prioritize septic systems and determine which potential alternatives are applicable. The first step was to prioritize each system based on the potential severity of its environmental and public health impact. Eight factors were considered in this first step of the prioritization process:

1. Distance from health department septic system problem areas (ft) (Based on the factors including: high water table, steep slopes, poor percolation tests, lot size, historical use of alternative septic system technologies)
2. Distance to (surface) water (ft)
3. Distance from Chesapeake Bay Critical Area (ft)
4. Depth to groundwater (ft)
5. Distance from bogs (ft)
6. Slope (%)
7. Soil percolation rates (in/hr)
8. Distance from well head protection areas (ft)

In the second step of the prioritization process, the priority septic systems were categorized relative to potential alternatives for mitigation based on planned sewer service type, proximity to sewer service, and density of OSDS. In subsequent tasks, these categories will assist in determining which of the four considered alternatives is the best-suited solution for high-priority problematic systems. This first phase also included nitrogen load calculations for all septic systems in the county categorized by watershed, sewer service area, sewer service type and priority score.

Phase 2: Evaluation of Treatment Alternatives and Costs

The second phase of the project completed in August 2007 involved a planning level cost analysis of the various treatment alternative - potential cluster community wastewater systems, enhanced onsite septic systems, and potential sewer extension projects to connect existing septic systems to existing sewer service areas (SSAs). Treatment approaches were evaluated with respect to life-cycle costs and removal efficiency, providing baseline planning information for developing a countywide treatment strategy in the final phase of the project.

The cost analysis indicates that in Anne Arundel County septic system upgrades are least costly from the standpoint of initial capital investment, but are significantly more expensive over the long-term when operations and maintenance, service life, inflation, and energy costs are accounted for. It should also be noted that the OSDS upgrade alternative assumed that drain field replacement or rehabilitation costs would be incurred in the initial capital cost of the upgrade.

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Lastly, this phase of the project identified several key issues in terms of the present direction of nutrient management policy (e.g., eligibility of Watershed Restoration Funds to support more effective treatment approaches) that may have significant bearing on the formulation of a countywide septic system treatment strategy.

Study Cost

The Anne Arundel County study, which evaluated more than 40,000 septic systems countywide, was conducted by private consultants at a cost of $342,000 and is to be completed in a year. This project cost does not include development of the GIS database containing baseline information on all systems. The project was also conducted by firm currently working with the county. As such, the consultants had existing working knowledge of the county sewer system and planning efforts which provided advantages in overall speed and efficiency of the project completion.

Implications for the Inland Bays Watershed

DNREC currently has the base GIS data necessary to conduct a similar study of septic systems in the Inland Bay Watershed. A study of similar scope may be beneficial for the Inland Bays Watershed. It will provide a long-term perspective on approaches to achieving nutrient management and public health goals and assuring the most cost efficient strategies are applied. For example, as proposed septic systems planned for connection to central sewer within the next five years are exempt from inspection requirements. Further cost evaluation may suggest a longer time frame for exemption from system replacements or upgrades in areas where central sewer is planned beyond five years. Any effort should involve partnership with Sussex County who manages sewer planning districts in the watershed, as well as municipalities with existing central sewer facilities.

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Funding Programs and Institutional Opportunities

Local, State and Federal Programs

Although a number of local, state and federal funding programs are currently available to assist low- and moderate-income homeowners with financing septic requirements, it is clear that existing programs (1) are not sufficient to cover the anticipated financing need and (2) do not offer the dedicated sustainable financing to support septic financing needs in the Inland Bays watershed. In FY 2007, relevant funding programs had a total of $2.0 million available in grant and low interest loans that *may* be applied for septic system rehabilitation or replacement (See Table 3). Many of these programs are used for a range of projects unrelated to septic systems, including home repair programs and use of funds for hookup to central water or sewer systems. All of these grant programs are highly competitive. Programs specifically geared to onsite maintenance of private septic systems, including inspections and pump-outs, are even more limited.

TABLE 3: FY2007 Allocations to Grant and Low Interest Loan Programs in Delaware That May be Used for Septic Related Projects

	FY 2007 Available Funds	
	GRANTS	LOANS
EXISTING PROGRAMS		
State Revolving Loan Fund (SRF) Septic Rehabilitation Loan Program	-	$400,000
Community Development Block Grant (CDBG)	$800,000	-
RC&D Emergency Home Repair Project	$250,000	-
Sussex County Wastewater Relief Fund	$100,000	-
USDA 504 Housing Rehabilitation Loan Program	$150,000	$300,000
TOTAL FUNDS FROM EXISTING PROGRAMS	**$1,300,000**	**$700,000**

Nevertheless, there are opportunities to expand or adjust existing programs, with the greatest opportunities lying with the Clean Water State Revolving Loan Fund (CWSRF). The Sussex County Water/Wastewater Relief Fund program offers a model for the ongoing distribution of funds for inspection and maintenance. In addition, the organizations administrating the programs already offer resources in the form of institutional capacity and coordinated outreach to individuals most in need. Below is a summary and evaluation of existing programs available to address septic financing needs for individual homeowners.

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Sussex County Wastewater/Water Relief Program

Description

Sussex County offers a grant subsidy program through the Utility Billing Division for those needing assistance in paying their county sanitary or water bills. Assistance is available on a quarterly or annual basis at $200 per year. In addition, the program offers a one-time grant of $2,500 that may be applied toward septic inspection and pump-out, septic repair or replacement, or connection fee assistance. Eligibility is based on the Federal Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) low-income levels, subject to annual revisions.

Type of opportunity

Local funding source with the greatest opportunities include the County's institutional capacity to administer a financing assistance program that offers ongoing aid for operation and maintenance, as well as small repairs related to septic systems.

Level of opportunity

The County pays for this program through their general fund via transfer tax revenues. In FY 2007, $100,000 was allocated for this program. In FY 2008, $75,000 has been proposed. In the past, the annual budget for this program has ranged from $50,000 to $100,000. Allocations are dependent upon on available county resources in a given year. In recent years, transfer tax collections in Sussex County have decreased due to a decline in development county-wide[13].

Potential political, legal, and administrative barriers and opportunities

A significant increase in allocations to this fund is unlikely due to political and fiscal constraints at the county level. However, the institutional capacity to administer such an ongoing assistance program positions the county as an integral partner in administration of small grants and subsidies that may be needed to address operation and maintenance (e.g., inspections, pump-out, service contracts), as well as small repairs related to septic systems. This is important given the limited programs that currently offer assistance with operations, maintenance and small repairs.

Clean Water State Revolving Loan Fund (CWSRF) Wastewater Facility Loan Program

Description

Under this program, the state of Delaware offers public wastewater treatment facilities low-interest loans to address compliance issues. Rates are based on the income qualifications of the community. Low rates of 1% are available to disadvantaged communities meeting income requirements.

Type of opportunity

There are opportunities to leverage revolving funds received through the CWSRF program by banking revolving funds and allowing them to earn interest, and then issuing bonds to lend out for projects. To date, Delaware does not leverage their revolving loan funds. Twenty-seven states leverage their CWSRF funds. Within EPA Region 3 Virginia and Maryland leverage their

[13] Remark by Dave Baker, Sussex County Administrator, at the Inland Bays Septic Financing Forum, October 25, 2007.

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CWSRF funds[14]. Any interest earned on leveraged funds must be used by the state to lend or grant for additional projects. The interest earned could be applied toward a range of activities where there is demand, for example, a low interest loan program down to 0% for septic systems or wastewater treatment projects, as long as the fund is managed in perpetuity.

Level of opportunity

Interest generated from leveraged funds could be used to support a low-interest loan program for septic systems at virtually zero cost to state, county or citizens. This is one of the greatest opportunities to generate additional capital with the least associated costs. Funds available at 1% for a term of up to 20 years could be increased 2.25 to 2.75 times[15]. If longer lending terms of up to 30 years are applied, further low-interest funding for projects could be available.

Only revolving funds can be leveraged. In the CWSRF program alone, $5.7 million is revolving and collected annually by DNREC in the form of repayments[16]. Applying the above criteria, leveraging the annual repayments would increase funds available at 1% for 20 years to $12.8 to $15.7 million (See Figure 1). The amount available would depend on the rates and terms applied. More or less money could be made available using combinations of higher-rate and lower-rate loans or subsidies.

Potential political, legal, and administrative barriers and opportunities

Issues to consider include:

1. Legal capacity for the DNREC Financial Assistance Branch to borrow money;
2. Adequate demand for funds; and
3. Willingness to borrow.

If in fact the DNREC Financial Assistance Branch does not have the legal authority to leverage funds, identification of alternative institutions including direct borrowing by the state should be evaluated. The second concern regarding demand would require careful review of the intended-use plan for wastewater projects slated for state financing. Leveraging is not appropriate if there is no demand for additional funds. When evaluating demand, potential changes in community preferences to terms and packages that may be made available under a leveraged program should be considered. Changes in funding availability and potential packages may increase the appeal of state funding over other sources or affect movement on projects. There may be ways to offer subsidies as a part of packages, as long as the fund is managed in perpetuity. This may translate to overall higher interest rates on some projects, and lower interest rates or subsidies on others. EPA requires that CWSRF funds are offered at below market rates.

Finally, the willingness to borrow is expected to be an educational process. Decision-makers would need to understand benefits of leveraging and any associated costs, such as associated financial and legal consultant fees to set up the process.

Currently the Delaware Clean Water Advisory Council has formed a subcommittee to look into the possibility of leveraging the revolving loan funds. Results of the evaluation and consideration of how funds might be applied to address septic requirements in the Inland Bays in the form of loans less than 3% or grants for individuals should be explored. Any leveraging program must meet EPA approval and comply with Clean Water Act regulations. Opportunities should be explored in close coordination with EPA.

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[14] Personal communication with Magdalene Cunningham, EPA Region 3 SRF Coordinator, November 2007.

[15] Calculation by Michael Curley, International Center for Environmental Finance, at Follow-up meeting, November 19, 2007.

[16] Personal communication, Kathy Bunting-Howarth, DNREC Water Resources Division, December 2007.

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CWSRF, Septic Rehabilitation Loan Program (SRLP)

Description

Under this program, up to $25,000 is available to homeowners for septic repair, replacement, hookup to central sewer and abandonment. Loans are available at 3% or 6% fixed rates depending on income levels for terms up to 20 years. Special programs are also available for rental properties, investment properties, and mobile home parks. This program is revolving with annual federal allocations.

Type of opportunity

With some programmatic adjustment, the SRLP has the opportunity for increased funding to accommodate the needs of Inland Bays septic system owners. In addition to opportunities for increased program funding, alterations to the program worthy of consideration include reduced loan rates; deferred loans to time of property transfer; and making allowance for maintenance activities such as inspection and pump-outs as eligible projects.

Level of opportunity

In FY 2007, this program contained $400,000 from the $1.5 million dollars available for nonpoint-source programs. Funding is generally under-utilized, In the past, no more than 30 applicants have approached the Financial Assistance Branch annually. This has been due, in part, to limitations in staffing to conduct outreach on the program. A centralized clearinghouse that distributes information on all available funding and assistance programs could provide improved outreach to potential borrowers and grantees. In addition, implementation of the proposed septic system regulations is expected to increase demand on the program. The nonpoint-source program funds could be increased and allocated for use under the SRLP if there was adequate demand.

Potential political, legal, and administrative barriers and opportunities

Additional staffing would likely be needed to support program expansion. Administrative needs would need to be assessed periodically. By administering the program through DNREC, Delaware maintains the lowest possible interest rate for applicants. Other states, such as Maryland and Ohio, have linked deposit programs and administer funds via local banks. In these situations, banks often take one point to cover the processing of the loan. If staffing issues become a significant concern, review of linked deposit models in other states and coordination with private banks and credit unions as highlighted in the "Private Funding Sources and Institutional Opportunities" section may be more cost-effective.

Significant changes to the program, such as reduced interest rates for low-income system owners and inclusion of maintenance activities under the program would need to meet EPA approval. Zero-interest loans are applied in other states. For approval, EPA needs assurance that the fund is protected in perpetuity, meaning that the revolving nature of the fund continues and funds are protected from inflationary pressures[17].

USDA Rural Development, 504 Home Repair Loan and Grant Program

Description

This program assists eligible, very low-income homeowners (household income 50% or less of the state median household income) make necessary repairs to remove health and safety hazards from the property. With regard to septic systems, the program may cover repair,

[17] Personal communication, Magdalene Cunningham, EPA Region 3 Coordinator, November 2007.

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replacement, connection to central sewer, as well as operations and maintenance costs such as pump-out and inspections. Grants of up to $7,500 are available for very low income seniors (62 years or older) unable to pay for a loan. Loans up to $20,000, at 1% interest for terms of up to 20 years are available for eligible low income applicants.

Type of opportunity
The greatest opportunity under this program is the low-interest loan program, which is typically underutilized[18]. In addition, this program is one of the few that is able to provide assistance with operations and maintenance costs including inspections and pump-outs.

Level of opportunity
This federal program typically allocates $300,000 for loans (available at 1% interest) plus an additional $100,000 in grant dollars for all of Delaware per year. The loan fund is rarely fully utilized. The main reason the funds are underutilized is due to credit issues among seniors as well as lack of awareness of the program among other very low income homeowners.

Potential political, legal, and administrative barriers and opportunities
Loan funds though this program offer ample opportunity for qualifying homeowners to address septic problems and maintenance. Full usage of funds is a win-win situation for all parties involved. This opportunity could be better capitalized on with the development of a central clearinghouse to connect homeowners with relevant funding programs.

Community Development Block Grant (CDBG)

Description
The CDBG, a federally funded program through the U.S. Housing and Urban Development Agency (HUD) offers deferred loans at 0% interest for low-income residents to address housing code violations. Related to septic systems, the program can be used for repairs, replacement or connection to central sewer. The program offerings vary based on project type and ownership. A maximum of $2,500 is available per household for sewer or water hookups. The maximum amount of funding for housing rehabilitations is $12,500 for manufactured homes on rental lots; $18,000 for manufactured homes where the homeowner owns the lot it is situated on; and $25,000 for owner-occupied lots.

The federal funds are allocated to local entities by the Delaware State Housing Authority (DSHA). In the Inland Bays Watershed, the fund is administered by Sussex County.

Type of opportunity
The CDBG is an existing federally funded program that has potential to provide a small level of financial support for septic repairs and replacements on an ongoing basis. In addition, coupled with targeted planning efforts, the funds may be best used to support connection of existing septic systems in priority areas within the Inland Bays to central sewer systems.

Level of opportunity
Approximately $800,000 in grant funds were available for use in Sussex County in FY 2007 under this program. As with most federal programs, the CDBG funding has declined in recent years. The program is in high demand in Sussex County and currently has a waiting list of more

[18] Remark by Janet Brittingham, USDA Rural Development at Technical Assistance and Funder Meeting held on May 18, 2007.

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than 800 applicants. Any new applicants have an estimated seven-year wait to receive grant funds. In a given year, approximately 100 projects are completed.

Because of the high demand for the program funds, use of funds for septic repair or replacement is limited. However, with further coordination with the Delaware State Housing Authority (DSHA) and Sussex County, a small portion of the CDBG program funding could be allocated to address septic repair or replacement needs related to the proposed regulations. Use of available funds for connection of existing systems to central sewer in targeted areas may offer greater opportunities.

Potential political, legal, and administrative barriers and opportunities

To date, very few septic repairs/replacements have been completed using the CDBG. For example, in the last three years only six septic system replacements were completed using the CDBG, versus funding of 12 new private wells and 122 water and wastewater connections to central facilities[19]. The preference for DSHA is to continue to use the bulk of the funds for connection to central water and wastewater facilities.[20] Clear and prioritized needs must be demonstrated for special designation of funds for septic repair or replacement. This desire, combined with current fund status, makes a strong case for targeting funds to connection of septic systems to central systems in priority areas within the Inland Bays.

Delaware State Bond Bill

Description

The bill authorizing long-term capital improvement programs in the state of Delaware is known as the Bond Bill, so named because it authorizes the sale of general obligation and revenue bonds. A large portion of capital expense is funded from special funds and current revenues.

It is initially the Governor's proposal and is then reviewed by the Bond Bill Committee which follows a procedure that includes public hearings where department and agency officials explain their financial needs. The public may also attend and comment. After the public hearings, the Committee begins "mark up" sessions to develop a final version of the bill to be presented to the full General Assembly for adoption.

Type of opportunity

A range of possibilities are available through the state Bond Bill. Funding through the Bond Bill is often the first potential state-level financing source considered for addressing capital improvement needs, such as those related to the proposed septic regulations in the Inland Bays Watershed.

Level of opportunity

Significant allocations are possible. Historically, the Bond Bill Committee has supported expenditures up to $10 million to address failing septic systems[21].

Potential political, legal, and administrative barriers and opportunities

Little to no political support is anticipated at this time for state financing of septic maintenance, repair and replacement under the Bond Bill[22]. Financing of septic management or replacement

[19] Remarks by Bill Lecates, Sussex County at meeting with County on March 2007.
[20] Personal communication with Andy Lorenz, Delaware State Housing Authority, September 2007.
[21] Remarks by Jennifer Cohan, Delaware Office of the Controller General at the Inland Bays Watershed Septic Financing Forum, October 25, 2007.

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needs in the Inland Bays would be received as a new initiative. The current state budget crunch and competition for funds for existing initiatives in education, transportation, and other areas deem support of funds for use in a septic grant or low-interest loan programs through the Bond Bill as unlikely. However, a targeted financing request to support comprehensive wastewater planning efforts such as a study that evaluates cost of central and decentralized wastewater management and nutrient reduction goals in the Inland Bays may be better received. Follow-up requests for targeted projects identified in the study may also be better received in the future.

Private Funding and Institutional Opportunities

Community Reinvestment Act (CRA) and Private Banks

Description

The Community Reinvestment Act (CRA), enacted by Congress in 1977[23], is intended to encourage depository institutions to help meet the credit needs of the communities in which they operate, including low and moderate-income neighborhoods[24]. The CRA requires that each insured depository institution's record in helping meet the credit needs of its entire community be evaluated periodically. That record is taken into account in considering an institution's application for deposit facilities, including mergers and acquisitions. As such, there are existing incentives to support financing efforts for low-income communities. Contributions may be delivered in the form of grant support for local projects, as well as products and services.

The following commercial banks operate in Sussex County: Discover Bank, PNC Bank, Citizens Bank, M&T Bank, and Wachovia[25]. Although Bank of America has no current presence in Sussex County, they may also have interest in participating and should be considered in any effort to coordinate with private banks.

Type of opportunity

Commercial banks offer potential assistance in the form of direct funding as well as institutional capacity in the form of low-cost loan products and loan administration services. They can also absorb risks related to lending.

Specifically, if DNREC who currently manages and administers the Septic Rehabilitation Loan Program could not adequately administer the septic loan program, a bank could do so. This is done in linked deposit programs under the CWSRF program in a number of other states, including Ohio and Maryland. In linked deposit lending the state agrees to accept a reduced rate of return on investment (e.g., a certificate of deposit) and the lending institution agrees to provide a loan to a borrower at a similarly reduced interest rate. For example, if the typical earnings rate for a certificate of deposit (CD) is five percent, a state might agree to purchase a CD that earns two percent interest, and in exchange, the lending institution agrees to provide a loan to a borrower at an interest rate that is three percentage points lower than the mark rate for the borrower.

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[22] Remarks by Jennifer Cohan, Delaware Office of the Controller General at the Inland Bays Watershed Septic Financing Forum, October 25, 2007.

[23] 12 U.S.C. 2901

[24] Federal Financial Institutions Examination Council's (FFIEC) Web Site, Community Reinvestment Act (CRA), CRA implemented by Regulations 12 CFR parts 25, 228, 345, and 563e, http://www.ffiec.gov/cra/default.htm

[25] Personal communication with Gary Smith, Delaware Economic Development Office, July 2007.

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Level of opportunity

The opportunity for low to medium-level funding, as well as institutional resources, may be available. Application of a linked deposit type program may be less desirable in Delaware, due to current administration of the septic loan program directly by DNREC. Administration of the loans to individuals by the state keeps processing fees to borrowers low comparative to loans administered by private banks. For example, in CWSRF linked deposit programs in other states, banks typically take one point for administration at cost to the system owner[26]. However, if demand for the program grows to a level that creates administrative and staffing challenges for DNREC, linked deposit type program may be of great benefit.

Depending on available funding, administration costs could be paid by the state directly. For example, in Massachusetts, qualifying borrowers are able to secure loans for septic repairs at 0% through private banks in a program managed by the state housing authority. Banks are paid a flat processing fee of $500 by the state housing authority for these transactions. The administrative costs are covered by a $13 million state revolving fund established to support the program. In cases of special need, the program may also offer deferred loans to be paid at property transfer for very-low income residents who cannot afford even a 0% loan.[27]

Potential political, legal, and administrative barriers and opportunities

A follow-up meeting with contacts of key commercial banks and credit unions is a next step in developing awareness of financing needs for septic system owners and further identifying what local lending institutions may be willing to contribute under their CRA obligations and beyond.

[26] Remark by Michael Curley, International Institute for Finance, Follow-up meeting held on November 19, 2007.

[27] Personal communication with Deanna Ramston, Mass Housing, November 2007.

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Massachusetts Septic System Inspection Requirements and Financial Assistance Programs

Regulation of Septic Systems in Massachusetts and Inspection Requirements

Regulation of onsite systems in the state of Massachusetts is outlined in 310 Code of Massachusetts Regulations (CMR) 15.000 or "Title 5." Local Boards of Health are the primary regulatory authority over septic systems in the state. However, the Massachusetts Department of Environmental Protection (DEP) is involved in certain approvals, including many innovative/alternative technology approvals, shared systems, large systems and many variance requests. In addition, DEP is responsible for overseeing local implementation of Title 5 and provides local governments with training and technical assistance.

In 1995, the state of Massachusetts adopted inspection requirements for small private septic systems to address improperly functioning septic systems and cesspools known to be a major cause of pollution to drinking water supplies, coastal waters, rivers and lakes throughout the state. Inspections are required prior to property transfer (e.g., before properties using small private septic systems are sold, divided or combined), as well as before properties are expanded or undergo a change in use. There are exceptions to the general requirements described. For example, no inspection is required when property is transferred between specified family relations. Nor, are inspections required when the owner has signed an agreement with the Board of Health to upgrade the system, connect to a sanitary sewer, or connect to a shared system within two years.

The inspection must be completed by a qualified inspector using the DEP approved inspection form. The inspection form is sent to the local Board of Health for small systems (and both to the local Board of Health and DEP for large or shared systems.) Inspections are valid up to two years prior to the time of transfer.

Regardless if the property is sold, a system that fails an inspection must be repaired, replaced, or upgraded within two years unless an alternative schedule is authorized by the local Board of Health or DEP. Wherever feasible, a failed system must be upgraded to full compliance with Title 5. If this is not possible, in many instances the local Board of Health is authorized to approve a Local Upgrade Approval that brings the system as close to full compliance as possible in accordance with certain minimum criteria.

Financial Assistance Programs

In response to the high costs of repairing or replacing systems failing inspection, the state of Massachusetts developed three financial assistance programs to support those in need:

1. Septic System Repair Loan Program for income eligible applicants at rates 0% to 5%.
2. Community lending program overseen by DEP and managed by the Massachusetts Water Pollution Abatement Trust
3. Personal income tax credit program for septic repair or sewer connection

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Septic System Repair Loan Program

In 1996 the state allocated $13 million to begin a revolving loan fund to support low- and moderate-income homeowners with septic system repairs, replacements, or connection to central sewer for those systems not passing Title 5 inspections. The program is a joint effort between the Massachusetts DEP, the Massachusetts Department of Revenue (DOR) and MassHousing. Through the program, loans from $1,000 to $25,000 are available for terms of three to twenty years at interest rates ranging from 0% to 5% depending on household income.

Loans are originated by approved banks, credit unions and lenders throughout the state and then purchased by MassHousing using the state appropriated funds. Lenders use standard underwriting procedures and place funds in escrow to be disbursed to contractors. Participating lenders receive a $500 from MassHousing for each loan that is processed. 0% deferred loans are applied in cases of extreme hardship, with liens placed on properties until sale or refinancing.

The benefits of establishing the program in this manner include low administrative costs and very low delinquency rates attributed in part to repairs being made near the time of property transfer. The revolving nature of the program also contributes to its stability and sustainability. To date, nearly 1,800 low-interest loans amounting to more than $27 million to support low- and moderate-income households collectively have been made over the course of the program.

Community Septic Management Lending Program

The1996 Open Space Bond Bill authorized $30 million to the DEP to assist homeowners with compliance with Title 5 septic inspection regulations. The DEP used the funds to establish a program that helps communities set up their own local lending program. The program is managed jointly by the DEP and the Massachusetts Water Pollution Abatement Trust (or the Trust). The fund was set up to enable communities to meet requirements for the use of Clean Water State Revolving Loan Funds, however this provision has not yet been needed or utilized.

Under the program, communities can borrow up to $200,000 at 0% interest over twenty years to establish a local lending program. Funds may be used to offer financial assistance to homeowners within the community to repair or replace their system, or connect to central wastewater facilities. Communities can offer loans to residents at up to 5% interest and have the option to attach a betterment to property to collect payments as part of property tax bills. Communities also have the option to set aside up to 2.5% of the loan funds to obtain consulting services to administer the program. A $20,000 planning grant is available for communities entering the program for the first time to provide additional assist with program development.

Some towns have borrowed millions, and there is currently an effort by Barnestable County to support a regional lending program. However, the complexities of getting into the lending business – debt obligations, bond council, registry of deeds – are obstacles to accessing these funds for the many smaller towns located throughout the state.

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Personal income tax credit for septic system repair or sewer connection
A third financial assistance program, a tax credit program, took effect in 1997. The program offers a tax credit of up to $6,000 or 40% of expenses (whichever is less) to defray the cost of septic repairs, replacements, or connections to central sewer for systems that fail Title 5 inspections. Tax credits can only be received for primary residences. The credit cannot exceed $1,500 in any year and may be spread out over four years, beginning the year where work required to repair or replace the system is completed.

Implications for the Inland Bays Watershed

The diverse array of financial assistance programs developed in the state of Massachusetts to support homeowners with septic inspection related expenses showcase the demand for a variety of programs to support a range of needs, similar to what can be anticipated in the Inland Bays Watershed. In the case of Massachusetts, the state supplied the base funding source for all three of the financing programs. Continued education and alliance with state elected officials would be needed to secure buy-in for state funded initiatives.

Once funding is secured, most instructive for application in Delaware is the design of the low interest loan program via private banks as well as set up for any tax credit program that may be considered.

First State Resource Conservation & Development (RC&D) Emergency Home Repair Project

Description

The RC&D Emergency Home Repair Project was established to assist very low income (HUD low income eligibility at 50% of less of median income) homeowners with emergency home repairs, providing materials, contractors and volunteers to assist in eliminating unsafe conditions in the home. The program may cover small repairs to septic systems, inspection and pump-out, and general plumbing related expenses. Septic systems may be addressed for clients that have an existing qualifying emergency repair condition in home.

Type of opportunity

RC&D's assistance approach serves as an alternative model to grant and loan assistance programs, where efficiencies are gained by repairs coordinated through a central organization. Currently servicing the area, the program is not only a model, but could potentially be expanded with a special project focus on septic repair and rehabilitation.

Level of opportunity

Annually, $250,000 is available for homeowners in Sussex and Kent Counties who meet HUD income requirements. The program is completely grant and foundation-funded. RC&D is willing to designate $20,000 in resources to support septic issues for existing clients.[28] Current level of opportunity for direct funding support is low.

[28] Personal communication with Christine Stilson, RC&D Emergency Home Repair Project Coordinator, September 2007.

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Potential political, legal, and administrative barriers and opportunities

Support to use the existing program to address new septic system requirements with current resources is low. However, RC&D may prove a valuable partner or leader in delivery of a larger program or effort that applies their hands-on services method of assistance. There could be significant cost-savings in coordination of multiple home septic repairs or replacements through a single entity. The model offers a way of aggregating demand for those in need, in combination with or even without formal development of a septic management district or entity.

Developer Contributions

Description

Sussex County has experienced a period of continued high growth in recent years. In fact, from 2000 to 2006 the county experienced a 15% growth in population.[29] This does not consider seasonal residents, which are estimated at an additional 62,000 in summer months. The total expected growth in the current decade from 2000 to 2010 is 24%. The comparatively low cost of living, low tax rates and surrounding natural resources are a draw for retirees from other states and local residents alike. In particular, the area within the Inland Bays Watershed has experienced significant development, and although the pace of development has slowed, it is expected to continue[30].

There have been several examples in recent years of developers contributing funds to support extension of existing wastewater service or development of new wastewater treatment facilities to serve new and existing residents as part of development proposals. These include Johnson Corner Sanitary Sewer District, where developers contributed $1.2 million to offset the costs associated with connecting 1,500 existing users to expanded sewer service, as well as a project in the city of Millville where developers contributed $13 million for the development of a new wastewater facility that provides service to 1,300 homes currently using onsite septic systems, many of which are located along or near White Creek, a tributary of the Indian River Bay and a sensitive area in the Inland Bays Watershed.[31] Other noteworthy examples include connection of areas with low income residents, such as Pinetown, to central sewer. Here, the developer will build a pump station for an adjacent development that will enable connection of more than 30 properties in Pinetown to the West Rehoboth Sewer District managed by the County[32]. Consideration of developer contributions and collaboration should not be overlooked; they can offer both capital, as well as direct construction services, to provide central wastewater service to sensitive areas with septic systems.

Type of opportunity

Developers offer financial support as well as construction services for central wastewater sewer connection for communities with septic systems.

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[29] Sussex County Comprehensive Plan Update, Draft 2007.

[30] Remark by Dave Baker, Sussex County Administrator, Septic Financing Forum Follow-up Meeting, Annapolis, Maryland, November 29, 2007.

[31] Johnson's Corner Sanitary Sewer District, presentation by Michael Izzo, Sussex County at the Inland Bays Watershed Septic Financing Forum October 25, 2007. City of Millville wastewater project, USDA Rural Development News Release, Georgetown, DE, May 15, 2007, "USDA funds will help complete sewer system in Millville".

[32] Information shared on community tour with First State Community Action Agency, June 30, 2007.

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Level of opportunity

The level of opportunity is significant. For example in Millville, developers contributed $13 million for development of a new wastewater facility that involved hookup of existing sewer systems, and the Johnson Corner Sanitary Sewer District project involved contributions of $1.2 million.

Potential political, legal, and administrative barriers and opportunities

Although there has been a recent decline in development in the area, as noted by Sussex County staff, Sussex County on a regional level remains a desirable area for development due to low taxes and affordability. Opportunities for contributions from the development community should not be overlooked.

Potential barriers in general with regard to expansion or development of new central wastewater facilities include buy-in from community on benefits of a central system. Bringing central water or wastewater facilities to existing communities is often fraught with community concerns regarding loss of community control and character, and unwanted growth, as well as the costs of connection and service. For example, attempts to connect Jimtown to central wastewater facility as part of new development has been ongoing for the past year, with agreement on wastewater service to the community continually stalled due to community concerns regarding cost, growth, and management of the systems by a private utility, versus a public one.

Investment and Operation of Septic Management Districts by Private Utilities[33]

Description

Private utilities make significant investments in the construction of wastewater facilities serving new developments. Typically the level of investment is negotiated between the private utility and developer and then reviewed and approved by the Public Service Commission (PSC). The developer contributes to the cost of infrastructure directly and through payment to the private utility of impact fees, which are transferred at closing of title for each property in the development. The utility covers any remaining capital costs and is able to recoup these costs plus interest through customer fees. The PSC has jurisdiction over all fees charged by the private utility to the customer and may approve or disapprove charges following a public comment period and a formal PSC hearing. The PSC also regulates other fees and services which include: how delinquent accounts are handled, when and how surcharges can be imposed and what interest can be charged by the utility on past due accounts. In total, these PSC-approved rates and charges form the utility's "Tariff."

Type of opportunity

Private utilities have the ability to offer a range of services related to the development and operation of septic management districts. (See "Responsible Management Entity Concept and Application of a Septic Utility Fee," page 40, for more information on septic management districts.) Developments that are prime candidates for septic management districts would be those existing communities in environmentally sensitive areas with low customer counts, generally lower than 100 homes. In these areas the customer could retain ownership and the

[33] This section was added to the report based on input from Jerry Esposito of Tidewater Utilities at a January 11, 2008 meeting where the final white paper report was presented by EFC. Base information for this section was provided by Tidewater Utilities later in January 2008.

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responsibility for the cost of the septic tank and individual drain field. Alternatively a private utility could invest in a common drain field or other disposal method and provide any required treatment through a community treatment plant.

Level of opportunity

The level of opportunity can be significant. For new construction, utility investment and developer-paid impact fee amounts are generally based on: the number of customers in the District; the cost of land required for a common drain field or other disposal method; the type and cost of the sewer system used to transport the septic tank effluent to the common drain field; and the cost of the treatment plant.

If low technology infrastructure is permitted to be utilized, the utility investment could cover the majority of all of the investment needed to build necessary improvements. As the complexity of the technology increases and/or the cost of land increases, so does the overall project cost and therefore, financial contributions from the developer.

For existing small communities who are candidates for private septic management districts, the amount of the utility investment could be based on the worth of the existing septic systems, according to a formula provided by the PSC and whether or not the individual systems are abandoned. If the existing drain fields and/or septic tanks are to be abandoned, the cost of the new tanks, the cost of land required for a common disposal field, the type and cost of pumping or gravity sewer system used to transport the septic tank effluent to the common disposal field, and the cost of the treatment plant become part of the investment equation.

Alternatively, if there is no "ownership" of any infrastructure, and therefore no ability to operate as a PSC-regulated utility, an area-wide contract for operation, maintenance, inspection and related services could be offered to the community's Homeowners Association (HOA) or other type of local management district/association. DNREC's acceptance of this approach as being adequate to satisfy regulatory requirements would have to be determined. Under this non-PSC regulated model, the contract operator is not operating as a utility and therefore cannot invest any capital to the system.

Potential political, legal, and administrative barriers and opportunities

There are several open questions that would need to be addressed by the PSC and other governing bodies with respect to private ownership of septic system management districts. In areas of new construction, the utility can own the septic tank as part of the utility's investment. In existing communities with failing or potentially failing septic systems there is a question as to whether the utility can obtain ownership of the septic system, or whether it will remain with the homeowner. Other questions include:

- Will annual pumping of each septic tank be made part of the utility's PSC-approved Tariff and be included as part of the utility's annual fee?
- Does the homeowner or the utility own the individual drain fields or in the case of new construction should the septic tank effluent be pumped to a wastewater treatment plant and common drain field owned and operated by the utility?
- Will required repairs to the septic tanks become the responsibility of the utility?

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Opportunities for Public/Private Partnerships

To correct existing failing septic system communities, the difference between the investment made by the utility and the cost of the entire remediation must be derived from one or more other sources (e.g., State or County government, funds earmarked for Inland Bay cleanup, HOAs). Private utilities are usually prevented from obtaining grant money from government sources for these purposes. HOAs may or may not qualify. Generally grants come with covenants that do not allow the sale of infrastructure unless the Grant is paid back. Low interest loans given to communities also prohibit the sale of infrastructure until the loan is paid off.

Given the intrinsic restraints placed on government grant and loans and the need for additional money from beyond private investment, existing systems become excellent candidates for Public / Private Partnerships. In this vehicle, needed private investment is obtained upfront and returned over the course of a long term contract with a state, county or local government. These partnerships provide for continued capital investment by the private entity through a series of preauthorized rate increases. This activity is not regulated by the PSC as the private utility does not own the franchise area. The tariff rates and charges are contractually bound between the private utility and the government entity involved.

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Revenue Opportunities

Based on the evaluation of existing programs in the previous section, it is clear that, although institutional capacity is significant, existing local, state, and federal funding resources are simply not sufficient to meet the needs of affected low income septic system owners. Addressing the financing gap would require new revenue streams – the most valuable would be large, consistent revenue sources.

This would require leveraging new taxes and fees. There are significant legal and administrative differences associated with taxes and fees. For example, fees assessed by an enterprise program such as a drinking water, wastewater, or stormwater utility can only be applied to programs associated with that enterprise. Taxes on the other hand, are not usually restricted in this way. Another important difference is that there is typically some way to "opt-out" of a fee. For example, fees would not be collected from any residence that chooses to discontinue water or sewer service from central facilities. This is not the case with a tax. For instance, this is what makes the Maryland Flush fee not really a fee, but a tax. In many respects, the distinction between fees, taxes, and payments is not critical, except in the political context. In cases where there are potential legal or administrative issues, however, it is important to make the distinction between the various types of revenue classifications.

There will always be at least some political opposition to increasing existing taxes and fees or creating new ones. However, to meet the needs of the community and overarching resource protection goals someone must pay. The alternative is to not protect the resource. Questions on who should pay and how much will require input from all stakeholders and will ultimately be the decision of local and state elected officials. Is the Inland Bays Watershed worthwhile asset to begin protecting now? What is the cost if we wait? What is the most efficient path to moving forward? These are the questions that would need to be answered as steps are taken to address the financing needs of low–income households and protect a valuable natural asset of the state. Three primary approaches discussed at the Inland Bays Septic Financing Forum and at meetings through the course of the EFC project are further evaluated in this section.

Responsible Management Entity Concept and Application of a Septic Utility Fee

Description

An array of management models is available for application in the Inland Bays Watershed. The U.S. Environmental Protection Agency voluntary guidelines for onsite management, developed to assist communities around the country with improving septic system management, has outlined five distinct management models worthy of consideration for application to the Inland Bays Watershed[34]. Of the models set forth, development of a Responsible Management Entity (RME) to conduct operation and maintenance activities at a service charge has the greatest potential for application to management of septic systems in the Inland Bays Watershed. RME's are typically applied in environmentally sensitive areas where large numbers of onsite systems or cluster systems may affect sensitive water bodies. RMEs can take the form of private or public utility, private company, or any one of a number of governmental or nongovernmental

[34] *Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems*, Office of Water, Office of Research and Development, U.S. Environmental Protection Agency, EPA 832-B-03-001, Published 2003. Available at http://www.epa.gov/owm/septic/pubs/septic_guidelines.pdf

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organizations. Benefits of creating an RME to assist with operation and management of septic systems include long-term maintenance, single permitting for a group of systems, and opportunities to control regional planning, depending on the RME setup. There are wide number of variations on establishment of an RME and menu of options that must be considered including:

- Form of RME: Public or private utility, private company, government or nongovernmental organization, special district or other.
- System ownership: Ownership of septic system retained by property owner versus ownership by the RME.
- Participation: Voluntary versus mandatory participation for septic system owners must be considered. Use of maintenance contracts could be a mechanism to clarify.
- Services provided: A range of services could be provided to septic system owners. Categories of service that may be considered include basic inspection and pump-out, coverage of repair and replacement costs, ongoing operation and maintenance service contracts required of advanced systems, coordination of assistance for low and very-low income families, regional wastewater planning, water quality monitoring.
- Authority of RME's: Establishment and expansion of service boundary, fee establishment and collection, easement/right of entry approval from septic system owners.

Private versus public entity

There are a number of benefits for developing a public management entity for septic systems. A public entity, such as one managed by the County, has the advantage to integrate long term wastewater planning goals with system management and replacement approaches. For example, the County has the most current information on wastewater extension and development plans that may influence potential for existing septic systems properties to connect to central wastewater facilities and can address system management with this alternative where appropriate. In addition, a public entity, such as the County, has opportunity to leverage low interest loans and grants available from various state and federal programs including the SRF and USDA Rural Development. Also important is the existing level of trust residents have with public versus private entities. Particularly, Sussex County already implements various assistance programs to support low income homeowners with various infrastructure issues. For opportunities related to private management entities see "Investment and Operation of Septic Management Districts by Private Utilities" on page 37.

Type of opportunity

Implementation of an RME in some form offers the greatest opportunity to aggregate demand and reduce overall operation, maintenance and replacement costs for individual system owners. RME's have a variety of options to promote cost reductions, including solicitation of competitive contracts from private providers to offer services, and the general advantage of spreading costs across a large set of system users.

Level of opportunity

The level of opportunity is significant with the greatest potential lying with development of a public or government-based RME in terms of long term planning and access to existing grant and loan programs (as described above). The fee would depend on the level of service offered. RMEs that own and manage wastewater treatment facilities charge anywhere from $30 to $80 per month for their services depending on capital costs, operation/maintenance expenses, and regulatory burden.

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Potential political, legal, and administrative barriers and opportunities
A number of challenges must be overcome to begin development of a management entity. Challenges include: implementation of legislation enabling development of appropriate management entities with adequate authority[35], easement/right of entry approval from septic system owners, rate structure oversight, and oversight of RME by a regulatory authority. There would also be the added challenge of buy-in from existing septic system owners of the benefits of participating in a management entity and, if a voluntary service, likelihood of owners choosing to opt out of participation which would decrease benefits of the expected aggregated demand. In addition, a clear approach on how to address systems that may have opportunities to connect to extended or new sewer facilities must be outlined.

Responsible Management Entity (RME) Concept Case Study Examples

Responsible management entities (RMEs) refer to organizations established to oversee and manage individual septic systems for a user fee. RMEs can take many forms and offer a range of services depending on environmental protection goals and community needs. The structure, function, and authority of RMEs is governed largely by state and local laws that enable their existence. A number of RMEs operate around the country. Below are a few examples that offer ideas on the how an RME can be established and operate. Any RME approach would require ongoing outreach, education, and communication with residents to both evaluate and determine the best alternatives for septic system owners of the Inland Bays community.

Otter Tail Water Management District
Otter Tail, Minnesota

District formation

The Otter Tail Management District was formed in 1984 to assure proper onsite treatment of wastewater in a 55 square-mile area experiencing decreasing lake water quality and population growth. The District, formed under Minnesota statute allowing the formation of sanitary districts (M.S. 116A, 1971), covers an area with six lakes, four townships and portions of the City of Otter Tail and has the authority to levy taxes and write and enforce ordinances. It provides inspection, maintenance and monitoring services for both individual and cluster systems. The District also plans for the entire area and has installed cluster systems where necessary. To date, the District has installed sixteen cluster systems in areas with small lake lots or poor soil conditions which can not support individual onsite systems.

[35] Formation of a septic management district by the County may be enabled through passing of legislation similar to Delaware Code, Title 9, Chapter 47, Subchapter II, Section 4720 to 4730 used to establish garbage collection districts in Kent County.

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System types

Serving 1,200 homes, cabins and businesses at the time of its initial development, the District has expanded to 1,545 connections that include both individual septic systems and the sixteen cluster systems. There are three primary types of users within the District:

- 1,160 seasonal residents (75%)
- 390 permanent residents (25%)
- 48 resorts or businesses (3% of total, 75% of seasonal)

System services

Regardless of system type, those in the District receive minimum services including:

- Regular system inspection (interval based on system type and use);
- Maintenance of system records; and
- Information/education on user "best management practices."

System owners of individual systems also have the choice of being involved in an active or passive maintenance program. The District maintains the system for those on the active program and pays for all repairs. In the passive program, the owner pays for maintenance, repairs and replacement but is still under the jurisdiction of the District. Cluster systems are required to be on the active program.

If selected, new systems are fully covered at the active program level. Existing systems may enroll in the active program on a sliding scale over a ten-year period where the district picks up 10% more of the repair costs each year. At the start of the program, the system is inspected and the tank cleaned. At the end of the ten-year period, the system is covered 100%, except in the case of owner abuses that cause degradation to the system.

User fees and collections

The District operates solely on user fees and in 2004 had an annual operating budget of $140,000. Although the district has several employees, many of the activities including tank pumping, planning, design, construction, and repair are contracted with individuals and businesses.

User fees are based on the type of system and maintenance program. Table 1 indicates the general rate structure effective 2002 for facilities on the active plan. These rates include the administrative fee ($36-$38 for dwellings or $36-$261 for businesses) and fees for all repairs and replacement of systems. Facilities on the passive system pay only the administrative fee. User fees for resorts and businesses are calculated on an individual basis due to the difference in size and components of each system.

TABLE 1: Annual user fees for facilities on the active plan, effective 2002

Type of Active Facility	Annual Cost
Permanent residence with tank, pump and drainfield	$168
Permanent residence with tank and drainfield	$120
Seasonal residence (based on 3 months average)	30% of permanent residence rates
Permanent cluster system	$196
Seasonal cluster system	$152
Resorts and businesses	$164-$2,178

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To assist with collections, the District has the ability to issue compliance orders and the capacity to assign costs (including penalties and interest) to property tax statements. Up to 10% of the owners default on making their payment and the property tax collection mechanism of the District is used and necessary for financial viability.

Program Success

The program has been successful in protecting groundwater and surface water sources as indicated by groundwater monitoring efforts as well as the monitoring of lake water quality over the past twenty years. System failure rates have been less than 2% over a twenty-year period. Through the course of the program, seventeen of the over 1,500 septic systems have been replaced. In addition, 120 older pre-project systems have been upgraded or replaced.

Implications for the Inland Bays Watershed

The Otter Tail Water Management District example showcases one community's approach to offering low-cost inspection services for septic owners, with maintenance service available on an opt-in basis for those desiring the benefits of this added service. This additional maintenance service assures proper management of systems and allows septic system owners to take advantage of aggregated service for their systems *if they choose*, and may be an alternative worthy of consideration in the Inland Bays Watershed.
The program also integrates inspections considering system type – seasonal versus permanent, residential versus business – which also may be worthy of consideration in the Inland Bays Watershed.

Albemarle Septic Management Entity
Albemarle Region, North Carolina

Management Entity Formation

The Albemarle region is located in the northeastern corner of North Carolina. The region has experienced explosive growth pressure from the Virginia Beach and Norfolk regions. Slow-permeability soil and shallow seasonal water tables have limited the effectiveness of conventional onsite septic drainfields. The establishment of the Albemarle Septic Management Entity (ASME) (based out of Albemarle Regional Health Services) to inspect enhanced systems and maintain systems by contract was the result of the coordinated effort of four health districts. The program operates as a joint management agency authorized under Section 153A-274 of the North Carolina general statutes. ASME has enforcement and compliance authority including the power to remediate systems and place property liens.

Services and fees

The ASME has a customer base of 3,500 and oversees individual onsite and cluster systems in an eleven county area. All innovative and alternative systems are required to enter into inspection and maintenance agreement with the ASME. In addition, all repaired or replaced systems receiving grants or low-interest loans are required to join the management area.

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New system owners are informed of the inspection and maintenance agreement and owner requirements prior to system construction. As part of the inspection and maintenance agreement, ASME conducts inspections at least annually. All repairs and any maintenance activities must be completed by the septic system owner. If owners fail to make repairs, the ASME can make the needed repairs and bill the owner, and if needed place a lien on the property for failure to reimburse ASME.

Costs are generally $50 per inspection. ASME issues permits on newly constructed facilities at a cost of $150. Fees are collected through billing notices. The overall annual budget of $290,000 is sustained through annual fees and county funds.

Special services for low income septic system owners

ASME works with low-income septic system owners to identify grant and low-interest loan funding to address repairs and replacements of failing systems within the management area. A combination of Community Development Block Grants (CDBG), the state Clean Water Trust Fund, and other funding sources are applied. As noted, all repaired or replaced systems receiving grant or low-interest loans are required to join the management area. ASME handles grant and loan administration and factors the cost of inspection into grant and loan products for a period of ten years.

Implications for the Inland Bays Watershed

A management entity that operates through enforceable management contracts is a viable alternative for overseeing the long-term maintenance of new and replacement systems, as well as systems receiving financial assistance in the Inland Bays Watershed. However, incorporating the more than 16,000 existing systems in this type of program will be a challenge. More likely, a special program for existing systems that includes service options beyond inspections that pose cost saving advantages, such as pumping and repairs at reduced cost enabled by aggregated demand, will need to be considered.

Henderson Inlet Shellfish Protection District
Thurston County, WA

Protection Area Formation

Fecal coliform is polluting the Henderson Inlet and has affected commercial shellfish harvesting in the area for a number of years. Restrictions placed on shellfish harvesting due to fecal coliform levels in the mid 1980's, and more recently in 2000 and 2001, resulted in a bacterial DNA study of the area completed in January 2002. This study verified that human waste is contributing pollution to the Henderson Inlet streams and marine waters. In December 2003, a citizen advisory committee was convened to assist the county with the development of a septic operation and maintenance program to address the problem. A final advisory committee report submitted in September 2005 recommended the creation of the Henderson Inlet Shellfish Protection District to assure proper operation and maintenance of septic systems in the area of concern.

Development of the District was enabled under state legislation (Revised Code of Washington, Chapter 90.72 Shellfish Protection districts) which authorized counties with shellfish tidelands to develop programs to address nonpoint pollution sources that affect the resource. The District was created by the Thurston County Board of County Commissioners in 2005, going into effect in 2007.

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How the Program Operates

Approximately 6,400 septic systems are located within the Henderson Watershed Protection Area (HWPA), a special area designated within the District for implementation of the septic management program. A property is included in the protection area if any portion of its septic system falls within the HWPA boundaries.

The program requires renewable operation permits for all septic systems. Systems have varying requirements based on their classification as low risk or high risk systems, and most will have a three-year renewal cycle. However, more complex systems will have a one-year renewal. Operational permits require routine maintenance and inspections, depending on the site conditions and type of system. Any problems identified in the inspection must be addressed before certificate renewal, and reports must be submitted to the county health department at the time of certificate renewal. Routine maintenance may be completed by county-certified pumpers, system installers, and monitoring specialists, as well as by state-licensed inspectors. In addition, owners of most standard systems may become certified to complete self-inspections by attending county sponsored trying.

High risk systems are those that pose greater risk to water quality and public health based on a combination of factors including: proximity to surface waters or drainages, system size and complexity, soil type and age. High risk systems have the additional requirement of dye-trace evaluations every other renewal cycle, which, for most systems, would occur every six years. Dye-trace evaluations may be performed by county health department staff or training professional approved by the County Health Officer.

Program Fees and Financial Assistance

Fees will be collected by the county through property tax statements. Fees are $32 per year for low-risk systems, $87 for high risk systems, and $160 for community systems. For each subsequent year, charges will be automatically adjusted on January 1st by the consumer price index for the previous year. The maximum increase will be 3.5%. Collections will be used to support administration of the program.

Among those that are available for exemptions are senior and disabled homeowners. Waiver requests must be submitted annually. In addition, a riser rebate program will be offered, whereby residents installing risers over their septic tanks, making future evaluations easier and less costly, are eligible for a rebate of $50 from the local conservation district.

Basic financial assistance is also available to homeowners to assist with septic system maintenance through a special county grant program established with $130,000 from state funding sources. Up to $500 is available to qualifying homeowners for septic system inspections, tank pumping, tank access riser installation, and minor system repairs. To qualify, homeowners must (1) have a total annual household income less than $40,000 or be currently enrolled in the Senior/Disabled Property Tax Exemption or Deferral Program, and (2) hold the property as their primary residence. As a condition of the program, homeowners must contribute 25% of total eligible work or complete "in-kind" work (e.g., digging).

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Implications for the Inland Bays Watershed

A program establishing a special district or protection area of this variety would most likely necessitate the close coordination of the state and county. A review of both county and state regulations allowing development of special districts as they pertain to septic systems is also needed. Conversations with the HWPA program indicated the need for significant public outreach efforts to assist residents and local officials in developing a better understanding of the goals and needs of creating this type of protection area.

General Septic Fee

Description

A general septic fee would generate significant sustainable and dedicated revenue to address financing needs related to the proposed regulations. The Maryland Flush Tax offers the most successful example of a state-wide fee being collected to support nutrient loading reductions from both central and onsite systems. Under state legislation, a fee for wastewater system users amounting to $30 per year ($2.50 per month) generates $65 million annually, and a septic fee of $30 per year generates $12.6 million per year from septic system owners. Collections from wastewater users are applied toward installation of enhanced nutrient removal technologies in 66 wastewater treatment facilities, while collections from septic system owners are applied toward grant programs to support installation of nutrient reducing technologies of septic systems in sensitive areas, as well as planting of cover crops on agricultural lands.

Scope of application

There are a number of ways a fee could be imposed or collected for the Inland Bays Watershed. An important consideration is the scope of application. A fee could be imposed to septic system users watershed-wide, County-wide or even State wide. Justifications could be provided for each.

- A watershed-wide fee offers the most direct relationship between the revenue source and the source of the problem. However, a watershed-wide approach adds complexities of administration of the fee, especially if there is interest in broader application of a fee in other areas in the state facing similar problems. For example, separate accounts would need to be tracked for collections and expenditures related to various watersheds. There are also disadvantages in the economies of scale using a broader County or State application that allow generation of greater revenue streams at a lower fee[36].
- Given nutrient TMDLs in other watersheds in Sussex County, including the Nanticoke and Broadkill Watersheds, application of a County-wide fee is logical. Both watersheds face similar nutrient loading problems from septics that will require financing approaches if they are to be adequately addressed.
- Justification of a statewide septic fee could be warranted given the economic and natural resource value of the Inland Bays to the state of Delaware. The benefits of a state-wide fee include application of funds to address septic management and other related issues statewide in the future as needed.

[36] For example, the Broadkill Watershed in Sussex County has similar issues related to septics and has only 8,328.

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Type of opportunity
Implementation of a septic fee or tax at any level would relieve the financing gap, because it's a sustainable financing revenue source. Determination of the best use of the funds, depending on scale and application, would be important. Considerations for use of funds should include: targeted assistance needs such as those of low-income households impacted by the proposed regulations in the Inland Bays; ongoing assistance for low-income septic system owners with operations and maintenance activities, repairs, system replacement and installation of nutrient reducing technology; assistance with connections to central sewer; replacement of failing or substandard systems that posing public health concerns. Determination of the best form of assistance would also need to be determined, for example, assistance in the form of grants, technical assistance and resources, tax credits, low interest loans.

Level of opportunity
The potential annual collections varies, depending on the fee applied as well as the scope of application (watershed-wide, County-wide or State-wide). A $10, $20, $30 and $40 annual septic fee applied to septic system owners at the various scales are shown in Table 4, below. The table includes all estimated existing septic systems. This number would change as septic systems are progressively connected to new and existing central wastewater facilities and new systems are installed.

Revenue applications and goals should be kept in mind when determining and setting the fee. The costs related to administration of the funds should also be considered.

Table 4: Estimated Annual Revenues from a General Septic Fee Applied at Watershed, County and State Scales

Area	No. of Septic Systems	Annual Fee			
		$10	$20	$30	$40
Watershed	18,943	$189,430	$378,860	$568,290	$757,720
County	49,869	$498,690	$997,380	$1,496,070	$1,994,760
State	94,466	$944,660	$1,889,320	$2,833,980	$3,778,640

Potential political, legal, and administrative barriers and opportunities
A new tax or fee is politically unpopular in any community, however, within the state of Delaware, a conservative tax policy that strives to maintain a low tax rate for Delawareans permeates at all levels of government. Education on the need for additional fees or taxes in some form would be imperative if the financing needs for the Inland Bays Watershed are to be realized.

Opportunities to assess a watershed-wide or County-level septic fee may be available through passage of a County ordinance or implementation of a special taxing district. Further research on legal authority and most appropriate process to collect fees at these scales is needed. Regarding a statewide septic fee or tax, there is a Constitutional requirement that any increase in existing State taxes, or new State taxes, is adopted by a super-majority (3/5) vote in the State Legislature. Legal restrictions on assessment of a tax versus of fee and viable collection and application would need to be further evaluated and considered.

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Regardless of the scope of application, the collection of the septic fee or tax via property taxes at the county level will be the most efficient. There is the administrative capacity to both collect and administer funds within Sussex County for a watershed-wide or County-level fee. There would likely be interest in coordination and oversight by DNREC to assure that funds are administered to priority areas. If a statewide fee is assessed, collection again at the County level via property taxes takes advantage of existing administrative capacity. Money would need to be directed to the state for distribution, which does add some inefficiency in terms of administration and processing, however, allows for broader application of the funds.

As mentioned, tracking of fund collection and oversight of use and program changes would be important. A special sub-committee of the Clean Water Advisory Council may be the best existing organization to oversee funds collected. Alternatively, a Special Advisory Committee, such as the Bay Restoration Fund Advisory Committee[37] developed to oversee the Bay Restoration Fund established in Maryland through the Flush Tax, could be responsible for evaluating the financing and effectiveness of facility upgrades and recommending changes to the program could be created.

Maryland Flush Tax

Background

The Chesapeake Bay has experienced a continued declined in water quality due in most part to excess nutrients such as nitrogen and phosphorous. Wastewater treatment effluent has been found to be one of the major contributors to the presence of these nutrients in the Bay. To address this, in May of 2004 Maryland Governor Bob Ehrlich signed Senate Bill 320 – The Bay Restoration Fund. This legislation created a dedicated fund, the Chesapeake and Atlantic Coastal Bays Restoration Fund, intended to charge wastewater treatment users to provide funding to improve the state's 66 wastewater treatment facilities to put enhanced nutrient removal technology in place. The legislation also calls for charges on septic system users. Funding generated from this source is to be used to upgrade septic systems to nutrient reducing technologies and support cover crop program.

Regulation of septic systems in Maryland

There are an estimated 420,000 individual septic systems located in the state of Maryland. On-site sewage systems are currently regulated under Maryland Register Title 26 Department of the Environment, Subtitle 04 Regulation of Water Supply, Sewage Disposal and Solid Waste, Chapters 2 and 3. State regulations outline permitting requirements of new, replacement, expanded or changed individual systems as well as systems associated with subdivisions. Guidance for each step of the permitting process including site evaluation, design and construction, and construction inspection is provided for both conventional and non-conventional on-site systems. The state regulations *do not* include pumping or periodic inspection requirements of permitted systems. Current regulations *do not* specify maximum nitrogen loading concentrations or use of advanced technologies for new systems.

[37] The Chesapeake Bay Fund Advisory Committee that oversees Maryland Flush Tax funds includes appointed representatives of the state House and Senate, state wastewater facilities, local businesses, local health departments, conservation organizations, a state institution of higher learning, the Maryland Association of Counties, and the Maryland Municipal League, as well as the Secretaries of the Departments of Planning, the Environment, Natural Resources, Agriculture, and Budget and Management.

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Regulations are implemented by a delegation agreement between MDE and local jurisdictions. Each of the 24 local jurisdictions (23 counties and 1 independent city) must comply with the state regulations at a minimum, and have the ability to pose greater requirements on septic systems within their jurisdictions.

How the Program Operates

Collections from Central Wastewater System Users

A monthly fee of $2.50 is charged on the individual sewer bills to those served by a wastewater treatment plant (commercial operations are charged on an equivalent dwelling unit scale based on usage) and generates some $60 million annually. When the legislation was enacted, the plan was to securitize the $60 million by pledging these funds to the repayment of a bond issue, the proceeds of which were estimated at about $750 million. These funds are to be used to furnish 100% grants to the 66 largest wastewater treatment plants to bring their discharges down to what is considered the limits of technology, or 3 mg/l total nitrogen and 0.3 mg/l total phosphorous.

According to the Bay Restoration Fund's Annual Report for 2006, the wastewater fund has collected more than $38 million from the fee charged and earned interest. Just over $30 million of this has been expended on capital grant awards to treatment facilities and administrative fees.

Septic System Fees

Septic system users pay a $30 annual fee. Property owners with septic systems are identified and billed by each county via property tax, or through separate billing process to be determined by the county. Although collections were to begin on October 1, 2005, most counties did not begin collections until 2006. To date, $12 million has been collected; however, annual collections from septic system users in the amount of $12.6 million are expected. Sixty percent of the revenues from septic tank users (or $7.56 million annually) are designated to support installation of nutrient reducing technologies in areas of special concern. The remaining 40% of the revenues are designated to provide financial assistance to farmers to help plant cover crops to prevent nutrient runoff from agricultural land.

In early 2006, DNR initiated a request for proposals (RFP) from local, county and state agencies to allocate Bay Restoration Funds for local septic grant programs. A total of $9 million was awarded in December 6, 2006 to 10 jurisdictions who submitted proposals to upgrade approximately 700 systems. Based on grant awards and estimated number of systems upgrades, use of nitrate-reducing technologies will cost an average of $12,860 including specified administration costs.

Jurisdictions are allowed to use up to 20% of the funds to develop and administer their programs. The bulk of the funds must be distributed as grants to septic system owners to cover the cost of adding Best Available Technology (BAT) to new or existing septic systems. The grant will also cover the cost of a five-year operation and maintenance agreement for the BAT. (There is no requirement of maintaining a service contract after the initial five years.) Priority is given to failing systems in Critical Areas, and jurisdictions receiving funding have two years to implement the program. A video and brochures have been produced explaining the program and benefits, but the program is still in the early stages of development and any assessment of the extent of the success of the program will require more time.

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Costs of the technology are higher than initially estimated. Bids ranging from $8,000 to $20,000, inclusive of the five-year maintenance contract, have been received. Some of the higher-cost technologies have greater nutrient reduction capabilities. Overall, it is hoped that costs will average $10,000.

Fund Management

A Bay Restoration Fund Advisory Committee is responsible for evaluating the financing and effectiveness of facility upgrades and recommending changes to the program. This 18 member board consists of Governor-appointed representatives of the state House and Senate, state wastewater facilities, local businesses, local health departments, conservation organizations, a state institution of higher learning, the Maryland Association of Counties, and the Maryland Municipal League, as well as the Secretaries of the Departments of Planning, the Environment, Natural Resources, Agriculture, and Budget and Management.

Administrative Costs

Several state agencies receive a portion of the fund's proceeds to cover related administrative costs. The Comptroller's Office receives .5% and the local government or billing authority receives up to 5% for billing and fund management activities. Maryland's Department of the Environment receives up to 1.5% of wastewater treatment plant funds and up to 8% of septic systems funds to cover in-house facility implementation costs.

Implications for the Inland Bays Watershed

With regard to the Inland Bays Watershed, careful consideration of program goals, the smaller pool of septic system users for collections dependent on scale (watershed-wide, county-wide or state-wide application), and income levels must be evaluated to determine an appropriate fee level.

Successfully establishing a fee system of this nature requires close coordination with state legislators and officials. Any attempt to implement a program such as this would necessitate the careful cultivation of political relationships.

Septic Impact Fee

Description

Impact fees, are expenditures typically collected from new development to cover the costs of improved or expanded infrastructure needed to support growth. Impact fees are generally used to finance roads, schools, water and sewer treatment facilities, affordable housing and other projects and services in municipalities throughout the United States.

Development within the Inland Bays Watershed is significant, and this is an area where continued growth is expected. The 2007 update to the Sussex County Comprehensive Plan sites growth at 24% between 2000 and 2010. This does not consider the impact of seasonal housing within the watershed which includes 24,906 units drawing an increased 62,000 people to the area. Impact fees will address costs related to the additional wastewater infrastructure needed to serve the area. Within Sussex County sewer impact fees collected from July 1, 2007 to June 30, 2008 ranged from $1,559 to $6,621 (averaging $3,956) per single family residence

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(or equivalent dwelling unit, EDU) [38]. These funds must be used to finance increased wastewater treatment capacity and capital projects related to supporting growth.

Currently, although permit fees are in place at the state level for septic systems, no impact fees related to septic systems exist. Permit fees are $50 for gravity fed systems and $115 for engineered systems.[39] In addition, there is a $75 fee for site evaluation review collected during the permitting process. These fees are minimal and currently cover basic permitting and inspection costs related to new and replacement septic systems. These fees do not address the impact of additional nutrient loadings to sensitive water resources, such as the Inland Bays Watershed. Here, as with conventional sewer systems, the "watershed system" has a loading capacity which, if exceeded, is detrimental to the resource.

The City of Saco, Maine collects septic impact fees of $500 for new septic systems installed to service single family homes.[40] Fees are in addition to any permitting fees for new systems only and are collected by the city. The fees are applied toward upgrade of handling facility needed to unload and screen any waste from pump-outs of septic systems at the city's wastewater treatment plant. In the case of the Inland Bays Watershed, a similar fee could reasonably be applied to new systems to finance nutrient reduction from existing systems (e.g., install BATs, install cluster systems, or connect to central facilities). Reduction of nutrients from existing systems would offset nutrient loadings to the "watershed system" from new systems, thereby supporting growth without additional impact to the resource.

Type of opportunity

Given the current rate of growth in the watershed, a septic impact fee offers a relatively stable and ongoing revenue opportunity within the Inland Bays Watershed. The clear relationship between the increased nutrient load from new septic systems (versus loads from other wastewater service options including central wastewater treatment or cluster systems) further justifies the application of the fee.

Level of opportunity

The amount of revenue that may be collected using impact fees on septic systems is wide ranging depending on the scope of application, for example watershed versus county-wide, as well as the amount of the fee. Implementing a $500 impact fee on septic systems as is done in the City of Saco, Maine would generate $185,000 annually on a watershed scale, or an estimated $555,000 if applied county-wide. The amount collected would also vary annually depending on the level of development utilizing onsite septic systems.

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[38] Summary of system connection charges, Sussex County, Delaware on county web-site, http://www.sussexcountyde.gov/departments/engineering/sewerwater/index.cfm?action= rates_sc

[39] This means all other system types including innovative and alternative systems.

[40] This fee was implemented approximately 4 years ago. It applies to Personal communication, Howard Carter, City of Saco Wastewater Treatment and City of Saco, Maine website: http://www.sacomaine.org/departments/codes/impactfees.shtml

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Table 5: Estimated Annual Revenue from Septic Impact Fees on New Systems, $100 to $500

	Watershed-wide	County-wide
Septic system permits		
New systems per year	**370**	**1,110**
Estimated Annual Collections for impact fees at $100 thru $500		
$100	$37,000	$111,000
$200	$74,000	$222,000
$300	$111,000	$333,000
$400	$148,000	$444,000
$500	$185,000	$555,000

Potential political, legal, and administrative barriers and opportunities

Implementation of an impact fee would need to be administered at the state level through DNREC, as the permitting entity for septic systems in the watershed. As fees are already collected as a part of the permitting process, existing staffing levels and fee collection process would be adequate. Enabling legislation giving DNREC the authority to collect fees, however, would likely be needed.

Again, the implementation would meet challenges from the development community. Issues related to the fairness of such a fee and burden being inappropriately placed solely on the development community would likely be voiced. However, in combination with fees or taxing instruments placed on existing system-owners equity issues may be appeased. For example, a lower impact fee for replacement systems could be considered. Using this approach all systems at some point would be required to pay to reduce nitrogen loading and "watershed system" capacity overloads.

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Incentive programs and Market-based approaches

Together with effective regulations, incentive programs and market-based approaches offer a range of opportunities to promote desirable behavior. Programs can be structured in such a way to promote cost-efficient approaches to overall nutrient reduction within the watershed that considers sources from septic systems. Below are descriptions of potential approaches and an evaluation of opportunity for application in the Inland Bays Watershed.

Water Quality Trading

Description

Water quality trading is a way of reallocating and ultimately reducing pollutant loads to a water body in an efficient manner. It applies a system of credits in which credits are based on how much pollution is emitted into the environment. Credits can be bought and sold. Water quality trading allows sources with high-cost solutions to obtain credits from sources that can reduce their contribution of pollutants to waterways via low-cost solutions. These trades can take place among point sources; between point and nonpoint sources; or, among nonpoint sources. These programs only tend to be successful when there is a regulatory driver that establishes a pollution "cap." Without this there is little incentive for use of the credits. Under optimal conditions that consider location, financial benefits, adequate market infrastructure, and stakeholder readiness, trades can be made and ultimate improvements in water quality can be achieved at the least cost.

State policy for trading within watershed or TMDL-defined areas that comply with EPA guidance on water quality trading must be established. Within the Inland Bays Watershed and as outlined in the PCS, trading opportunities between point sources, between nonpoint and point sources at a minimum 2:1 ratio, and between nonpoint sources will be considered, subject to approval by DNREC. Nutrient reductions in the trade must also constitute reductions that occur beyond the baseline or the point or nonpoint source nutrient reductions required under the TMDL and the PCS.

Level of opportunity

Within the Inland Bays Watershed, several factors severely limit trading opportunities at this time. The assignment of zero phosphorous and nitrogen loads to wastewater point sources eliminates opportunity for trades involving these point sources. For example, new hookups will have no impact and there will be no reason to trade. The high reduction goals for nonpoint sources set at 40-65% for phosphorous and 40-85% for nitrogen makes it difficult to generate credits for trades among nonpoint sources and between point and nonpoint sources alike.

In the case of septics, inspections and pumpouts as proposed under the PCS would be considered a baseline activity and ineligible for generation of credits. Other alternatives, including the elimination of existing septic systems through connection to central sewer, have a relative high cost and may be financially unattractive for trading.

Wastewater systems are the primary point sources currently within the watershed. During the base-line period of the TMDL analysis (1988 through 1990), 13 municipal and industrial wastewater treatment plants were discharging to the waters of the Indian River Bay, Rehoboth Bay, and their tributaries. To date only three wastewater point sources remain. Several Combined Animal Feeding Operation (CAFO) permits which are technically considered

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point sources are also in the watershed[41]. The difficulty in adequately monitoring nutrient loadings from these sources to make appropriate trades would be a challenge. In addition, under the Delaware 1999 Nutrient Management Law both CAFO permitted facilities and standard farms are under similar requirements to meet nutrient management goals. Any special opportunities for CAFO permitted facilities not open to other farms are likely to be considered unfair and would face political challenges.

Tax Credit Programs

Description

Tax expenditures in the form of tax breaks, incentives, and credits are a part of every tax systems. These expenditures (versus revenue) offer attractive incentives to promote desired behavior that benefits the environment. Tax credit programs have been successfully applied toward encouraging green building, agricultural conservation, and use of alternative fuels.

Tax credit programs are generally politically accepted and popular. However, care must be taken to consider the financial impact of lost revenue. That may be revenue needed for restoration projects, meeting environmental needs, or nutrient reduction goals. Another important observation is the popularity of tax expenditure programs and their role in making passage of new regulations or new taxes more politically palatable. For example, in Massachusetts, the implementation of regulations in 1995 calling for septic inspections at time of property transfer triggered development of three financing assistance programs, including a tax credit program[42] (See the Massachusetts case study example in the "Private Funding and Institutional Opportunities" section of this report). The tax credit program in Massachusetts is available to cover costs related to system repair or replacement required by failed inspections. The maximum amount of the credit that may be claimed in any tax year is $1,500. The maximum aggregate amount of the credit that may be claimed is $6,000 collected over four years.

Opportunities for application

Due to the current state budget shortfall, creation of a tax credit program is unlikely to be supported at this time. However, in the future tax credit programs may have greater support and are a viable example for offsetting costs related to system repairs and replacements for system owners in Delaware.

[41] Personal communication with William Rohrer, Jr., Program Administrator, Nutrient Management Commission, December 2007.

[42] Three financing assistance programs developed in Massachusetts to address financing needs and offset concerns related to the Title 5 Septic System Inspection Program: (1) tax credits available to cover up to 40% of septic repair/replacement costs or up to $6,000 across four years (2) a low interest revolving loan fund program administered by the state housing agency Mass Housing; and (3) 0% interest lending program offered to communities who can then create a local revolving fund to offer low interest loans to residents in their respective towns. Personal communication with Scott Jordon, Executive Director, Massachusetts Bay Trust, October 2007.

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Recommendations

1. Regulations with adequate enforcement must be implemented first.

The first step to moving forward with meeting septic nutrient reduction goals and addressing financing needs in the Inland Bays watershed is implementation of the regulation. Regulations must be "in force and enforced" to drive compliance from system owners to achieve the desired nutrient reductions. Its implementation would also serve to attract capital and promote cost-effective strategies to address nitrogen loadings from septics. None of the financing opportunities outlined in this report are possible in the face of no regulation.

Regarding enforcement, DNREC has the authority to enforce the regulations through civil court action and assessment of penalties, and must be prepared to use it. Without adequate enforcement, there would be low levels of compliance as there are with any regulation. For example, few of us would file an annual tax return if we knew there was limited risk of the IRS fining us or sending us to jail. In this scenario of reduced levels of compliance, public and private funders and organizations alike have less demand for their services and little reason to give septic projects high priority. There would also be limited need to implement management approaches that can aggregate demand and create cost reductions and efficiencies to address the issues. Ultimately, a lack of enforcement would significantly slow down achievement of nutrient reduction goals from septics. Adequate enforcement mechanisms such as the appropriate use of fines and court action would need to be employed. Clear conditions of exemption that address the needs of the very-low-income households known to be in the community are also needed.

2. Clarify septic regulation goals with regard to nutrient reduction and public health protection.

Introduced as part of the Inland Bays Pollution Control Strategy, nutrient reduction goals are clearly the driver of the proposed septic regulations. However, references to public health protection as a secondary goal could help address the large number of known malfunctioning systems within the watershed. As part of the outreach and communication strategy to residents, clear intent of the regulations must be articulated. This point must also be clarified to assist in prioritization of projects where limited funding is available.

3. Conduct a watershed-wide study and cost analysis of alternatives for reducing nitrogen from existing septic systems that would set the stage for a comprehensive approach to wastewater management that considers septic systems as well as central wastewater treatment facilities.

A comprehensive approach to wastewater management that considers public and private wastewater treatment facilities, as well as onsite septic systems, is a key step toward ensuring that the most cost-effective strategies are identified and financed to support nutrient reduction goals. Alternatives to consider with regard to reducing nutrient loadings from septic systems should include: connection to central facilities, installation of cluster-type systems, addition of advanced nitrogen removal technologies for septic systems, and proper maintenance of conventional systems. Only after a thorough cost analysis of these alternatives is completed can the options be prioritized and the most cost-efficient steps to nutrient reduction understood.

Of the available options, central wastewater treatment facilities pose the least impact in terms of nutrient loading to the watershed. Although existing septic system owners within the Inland Bays Watershed that are slated for county sewer service hook-up in the next five years would be exempt from the proposed requirements, a longer term evaluation has not been conducted. Only by examining the life cycle costs of the wide range of alternatives available, and

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considering longer term central wastewater plans and growth trends, can the most cost-efficient approaches, in terms of nutrient reduction, be considered.

The ultimate benefit of such a study is efficiency – the identification of opportunities that provide the greatest overall nutrient reduction at the lowest cost. The additional information allows central wastewater facilities to consider nutrient loadings from septic systems when evaluating central wastewater service expansion plans. There are also benefits of increased access to funding through traditional central wastewater funding programs that can support central wastewater extension or construction of cluster systems.

As Sussex County is the key central wastewater provider in the watershed, the County should be approached as a primary partner is the septic study. In addition, municipalities with existing central sewer facilities should also be involved in the effort. Such a study can be expected to cost $150,000 to $200,000, based on a study of similar detail and scope conducted in Anne Arundel County, Maryland.

4. Increase opportunities for ongoing communication between DNREC Groundwater Discharge Section, the County Engineering Department and other stakeholders on wastewater management and financing.

Only when wastewater treatment activities – both central and decentralized – are integrated can the most efficient and cost-effective approaches to water resources protection, public health protection, and system management and expansion goals be reached. Coordination among the agencies that regulate and operate both central wastewater systems and decentralized septic systems is a first step toward more comprehensive planning. Recently, the County and DNREC Groundwater Discharge Section began to meet biannually regarding wastewater planning and septic management issues. Quarterly meetings with the County Engineering Department and DNREC, with additional participation by the Public Service Commission and representatives of municipal wastewater treatment facilities as may be relevant, are recommended to provide ongoing communication and enhance opportunities for coordination where appropriate. Participation by interested citizens on an annual basis during these meetings should also be considered as part of ongoing public outreach and education.

5. Establish a Septic Financing Task Force to facilitate necessary coordination between county and state officials to advance opportunities.

The County is clearly the key public institution with financing, administrative, and technical capabilities available to address both management and financing related to septic systems. A partnership between the County and DNREC is essential to both ultimately protect the Inland Bays and specifically address financing needs of low-income households related to the proposed regulations. Along with the County, a number of other key partners including funding organizations, technical assistance organizations, other state agencies, private organizations, and local communities share interest and may offer resources and expertise that would be useful to further prioritize opportunities outlined in this report and beyond.

Assembling a formalized Septic Financing Task Force to further evaluate priority opportunities would support identification and implementation of the best approaches for the State and the County. Many of the approaches outlined in this paper would require buy-in and effort on the part of multiple organizations and decision-makers to take action. A Septic Financing Task Force would elevate awareness, as well as identify financing opportunities to address septics and general wastewater planning issues. Also important, the codified setting of a Task Force establishes accountability and introduces a level of transparency.

This Task Force should include representatives from: DNREC Groundwater Discharge Section, DNREC Financial Assistance Branch, DNREC Office of the Secretary, Sussex County, USDA Rural Development, First State Community Action Agency, Clean Water Advisory

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Council, Delaware Office of State Planning and Coordination, Delaware Economic Development Office, Center for the Inland Bays, Private Wastewater Utility, and representatives from the local community and businesses.

Clear responsibilities and timeline to complete targeted tasks should be established. Task force responsibilities may include:

- Prioritize existing and new revenue opportunities for further examination.
- Recommend steps to advance implementation of priority opportunities.
- Develop a dissemination plan that considers:
    - Oversight process or organizational infrastructure for any special funds that are created;
    - Types of assistance programs to be offered;
    - Conditions for exemption;
    - Evaluates opportunities for improved coordination among funding and assistance organizations including consideration of a central clearinghouse.
- Make recommendations on an outreach and communication strategy to affected residents.

6. Take advantage of existing institutions and programs in the Inland Bays Watershed.

In the evaluation of existing programs, opportunities to leverage the CWSRF Wastewater Facility program offers the greatest and most significant opportunity to generate sustainable revenue streams that could support an assistance program for septics. Although availability of grants through leveraging may be limited, immediate evaluation of this possible source should be considered as a potentially easy and less costly alternative. Existing public funding programs are not expected to address the overall financing need, but they are an important element in a financing plan that considers multiple sources.

Existing programs and institutions may not offer the necessary dedicated sustainable revenue needed over the long-term, but they do have potential to address needs in the interim, while sustainable and dedicated revenue sources are being established. Existing programs are established conduits for administering new assistance programs. For example, funding from CDBG and USDA RD 504 Housing Program, although limited, is available to support financial needs in the short term. Institutional capacity of both the RC&D Emergency Home Repair Project and Sussex County Water/Wastewater Relief Fund should be considered for administration of any new funding or assistance program being considered. Organizations such as First State Community Action Agency (FSCAA) are the first to hear of problems and can direct low-income families to available resources. In addition opportunities with banks and credit unions should not be missed, if administrative capacity is foreseen as a long term issue.

7. Expand community participation and engagement.

Investment of scarce fiscal resources is always politically charged. Therefore, implementation of financing strategies requires a community-based approach, including all relevant stakeholder groups into the process. Success requires the participation and commitment of citizens in the watershed as well as effective coordination among communities, institutions, and stakeholders throughout the region. In many ways, the gateway for this level of communication is available through existing programs and organizations, including the FSCAA, who has direct contact with impacted low-income communities, as well as the Center for the Inland Bays who has connections with the Inland Bays community at large. Utilizing networks of these and other organizations and institutions to ensure adequate outreach and participation of the entire community will be important.

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The EFC Project Team

EFC Staff

Swati Thomas, Program Manager
Swati Thomas joined the EFC in November 2006 to manage the Inland Bays Watershed Community Financing for Septic System Management Project. Prior to joining EFC, Ms. Thomas worked as an environmental specialist for the Rural Community Assistance Corporation where she provided training and technical assistance to rural communities throughout Oregon and Washington on financial management of their water and wastewater systems. She has also had experience with watershed planning and restoration, as a consultant assisting watershed organizations and local governments in western Pennsylvania and as technical assistance staff with the National Association of Counties. She received a M.P.A. in Natural Resources Management and Environmental Policy and M.S. in Environmental Science from Indiana University and a B.S. in Environmental Systems Technology from Cornell University.
swati@umd.edu

Jennifer Cotting, Program Manager
Jennifer Cotting joined the EFC in 2004 to manage an EPA funded program designed to help communities and organizations in Region 3 overcome barriers to implementing and financing their watershed protection efforts. Now she coordinates a number of the EFC's core programs, with a particular focus on urban greening, tree canopy, and green infrastructure issues. Prior to joining the EFC, Ms. Cotting worked as an independent consultant developing and implementing environmentally based education and outreach programs for nonprofit organizations and government agencies. She received her M.S. in Sustainable Development and Conservation Biology from the University of Maryland and her B.A. in Communications from Marymount University. Ms. Cotting is also co-editor of Urban Wildlife News, the biannual newsletter of the Urban Wildlife Working Group of The Wildlife Society.
jcotting@umd.edu

Septic Financing Forum, Guest Financial Experts & Speakers

John Boland, Johns Hopkins University
John Boland, Ph.D, P.E. is an engineer and an economist, specializing in water and energy resources, environmental economics, and public utility management. He is currently Professor Emeritus at the Johns Hopkins University, after more than thirty years in the Department of Geography and Environmental Engineering. Dr. Boland has served on many committees and panels of the National Research Council, including one term as chairman of the NRC's Water Science and Technology Board. He is a Lifetime National Associate of the National Academies and a member of US EPA's Environmental Financial Advisory Board.
jboland@jhu.edu

Michael Curley, International Center for Environmental Finance
Michael Curley is an attorney who has spent the majority of his career in finance. He is the founder and executive director of the International Center for Environmental Finance, and the author of the *Handbook of Project Finance for Water and Wastewater Systems*, published by Times/Mirror Books. He is a member of the Environmental Financial Advisory Board at the USEPA and is on the board of the International Rural Water Association. Mr. Curley is one of

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the founders of the Environmental Finance Centers at the University of Maryland, Cleveland State University and at the Maxwell School at Syracuse University.
mc@icef.getf.org

Jack Greer, Maryland Sea Grant
Jack Greer is the Assistant Director for Public Affairs for the University of Maryland Sea Grant College. The former director of the University of Maryland's Environmental Finance Center, Mr. Greer has helped to facilitate dozens of charrettes and panels, including a Blue Ribbon Panel for the State of Maryland on funding the Chesapeake Bay Tributary Strategies and the Blue Ribbon Finance Panel convened by the Chesapeake Bay Program's Executive Council to find new ways to finance the cleanup of the Chesapeake Bay. He holds degrees from the University of Virginia, the University of Richmond, and the University of Maryland.
greer@mdsg.umd.edu

Dan Nees, World Resources Institute
Dan Nees comes to the World Resources Institute (WRI) from the University of Maryland, where he served as director of the Environmental Finance Center (EFC). Throughout his career, he has worked extensively with communities, local officials, and watershed organizations in the Chesapeake Bay watershed and Mid-Atlantic on a broad variety of environmental finance issues. Mr. Nees holds a B.A. in Economics, a Master of Environmental Policy, and a Master of Business Administration, all from the University of Maryland, College Park.
dnees@wri.org

Jay Prager, Maryland Department of the Environment
Jay Prager serves as chief for the Onsite Systems Division for the Maryland Department of the Environment (MDE), and oversees implementation of the Bay Restoration Fund for onsite systems. Mr. Prager also serves as head of the innovative and alternative system program for Maryland and as the Deputy Program Manager for wastewater permits. He has more than 25 years experience with wastewater disposal and began his career permitting of septic systems for a local health department.
jprager@mde.state.md.us

The Environmental Finance Center, University of Maryland at the National Center for Smart Growth Research & Education

The Environmental Finance Center at the University of Maryland (EFC) is a regional center that has worked with communities on environmental challenges throughout the Mid-Atlantic region for close to 15 years. One of EFC's core strengths is its ability to bring together a diverse array of organizations and individuals to help communities develop solutions for a wide variety of problems. Through charrettes, training programs, and policy analysis such as this, EFC has assisted communities with source water protection, stormwater management, green space and green infrastructure planning, low impact development, rate setting for drinking water and wastewater, septic system management, aquatic restoration, and community outreach and education. In February of 2007, EFC joined the National Center for Smart Growth Research and Education, moving onto the College Park Campus of the University of Maryland.

AR0022506

APPENDIX

Project Meeting Notes

1. **Leadership Dialogue: Funding and Technical Assistance Organizations**
2. **Leadership Dialogue: Special Interest Organizations**
3. **Community Interviews and Contacts**
4. **Inland Bays Watershed Septic Financing Forum**

AR0022507

Inland Bays Watershed Septic Financing Initiative

Leadership Dialogue: Funding & Technical Assistance Organizations

May 18, 2007

Attendees:

Name	Organization	Telephone	E-mail
Russell Archut	Sussex County	302-855-7719	rarchut@sussexcountyde.gov
Erika Benner	DNREC	302-739-9941	Erika.Benner@state.de.us
Janet Brittingham	USDA, RD	302-856-3990	Janet.Brittingham@de.usda.gov
James Brunswick	DNREC	302-739-9000	James.Brunswick@state.de.us
Andy Lorenz	DSHA	302-739-4263	andy@destatehousing.com
Denise MacLeish	USDA, RD	302-857-3627	Densie.Macleish@de.usda.gov
Greg Pope	DNREC	302-739-9941	Greg.Pope@state.de.us
Dave Schepens	DNREC	302-739-9948	Dave.Schepens@state.de.us.gov
Trudy Schyler	RCAP	302-288-0453	fopts@aol.com
Christine Stillson	RC&D Council	302-424-6710	clstillson@verizon.net
Swati Thomas	EFC	301-326-2070	swati@umd.edu
Anthony Wright	FSCAA	302-886-7761, ext 118	bwright@firststatecaa.org

AGENDA

1. **Introduction**
2. **Presentation of EFC septic financing initiative project**
3. **Presentation of proposed septic regulations in the Inland Bays Watershed and draft estimates of financing needs**
4. **Discussion**

DISCUSSION NOTES

Challenges:

- Credit worthiness for loan programs
- Need for additional coordination among funders and assistance providers
- Need for additional outreach to advocacy groups and rural communities affected by the regulation
- Insufficient funding to support low income families with meeting regulations
- Existing demand on declining funding resources
- Uncertain allocations for existing funding programs, in particular federal funding sources
- Inadequate documentation of home ownership, etc. needed to complete funding applications.
- Limited income data makes assessing funding need difficult

AR0022508

Ideas for addressing Challenges

- Alter program to assist applicants in meeting credit requirements
    - Attach properties to a guarantee process
    - Carry long term liens

- Improve coordination among agencies and assistance organizations (current communication is informal, occurs during budget/funding cycle, on project by project basis thru referrals o
    - Establish a central clearinghouse on septic system management, requirements, and funding sources
    - Conduct a training for community development organizations, crisis organizations, and other relevant agencies on the septic issue and available resources
    - Coordinate across programs to spread funding to as many as possible
    - Increased coordination between DNREC and Sussex County regarding sewer district planning and septic system database update

- Evaluate and "tweak" program policies to expand funding opportunities to assist low income with septic issues
    - CDBG programs may be adjusted. Funds can be targeted to specific areas if needed, or scattered, special funding limits could be set to spread the money to the greatest number of people (e.g., $2500 cap), adjustment process begins in August.
    - RC&D also has some flexibility in programs
    - SRF program funding levels are evaluated through the annual budgeting process
    - Sussex County programs can be created or adjusted through the county budget process (completed January to April)
    - ALL PROGRAMS NEED ADEQUATE DOCUMENTATION OF NEED.

- Improve outreach and education on the issue
    - Outreach to advocacy groups so that they can raise issues as appropriate to legislators and local officials
    - In particular, housing organizations need to be made aware of the issues so that they can be advocates.
    - Share progress and results of drinking water quality sampling by the state public health department currently being planned in the area.

- Improve cost efficiency of program implementation by the following:
    - Make system improvements or replacements collectively, rather than individually
        - Have an agency or organization put out an RFP for inspection & pumping services to identify/establish base cost for services
        - Have an agency or organization manage system replacement of a grouping of systems (identified by a district or otherwise) to take a advantage of economies of scale (e.g., similar to mass contract for hookup to central wastewater systems)
    - Connect failing systems to existing or new systems where cost effective and feasible.
        - Develop planning approach that requires municipalities to consider "pockets of poverty" when evaluating annexations.
        - Provide incentives to private developers for connecting failing septic systems to new wastewater facilities (e.g., via trading program or otherwise).
        - Note, any incentive program for private systems will need to be developed in cooperation with the Public Planning Commission.

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- Utilize special funding sources
    - State bond bill
    - Foundation grants that could be funneled to a non-profit or other institution for use as a low interest loan program (e.g., Chesapeake Bay Foundation)
    - Create a special revolving loan fund through CDBG or other funding sources
    - Charge fees similar to Maryland's flush fee

Note, many programs can not cover inspection or service contract costs. Both USDA RD 504 program and RC&D home repair can cover these costs. Their programs are targeted for the very low income.

AR0022510

Inland Bays Watershed Septic Financing Initiative

Leadership Dialogue: Interest Groups in the Inland Bays Watershed

September 17, 2007

Participants:

Name	Organization	E-mail
Ruth Briggs-King	Sussex County Realtors Association	ruth@scaor.com
James Brunswick	DNREC	James.Brunswick@state.de.us
Kathy Bunting-Howarth	DNREC	Katherine.Howarth@state.de.us
Rich Collins	Positive Growth Alliance	pgalliance@delaware.net
Nick DiPasquale	Audubon Society	nicholasdi@comcast.net
Eddie Jestice	Delaware Farm Bureau	Defarmbpres1@verizon.net
Ken Smith	Delaware Housing Coalition	dhc@housingforall.org
Dave Schepens	DNREC	Dave.Schepens@state.de.us.gov
Swati Thomas	Environmental Finance Center	swati@umd.edu
Bruce Wright	First State Community Action Agency	bwright@firststatecaa.org

AGENDA

1. **Introduction**
2. **Presentation of Proposed septic regulations in the Inland Bays Pollution Control Strategy**
3. **Presentation of EFC Septic Financing Initiative Project**
4. **Discussion**

MEETING NOTES

Proposed regulations:
An overview of the development process for the Inland Pollution Control Strategy (PCS) as well as the need for an approach to nutrient management in the Inland Bays Watershed was presented by Kathy Bunting-Howarth of DNREC.

Dave Schepens of DNREC presented information on the septic regulations outlined in the PCS. The proposed regulations will require all existing systems within the watershed to complete inspection and pump-out every 3 years. Performance requirements addressing nitrogen reduction will be required of all new and replacement systems beginning January 2015. See PCS regulations, Sections 6, 7, and 8 for details on the regulations at http://www.dnrec.state.de.us/water2000/Sections/Watershed/ws/

Contact Kathy Bunting-Howarth (Katherine.Howarth@state.de.us) or Dave Schepens (Dave.Schepens@state.de.us) for more information or a copy of the presentation.

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EFC Septic Financing Initiative:
Swati Thomas of EFC presented information on the EFC financing initiative. Primary objective of the project is to develop financing recommendations to support low income populations in meeting the regulations.

DISCUSSION NOTES

What concerns you most about the proposed regulations?

- Increased costs of inspection and pumping as a result of increased demand and new requirements.
- Enforcement of regulations that leads to eviction of families who cannot afford to make necessary repairs or system replacements.
- Lagged 2015 deadline for performance requirements which allows those who install new systems or replace systems a free ride
- Impact on property values for not addressing nutrient management issues including onsite management
- Great need for education on septic management and nutrient reduction needs.
- Absence of a solid deadline for compliance, low income families will be the last to comply, and available funding will be dried up
- Coordination of this project with higher levels of DSHA may be needed, DSHA is about to release their 5 year plan (Involvement of Kim Brockenbrough or Deputy Director)
- Make deadline now
- Septic regulations pose high cost to address a small portion of the problem (eg., septic systems only contribute 11% of nitrogen)
- PCS is about nutrients, not public health
- Be sure to claim credit for valuable work already being done, eg, 2000+ systems being planned for hookup to central sewer
- Private utilities could offer service to neighboring existing on-site systems where new central wastewater services are being provided to new developments
- Central clearinghouse of information on funding and resources for septic issues.
- Malfunctioning septic systems are a statewide problem (not just a problem in the Inland Bays Watershed)
- Identify and build central sewer systems in obvious trouble spots*** (area of agreement)
- Simple lending guidelines
- Notion of shared responsibility to support nutrient management efforts at all levels – state, local and private.

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Financing ideas

1. Hotel/Lodging Tax
    - Everyone is trying to utilize this potential funding source
    - Competition with towns & state-wide
2. Reassessment
    - Last reassessment was done 1973, much to gain
    - Taxes kill the economy
    - Not politically palatable
3. Fees
    - Applied for a specific purpose
    - More politically palatable
    - County based fee may be more appropriate that state wide fee
4. Central sewer evaluations - connections to new developments (eg, Jimtown)
    - Community acceptance may be a problem
5. Different regulations for high vs. low risk systems
    - Difficult to determine
6. Septic utility
    - Cost efficiencies
    - Palatable for community or cluster systems
    - Voluntary vs. required

AR0022513

Inland Bays Watershed Septic Financing Initiative

Community Interviews and Contacts
Compiled by DNREC December 2007

Individuals contacted:

- First State Community Action Agency
  - Bernice Edwards – Executive Director
  - Anthony Bruce Wright – Director, Community Development

- Sussex County Strong Communities (Comments from presentations at group meetings)
  - West Side New Beginnings
    - Minnie Smith - President
  - Pinetown Civic Association
    - H. Ranford Allen - President
  - Cool Spring Civic Association
    - Amber Ayers - President
    - Mike Brittingham - Treasurer
  - Coverdale Crossroads Community Council
    - Evelyn Wilson – President
  - Lucas Development Civic Association
    - Sharon Griffin Harmon
  - Ellendale Community Civic Improvement Association
    - Harold Truxon - President
    - Delores Price –President Ellendale Town Council

- DNREC Community Involvement Advisory Council – (Comments from presentations at meetings)
  - Harold Truxon – Ellendale Community Civic Improvement Association
  - Jan Durham – Retired
  - William Pelham – CIAC Chairman
  - Pamela Mietner – Retired, Dupont Company
  - Bob Fredericks – Former Mayor Dewey Beach
  - Lavaida Owens White – Christiana Hospital, Faith Community Nurse, CIAC Co-Chair
  - Dr. Bethany Hall Long
  - Dr. Jay Julis – Wesley College, Professor Environmental Science
  - Dr. Bruce Allison – Wilmington College, Biology and Environmental Science
  - Donald Scholfield – Capitol Park Civic Association
  - Marvin Thomas – Southbridge Civic Association

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- Jimtown Civic Association (2 community meetings, 2 Conference Calls)
    - Rose Allen Echols
    - Gerald Allen
    - Rev. Wendell Hall
    - Gay Allen
    - Ornia Kemp
    - Bertha Turner
    - Theresa Butcher
    - Barbara Harmon
    - Lucinda Allen White

- Interviews and Community meetings:
    - Elder Edward Cannon - Dagsboro Church of God
    - Manufactured Housing Working Group (get list)
    - Jane Hovington - Sussex County NAACP
    - Rev. Charlotte White – New Zion AME Church

SUMMARY OF RESPONSES TO KEY QUESTIONS & TOPICS

What concerns you most about the proposed septic regulations?

- Low income and fixed income residents will not be able to afford the costs of compliance inspections and the repair, upgrade of septic systems.

- Residents could lose their homes as a result of the regulation, similar to residents displaced by central sewer costs in West Rehoboth

- The most expensive systems will be required in areas with high water tables and poor soils. These tend to be low income communities, so there must be some way to target the bulk of financial assistance for these areas.

- Prioritize funding for communities with poor soils, high water tables

- The regulation will create hardship and displacement

- Make sure that low income communities are targeted for participation in the upcoming public hearings

Compliance

- Residents will resent letting inspectors onto their properties

- Most residents will not comply until enforcement actions make them conform.

- Is there some way to encourage and reward residents for early compliance?

- DNREC should anticipate a late rush of applicants at the end of the compliance inspection periods

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Education/outreach

- Many people will be caught by surprise unless there is an effort to inform people.
- We need someone to help with the application and to explain the kind of system I will need.
- An outreach person to solicit septic loan and grant applications and assist residents with applications/documentation in their homes in the needy communities
- You must get out early and often in these communities for people to understand
- Bi lingual staff and materials for regulation outreach and education
- Need an independent person to explain your septic system options
- Use local non-profit organizations that provide emergency assistance to distribute applications and funding
- There should be a septic education and outreach program to explain the systems we will need, maintenance, grant and loan programs.

What special needs do you have in your community?

- We (Jimtown) would prefer to have state of the art septic systems vs. central sewer and water.
- It will drive up the cost of rental property in beach front communities
- Substandard housing will need housing repairs (electrical, plumbing) before new systems can be used.
- The cost of mound system could exceed the value of mobile homes and lots in some communities. We won't be able to get a loan.
- What to do when you have two mobile homes sharing a common septic system on one lot?
- Lot sizes might not be compatible (large enough0 for the new systems
- Some mobile homes are crowded and will need a bigger septic system than normal for that size home and lot
- There must be some coordination between DNREC, County, and other financing programs to leverage all the funding needed where there are substandard properties.

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Have people in your community participated in the existing septic system upgrade/home rehab programs/water/sewer hook up?

- Not aware that anyone has used the SRF applications (25) you distributed at the Strong Communities meeting last summer.
- Still on the waiting list after 3 years and my home is falling down.
- No. People are concerned about confidentiality – the government knowing your information
- People will not take advantage of the county money. No money to repay the loans.

What improvements to the financial assistance programs would be most beneficial?

- Eliminate the credit worthy requirement for grants to very low income residents
- Eliminate the debt ratio requirements for loans and grants
- Make funding available for surveys of properties where residents are not sure of parcel boundaries
- Lots of heirs property here with no deeds. Make funding available for title searches
- Use the repaid loan money to provide grants in the SRF program
- Long term (30 year), low interest (1%-2%) loans
- Sliding scale for loan repayment
- Include funding for small community systems in a pool of funds for mobile home park communities. Perhaps the best solution where lots are too small.

AR0022517

AGENDA

Inland Bays Watershed Septic Financing Forum
Thursday, October 25, 2007
Time: 9:00 am to 1:15 pm
Location: Carter Partnership Center
Georgetown, DE

University of Maryland
Environmental Finance Center

Forum Goals

- Increase awareness of the range of financing tools available to support a septic management program and homeowner compliance with upcoming regulations in the Inland Bays Watershed
- Generate ideas on best approaches to support the septic financing needs in the Inland Bays Watershed, considering:
  - Cost reductions
  - Existing programs and institutions
  - Tools for raising revenue
  - Administering program and funds

9:00 am – Welcome & Introductions – Kevin Donnelly, Director Water Resources Division, DNREC

9:10 am – Challenges of septic system management in the Inland Bays Watershed

9:40 pm – Case studies

- Summary of financing approaches to address septic issues in other states – Swati Thomas, University of Maryland Environmental Finance Center
- Maryland Bay Restoration Fund – Jay Prager, Maryland Department of the Environment
- Johnson's Corner Sanitary Sewer District, Delaware– Developers kicking in for connections to existing neighborhoods in need in Delaware – Michael Izzo, Sussex County Department of Engineering

10:10 am – Opportunities for improving/utilizing existing programs and financing tools in Delaware *Short panel, followed by discussion.*

- Clean Water State Revolving Fund (CWSRF) Septic Rehabilitation Program- Greg Pope, Department of Natural Resources and Environmental Control
- Community Development Block Grant – Andy Lorenz, Delaware State Housing Authority
- USDA 504 Housing Rehabilitation Program – Janet Brittingham, USDA Rural Development
- First State Resource Conservation & Development (RC&D) Emergency Home Repair Project – Christine Stillson, RC&D
- Sussex County Water/Wastewater Relief Fund – Patricia Faucett, Sussex County
- Delaware Bond Bill – Jennifer Cohan, Office of Controller General

11:30 am – Cost saving approaches & development of new programs *-Discussion*
12:00 pm – Working lunch – *Discussion continued*
12:45 pm - Concrete next steps & Wrap up
1:15 pm – Adjourn

AR0022518

Inland Bays Watershed Septic Financing Forum
October 25, 2007
Carter Partnership Center, Del Tech

MEETING NOTES

CLARIFICATIONS

- "Grant need" and "loan need" refers to financing assistance needs for low income and moderate income respectively
- Under current regulations, inspections are not required at property transfer
- Planned connection of 2000+ existing septic systems to county sewer is mandatory
- Regulation clarification
  - Wastewater systems - direct discharge to the Inland Bays is capped at 0
    - For example, must use spray irrigation, ocean outfall, etc.
  - Trading in Inland Bays would be very expensive
- Appears to be confusion between nitrogen reduction goals and public health goals
- Important to consider what is fair and equitable
- Some money is already currently being spent by septic owners on maintenance, particularly those with newer more complex systems
- Inspection is not currently required.

EXISTING FUNDING PROGRAMS

- Clean Water State Revolving Loan Fund – Septic Rehab Loan Program (SRLP)
  - Last year $400,000 made available through the program
  - Interest rates well below market rates
  - Loan is due on transfer
- Community Development Block Grant (CDBG)
  - $2 million, $1 million to Sussex, $800 in actual program after administration costs are considered
  - Long waiting list – 700-800 people long
  - 25% use of funds for septics is unlikely, preference to use for hookups
- USDA Rural Development 504 Housing Rehab Program
  - Septics & hookup
  - Up to $20,000 1% loan, and $7500 grant
  - Low demand for loans
    - For example, $80,000+ available in loan program last year, only used $18,000
- First State Resource Conservation & Development (RC&D), Emergency Home Repair Project
  - Average income of households served is $10,000
  - On average assist with emergency repair of 250 homes in Sussex and Kent counties
  - All soft funds
  - Willing to cover septic costs for current clients

- Sussex County Water/Wastewater Relief Fund
  - $200 grant for bill assistance, $2,500 for septic repairs, connections
  - 2008 general fund allocation is $75,000

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    - County has limited resources to put toward the issue (e.g, tax revenues have decreased)
- State Bond Bill
    - In past, septic system elimination has been a priority – eg, $10 million allocations
    - Septics would be considered a new initiative
    - Currently, the Bond Bill Committee is unlikely to support financing of septic initiatives due to current state budget crunch
    - Recommend working through local banks and credit
    - Tax credits not likely to pass currently, but may be a possibility in the future

DISCUSSION NOTES

Approaches for addressing the financing need

- Septic utility district or management entity concept
    - Advantages
        - Attractive to private sector
        - Community client brings cost efficiencies with aggregated demand
        - Social benefits – distribution of costs
        - Lower risk for septic system owners
        - County based district has advantage of being well received community contact for these types of services
    - Potential Issues/questions
        - Rates may be an issue
        - Funding options affected by who owns, operates, and maintains systems
        - What about high initial capital cost to address malfunctioning systems identified in initial round of inspections – how could this be addressed?
        - Need to garner public support for development of a district
        - Enforcement authority critical
        - Trash district concept used in Kent County may be a model for forming a district (Note, Sussex county also looked at trash district concept, however the district was not formed.)
- Work through local banks and credit unions to develop low interest loan programs
- Work through existing funding programs
    - CWSRF Septic Rehab Loan Program
    - USDA RD 504 Housing Rehab Program – loan program is currently underutilized
    - Others as possible
- Development of a tax credit program for septic owners required to replace/repair their systems is not a likely approach at this time given the state budget crunch, however may be an option in the future
- Evaluate existing institutions and how they could be expanded/improved to meet financing needs
- Develop regulation with adequate enforcement
    - Inspections at time of property transfer offer opportunities for financing during property transfer as well as clear process for enforcement
    - A consistent regulatory framework with enforcement is necessary to promote cost efficient approaches
- Explore incentive and market-based approaches
    - Wastewater treatment plants to pay for septic system upgrades - trading
- Subsidies to support inspection and pump-out requirement

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    - Model after Sussex County Water/Wastewater Relief Fund where low income homeowners receive funds to assist with water/sewer bills
- What can be done for people who can not afford to comply with new regulations:
  1. Make people who have the means support those who don't
  2. Don't require them to comply

Other comments

- Notion of shared responsibility is important
- Ongoing communication and education to those affected by the regulation is important – Ties to public health benefits must be emphasized in outreach efforts
- Continued follow-up and transparent process for development of new programs to address financing needs is important

NEXT STEPS

- EFC and DNREC will follow-up with relevant local, state, and federal contacts, private organizations, stakeholder groups, and guest panelists to further evaluate and explore financing approaches discussed at the forum
- EFC and DNRC will hold a final leadership dialogue with community representatives, scheduled for November 7th.
- EFC will incorporate ideas generated at previous meetings and at the forum into a white paper report, to be completed in December 2007
- EFC and DNREC will notify forum participants when the white paper report is completed and available for review

AR0022521

Inland Bays Watershed Septic Financing Forum
October 25, 2007 – Carter Partnership Center, Del Tech
ATTENDEE LIST

No.	First Name	Last Name	Organization	e-mail	Phone
1	Ed	Lewandowski	Center for the Inland Bays	director@inlandbays.org	302-226-8105
2	Roger	Roy	Clean Water Advisory Council	Roger.Roy@state.de.us	302-239-9292
3	Bob	Frederick	Delaware Community Advisory Committee	BobF@LyonsInsurance.com	302-227-7100
4	Harold	Truxon	Delaware Community Advisory Committee		302-422-4304
5	Ed	Hallock	Delaware Office of Drinking Water	Edward.Hallock@state.de.us	302-741-8590
6	Andy	Lorenz	Delaware State Housing Authority	Andy@destatehousing.com	302-739-4263
7	Gary	Simpson	Delaware State Senator	gsimpson@udel.edu	302-744-4134
8	Robert	Venables, Sr.	Delaware State Senator	Robert.Venables@state.de.us	302-744-4298
9	Sheri	Berman	Discover Bank		
10	Mathew	Parks	Discover Bank		
11	Amy	Walls	Discover Bank		
12	Robert	Palmer	DNREC	robert.palmer@state.de.us	
13	Erika	Benner	DNREC, Financial Assistance Branch	Erika.Benner@state.de.us	302-739-9941
14	Greg	Pope	DNREC, Financial Assistance Branch	greg.pope@state.de.us	302-739-9941
15	Jim	Cassidy	DNREC, Groundwater Discharge Section	James.Cassidy@state.de.us	302-856-4561
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