

**Report to the Governor and the General Assembly
Pursuant to § 32.1-163.2
January 2007**

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Part I: Executive Summary

The Code of Virginia (“Code”) requires the Board of Health to develop and revise as necessary a five-year plan for the handling and disposal of onsite sewage (See *Code*, § 32.1-163.2). The *Code* also requires the Board to report to the Governor and the General Assembly every five years on the status of onsite sewage in Virginia and the progress in implementing its long-range plan. The following report details the Virginia Department of Health’s progress and contains information about the current status of the onsite sewage program.

The Division of Onsite Sewage and Water Services (DOSWS) within the Virginia Department of Health’s (VDH) Office of Environmental Health Services (OEHS) develops policy and assists in development of the Board of Health’s regulations. The overall goal is to prevent the spread of human diseases associated with water and wastewater. VDH implements the Board of Health’s regulations via 35 health districts comprising 119 local health departments and about 325 VDH staff. Local health departments collectively receive nearly 68,000 applications for onsite sewage system and private well construction permits and certification letters each year. In addition, they typically review nearly 10,000 new subdivision lots each year for local governments. VDH estimates that there are about one million onsite sewage systems currently discharging about 82.5 billion gallons of wastewater into the soil each year.

This report discusses several areas of progress since VDH’s last report (2002). Development of the Virginia Environmental Information System (VENIS) provides capabilities for electronic permitting, data storage, retrieval and analysis, and may allow for online applications and other citizen-user interfaces (See Part IV.E of this report). Much of the data for this report was generated from VENIS. In another new development, VDH has partnered with localities and other agencies to create the first performance-based decentralized wastewater pilot projects. These innovative projects allow localities to provide wastewater services to communities that previously were not served due to poor soil conditions for onsite sewage systems and lack of availability of public sewer. The program for Authorized Onsite Soil Evaluators (AOSE) has grown significantly. In its 2002 Report VDH noted that approximately 20% of all permit applications contained AOSE certified evaluations and designs, a number that increased to approximately 40% in FY ‘06. VDH signed an agreement with Southside Community College in 2005 creating the Virginia Onsite Wastewater Training Center. VDH published Notice of Intended Regulatory Action (NOIRA) in September 2006 announcing a new initiative to update and replace *Sewage Handling and Disposal Regulations*.

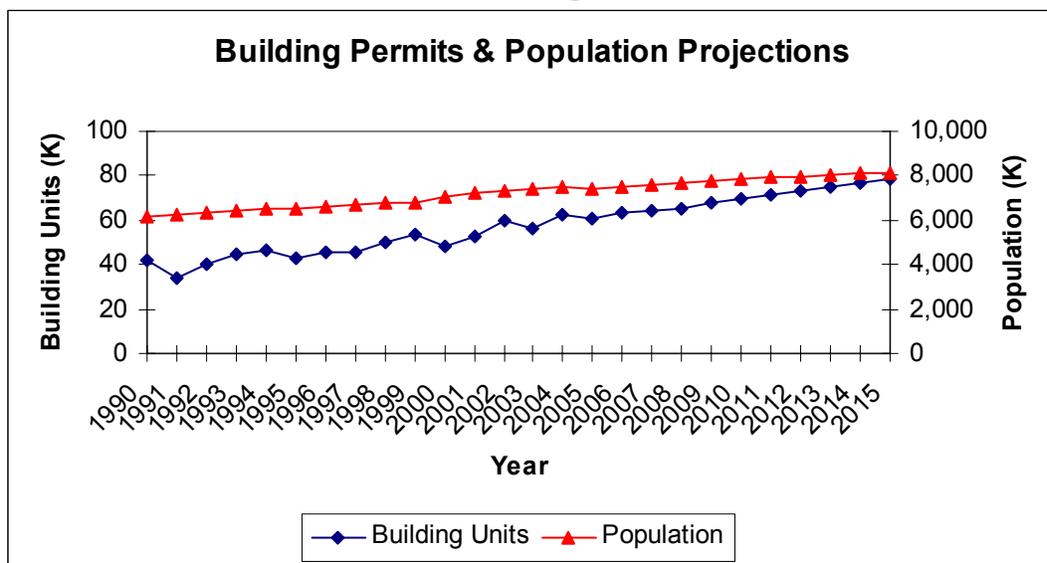
The Commonwealth has experienced tremendous growth during the five years that comprise this report. Because much of the development in Virginia depends upon onsite sewage and water facilities, VDH felt the strain of that growth. High rates of employee turnover in growth areas, the increasing use of advanced technologies and private-sector participation, and the need to manage the operation of onsite sewage systems to protect public health and water quality- all of these and more are driving forces in changing VDH’s role in the onsite sewage and water programs. In 2005 VDH received funding from the Council on Virginia’s Future (www.future.virginia.gov) to employ a consultant to analyze its onsite sewage business model and make recommendations for changes. VDH has received the consultant’s report and is evaluating the recommendations with agency staff and other stakeholders to develop a strategy for improving its business processes.

Part II: OVERVIEW: Strategic Plan and Services

The Board of Health is charged with protecting public health and the environment. VDH's onsite sewage and water programs provide regulatory and educational services to the citizens of the Commonwealth to assure that private wells are properly located and constructed and that sewage (wastewater) from onsite and alternative discharging sewage systems is properly treated and disposed of in the environment. As an agent for the Board of Health, OEHS develops policy and regulations (*Sewage Handling and Disposal Regulations*, the *Authorized Onsite Soil Evaluator Regulations*, the *Alternative Discharging Regulations for Single Family Homes*, and the *Private Well Regulations*) for implementation by local health departments and health districts. VDH local and district health departments processed more than 77,400 requests for permits and related services in FY 06. Population growth, particularly in rural and suburban areas, continues to be the major factor affecting environmental health services in the onsite wastewater and private well programs. Below is an excerpt from Governor Kaine's April 20, 2006, speech to those in attendance at the 17th Annual Environmental Virginia Symposium which spoke to these impacts:

Virginia is currently home to 7.5 million people. Between now and the end of my term in 2010, our population will grow 5%. It will increase by nearly 15% by the year 2020 and nearly 24% by the year 2030. By then, Virginia's population will be 9.3 million people. That increase in population is a driving force in Virginia's rapid development. Of all the development that has occurred in the last 400 years, more than a quarter of it has taken place in the last 15 years... But as quickly as our population is growing, our rate of development is growing even faster. If we continue as we have, Virginia will develop more land in the next 40 years than we have in the last 400 years.

Figure 1



From E.L. Hamm & Associates report to the Virginia Department of Health, May 2006 (See Part IV.D of this report).

As Governor Kaine noted, the rate of *development* is increasing more rapidly than the Commonwealth's rate of *population growth*. Since VDH onsite sewage and water program

- residential development to occur in areas previously considered unsuitable for development because of soil and site conditions. The increase in the number of owners utilizing these 'alternative' designs will lead to increases in the number of manufacturers seeking approvals for components and pre-engineered devices, increased numbers of AOSEs and Professional Engineers (PE) practicing in the program, and increased demand for regulatory standards to keep pace with the rapid changes in technology.
2. The increasing use of alternative treatment and dispersal technologies will create a greater-than-ever need for policy and regulatory developments to assure that these technologically advanced systems are properly operated and maintained.
 3. The role of the VDH environmental health specialist senior (EHSS) is changing from one of designing non-proprietary systems (septic tank and drainfield systems) for individual applicants to one of reviewing designs containing proprietary products and devices prepared by AOSEs and PEs. These changes will precipitate additional training and educational needs- both to train and educate VDH employees in their new roles and responsibilities and to provide general and specific information to consumers who are increasingly relying on the private sector for primary services.
 4. Additional demands will be placed upon VDH in its role as the primary provider of training and education in the onsite wastewater program as more and more individuals seek certification as AOSEs.
 5. VDH will continue to experience high rates of turnover among its environmental health specialists because of competition from other government agencies and from the private sector. This factor will continue to strain the agency's ability to recruit highly trained individuals, will strain resources for basic training of new employees, and will reduce resources available for continuing education.
 6. The combined influences of high turnover in growth areas and increased use of advanced technology will continue to fuel frustration among the private sector and VDH field staff (EHSSs).

To improve the performance of onsite sewage systems, improve groundwater protection activities, promote the concept of continuous management of all systems installed, and facilitate improved professional standards of practice, VDH's strategic plan detailed a number of strategies and objectives which include the following:

1. Beginning October 2003, maintain an electronic inventory (See Part IV.E, Virginia Environmental Information System) of at least 95% of all newly installed onsite sewage systems and private wells;
2. Beginning October 2003, increase the electronic inventory of all onsite sewage systems and private wells installed prior to October 2003 ("legacy systems") by adding 10% of these systems to the inventory each year;

3. Increase to 60% (from 50%) the percentage of submittals by private AOSEs and PEs found acceptable upon review by VDH and apply the same quality assurance review process used in the AOSE program to VDH field staff (EHSSs);
4. Consider regulatory amendments that would require additional system management after installation;
5. Report information gathered using VENIS to local governments for use in making land-use decisions and Geographic Information System (GIS) applications;
6. Work to reduce inconsistencies by publishing regulatory interpretations and clarifications; and
7. Offer continuing education in onsite sewage technology at an onsite training center (see Part IV.B of this report).

Part III: Onsite Sewage and Water Data

A. FY 06 Data From VENIS

1. Total Onsite Sewage Applications	39,057	
2. Total Private Well Applications	28,858	
3. Onsite Sewage Applications With AOSE Supporting Documentation	14,492	37.1% of Total
4. Onsite Sewage Applications for Septic Tank Effluent Systems	28,038	71.8 % of Total
4. Onsite Sewage Applications for Secondary Effluent (Alternative) Systems	1,171	3.0 % of Total
5. Onsite Applications for Repair Permits	5,453	13.9 % of Total
6. Onsite Applications for Certification Letters	7,138	18.3 %
7. Mass Sewage Disposal Systems		
Approved	109	
Installed	14	

B. Subdivision Review

In addition to applications for onsite sewage system permits and certification letters and applications for private well permits, VDH estimates that it reviewed and approved approximately 9,500 subdivision lots for local governments in FY '06. As of January 1, 2006, VDH only accepts site and soil evaluations from AOSEs and PEs in consultation with AOSEs, therefore VDH estimates that the vast majority of subdivision lot requests were supported by evaluations from AOSEs and PEs.

C. Total Requests for Services

For FY 06 the total number of applications for onsite sewage system permits and certification letters, subdivision lots, and private well permits is 77,415.

D. Number of Households Utilizing Onsite Sewage Systems Per Year

There are still no reliable statewide data regarding the total number of onsite sewage systems in use in the Commonwealth, partly because VDH has not yet captured the existing, or “legacy,” systems in VENIS. In its 2002 Five Year Report, VDH estimated that there were 927,400 households using onsite sewage systems in the Commonwealth. That figure was an extrapolation of the 1997 figure which had been obtained from the 1990 US Census. Unfortunately the 2000 US Census did not report “septic tank or cesspool” usage. Therefore the best estimate of the number of households utilizing onsite sewage systems is obtained by taking the estimate from December 2002 and adding to it the estimated number of onsite systems installed per year. Using the estimate of 20,000 systems installed per year, there are approximately 1,027,400 households in the Commonwealth using onsite sewage systems.

E. Volume of Onsite Sewage to be Disposed of Per Year

VDH calculates the average annual volume of onsite sewage to be disposed of to be 82.5 billion gallons (8.25×10^{10} GPY) or 226 million gallons of wastewater per day. This estimate is based on the number of households using onsite systems and on an estimated average daily flow of 220 gallons of water use per system. This value is intended to be a realistic estimate of actual water use and is not an estimate of theoretical maximum potential use.

F. Available and Needed Capacity in the Commonwealth for Environmentally Sound Methods of Disposal of Septage in Sewage Treatment Plants, Other Approved Facilities, and by Land Application Per Year

The solids and grease that accumulate in the septic tank are referred to as septage. These residuals need to be periodically removed from the septic tank and disposed of properly (generally at wastewater treatment facilities). Accurate and meaningful estimates for septage disposal needs are difficult to determine, because no comprehensive monitoring program exists within the state to measure the volume of septage actually pumped. Septage generation is a function of the number of onsite systems, their size, and the frequency of pumping. In theory, if every septic tank was pumped out on a five-year cycle, approximately 205 million gallons of septage would be generated annually. On a statewide basis VDH assumes that the average time between pumpouts exceeds five years. VDH has not received reports of chronic shortages of septage disposal capacity; however, periodically local sewage treatment plants refuse to accept septage, causing intermittent, localized problems.

Part IV: Program Initiatives and Progress

A. New Regulations

The *Sewage Handling and Disposal Regulations* (12 VAC 5-610-20 et seq.) were first adopted in 1982. The *Regulations* underwent substantive revisions in 2000 to incorporate standards for improved groundwater protection and for advanced treatment (alternative) systems. Prior to final adoption the State Health Commissioner withdrew criteria for mass sewage disposal systems (mass drainfields) and rocky soils due to significant opposition from the public and members of the legislature. The *Regulations*, even as revised in 2000, are prescriptive in

nature and offer little in the way of design flexibility. They also fall significantly short of offering solutions for citizens of the Commonwealth living in existing housing units that are served by substandard or non-existent sewage systems. In addition, they contain no requirements or criteria for ongoing operation and maintenance of onsite sewage systems. The *Regulations*, as written, look back to an implementation model in which VDH is the sole service provider for site evaluations and where VDH employees design the vast majority of onsite systems permitted (with PEs designing larger and more complex systems). For these reasons and others that are discussed at length in this report and in the E.L. Hamm Report (See Part IV.D, Re-Engineering Initiative), VDH believes the *Regulations* no longer provide an adequate regulatory framework for the onsite sewage program.

The Board of Health published a Notice of Intended Regulatory Action (NOIRA) in September 2006 announcing its intent to repeal the *Regulations* and promulgate new regulations for the onsite sewage program. VDH anticipates that the new regulations, to be called the *Onsite Sewage Regulations*, will be performance-based but will also include prescriptive site and design criteria for certain categories of systems. VDH expects to draft a regulation that expands beyond the 2000 amendments the range of site and soil characteristics that may be utilized for onsite sewage systems. In addition, the new regulations will be proposed with requirements for operating, maintaining, and monitoring all onsite sewage systems, including community onsite systems (also known as decentralized systems) and will propose requirements to certify operation and maintenance service providers as well as sewage system installers.

B. Virginia Center for Onsite Wastewater Training

As noted elsewhere in this report, the increasing demand for training is straining existing VDH resources. Training needs include newly hired staff, AOSEs and PEs, and continuing education for staff, the private sector, and other interested parties. In April 2005 VDH entered into a Memorandum of Agreement with Southside Virginia Community College (SVCC) to establish the Virginia Center for Onsite Wastewater Training (Center). The Center's mission is to educate and train practitioners and others in the methods and technologies essential to assure long-term sustainability of onsite wastewater systems, groundwater and surface water quality, and public health.

Ultimately, the Center will offer hands-on experience with a number of onsite wastewater products and technologies as well as classroom environments for training and education. A number of onsite equipment manufacturers have expressed their willingness to donate products for training purposes at the Center site, and several plan to use the Center's facilities to train and certify installers. Classes at the Center form part of SVCC's curriculum. Several classes including "Construction Inspection", "Computer Assisted Design", and "Pumps and Controls" were offered in spring 2006 to approximately 30 students. Upcoming classes and registration procedures can be found on the Center website at <http://www.sv.vccs.edu/acad/vcowt/>.

VDH has contacted organizations such as the Virginia Onsite Wastewater Recycling Association (VOWRA) and Southeast Rural Community Assistance Project (SERCAP) to identify better ways to interact with stakeholders for the mutual benefit of all parties. A representative from each of these organizations currently is a member of the Center Steering

Committee. Contacts with other organizations and groups are planned. The Center Steering Committee has also agreed to act as a member of the SVCC Advisory Committee for Program Development.

C. Decentralized Wastewater Pilot Projects: Charles City County, Caroline County

In its 2002 Five Year Report VDH stated that it was seeking a partner or partners for pilot projects to demonstrate third-party or utility-styled management of onsite sewage systems under performance-based regulatory concepts. In that report the agency noted that the onsite wastewater program was evolving from one where regulatory requirements were entirely prescriptive to one where system performance is a primary element of the permitting and regulatory program. As a result, VDH noted the periodic inspection of systems and components, as well as compliance monitoring, data management, and enforcement would become increasingly important.

The first performance-based pilot project was launched in March 2002 through collaboration among VDH, Charles City County, the Department of Housing and Community Development, and a group of community leaders and volunteers. The project has received considerable attention regionally and nationally, and it is being recognized as a significant innovation in the development of managed decentralized (onsite) wastewater systems. The essential components of the project are a set of performance standards developed jointly by the partners coupled with an intensive monitoring, inspection and reporting program. Intended to protect public health and the environment, the performance standards require advanced wastewater treatment before discharge into the soil. The monitoring and reporting program is intended to assure that the performance standards are achieved. Charles City County accepts full legal and financial responsibility for the planning, construction, and long-term operation of the decentralized sewage system (or systems). The individuals connected to the systems pay a monthly bill similar to a sewer bill. As noted, the project incorporates performance criteria as the regulatory basis for issuing permits and operating wastewater systems. State Health Commissioner Robert B. Stroube, M.D., M.P.H. granted waivers from the prescriptive site and design requirements of the *Sewage Handling and Disposal Regulations* (12 VAC 5-610-20 *et seq.*, the “*Regulations*”).

The Charles City County project currently has two sewage systems operating successfully, each serving small communities up to about 25 homes. A third system is planned. The pilot project is part of a Community Development Block Grant that has allowed Charles City County to upgrade housing units and provide wastewater services to existing residents who either had no sewage systems (i.e. pit privies) or who had substandard or failing septic systems. The innovative nature of the project allowed the county to install small-scale, neighborhood sewage systems in areas historically known for poor (‘no perc’) soils that normally cannot be used for individual onsite sewage systems under the *Regulations*.

A second pilot project was launched in March 2004 in Caroline County. The Caroline County pilot project will serve the community of Dawn located near Kings Dominion. The project, like the Charles City County project, is performance-based and will include housing rehabilitation as well as improved wastewater services. Caroline County broke ground in the

spring of 2006 and is in the process of constructing a neighborhood community system to serve approximately 150 existing households and businesses in the Dawn community. Caroline County anticipates that it will also serve some limited new construction as part of the project in the Dawn Community.

D. Re-Engineering Initiative

As part the Commonwealth's continuing efforts to improve business processes and operating efficiencies among state agencies (www.future.virginia.gov), VDH commissioned a study of the onsite sewage program in the fall of 2005. The goals of the study were to analyze and understand the current business model and processes, i.e. the current reality; to offer ideas for system efficiency improvements in the near-term; and to provide recommendations for defining the future reality of the organization, including the services it should be offering in light of the changing roles and responsibilities of the agency and the private sector. VDH's contractor, E.L. Hamm & Associates, delivered its report in May 2006. The consultants' report in many ways echoes the themes of this and prior agency Five Year Reports (1997, 2002), but goes into greater detail in analyzing current business practices and in offering suggestions for potentially changing those practices. VDH is currently evaluating the recommendations and developing responses.

E. VENIS

HealthSpace Integrated Solutions, Ltd. manages the Virginia Environmental Information System (VENIS), which is a software system for collecting, collating and reporting data from the department's environmental health programs. This electronic system is being used by local health departments for data management in the onsite sewage and water programs as well in the restaurant, rabies, and migrant labor camp programs. VENIS employs a hierarchical approach rather than a relational approach to store and retrieve data.

VENIS is more than simply a data collection and retrieval system, and is being used to generate individual permits and letters, decreasing the need for paper files. The primary benefit of the system, however, is likely to be the improved capacity to compare and contrast a wider range of data from across the Commonwealth, leading to better and more data-driven response to customer needs and demands. The ultimate outcome should be a more effective and efficient onsite sewage disposal program.

Development of the onsite sewage and private well modules of the VENIS have lagged somewhat behind the food modules. In part, the lag is due to the complexity of the onsite sewage program when compared to the food program. Another difference between the two programs is that, in contrast to the food program, no closely applicable model existed for data collection in the onsite sewage program. The database is still being developed and refined for the onsite sewage program; however it is being used for management and data evaluation.

VDH will continue to refine the database to better serve our internal customers. At the same time, VDH intends to continue its efforts to determine the needs of its external customers, and to improve the capability of the system to share information with the public and with other

agencies. For example, the real estate community and local building officials have expressed an interest in being able to use the system to access basic VDH information about sewage disposal systems and permits related to particular properties. Sharing such information electronically will improve efficiency by reducing the need to search paper-based records, copy information and deliver it in person or via mail. AOSEs and PEs have expressed the desire for web-based applications in the onsite sewage and water programs.

F. AOSE Program

In July 2002, VDH published final regulations for the AOSE program, which can be viewed at <http://www.vdh.virginia.gov/onsite/regulations/AOSE-06-27-02.pdf>. In July 2004, VDH issued Guidance Memorandum and Policy (GMP) #126 to provide additional information to stakeholders. GMP #126 can be found at www.vdh.virginia.gov/onsite/GMPs/GMP126.pdf.

Nearly 40 percent of the 39,057 onsite sewage system applications that VDH received in FY 06 included supporting work from AOSEs or PEs in consultation with an AOSE (AOSE/PE). To contrast, only 20 percent of applications in 2002 included supporting work from AOSE/PEs. Several local health departments and health districts have AOSE/PE submittal rates for FY 06 approaching 100%. Many stakeholders, VDH staff included, believe that the onsite sewage and private well programs would literally not be operable in those areas if not for the AOSE program.

Since 1999, VDH has certified 264 individuals as AOSEs. Currently, over 200 individuals have AOSE certification. Approximately 155 of the AOSEs work in the private sector, the others are employed by VDH. The early years of the AOSE program (beginning in 1999) were characterized to a certain extent by conflict and disagreement among the private-sector practitioners and VDH reviewers. In several cases the disagreements were significant, resulting in the agency initiating nine administrative proceedings against AOSEs between April 2000 and August 2006. Eight of those proceedings led to suspensions of the AOSEs' certificates to practice. While most AOSE work is of high quality, many AOSEs want strong VDH enforcement to assure that persons are held accountable for their work and competitive market forces can operate effectively.

The conflict that characterized the early years of the program appears to be giving way to a more stable environment. Many AOSEs were trained and employed by VDH and the number of substantive complaints about their work is decreasing each year. Many of the private AOSEs have hired staff persons and other helpers to assist with their workload so VDH anticipates that experienced AOSEs are now training future persons who can one day qualify for credentialing. As more AOSEs enter into the private sector, VDH anticipates that market forces will assure competitive pricing and quality work. Inconsistency in the interpretation of regulatory requirements remains one of the major problem areas. The E.L. Hamm report contains detailed discussion on this and related topics (See Part IV.D of this report).

Expanding VDH's partnership with the private sector will assure that the program's efficacy and impact remain strong. As the partnership expands, VDH will have more opportunities to meet customer needs and assure that services and products are protecting public

health and groundwater supplies. To improve the AOSE program with the advice of individuals and groups most involved with wells and onsite sewage systems, State Health Commissioner Robert B. Stroube, M.D., M.P.H. formed an AOSE advisory committee in 2005. The advisory committee meets every two months and its 15-members represent the different regions and interests of the Commonwealth. Members thoroughly air their views and experiences to advise the Commissioner about needed regulatory or policy changes in the AOSE program and this committee is improving communication among stakeholders, which helps to address nascent issues in the program.

Part V: Challenges: Expanding Partnerships, Changing Roles

There are numerous public health services that VDH must provide by law and regulation. For example, VDH is responsible for communicable disease prevention and environmental health services, including restaurant inspections and permits for on-site sewage disposal and private wells; rabies and vector control; and emergency preparedness. An emerging role for VDH is that of partner in water quality programs. That new role together with the explosion in available onsite wastewater treatment and dispersal technologies and the need to manage Virginia's population of onsite sewage systems is creating new challenges for VDH.

A. Expanding Partnerships

1. Total Maximum Daily Load (TMDL) and Chesapeake Bay Goals.

The Virginia Department of Environmental Quality (DEQ) and the Virginia Department of Conservation and Recreation (DCR) are the Commonwealth's lead water quality agencies. There is an ongoing effort by DEQ and DCR to complete the "total maximum daily load" (TMDL) process under the 1999 federal consent decree and move toward achieving the 2010 Chesapeake Bay Program water quality goals.

Although VDH is not a primary agency for water quality, the TMDL program will place increasing demands on VDH's limited resources because of its responsibilities in the onsite wastewater programs. Virginia faces a number of challenges related to ground and surface waters, the quality of which is an increasingly important element in the overall strategy for protecting the health of all Virginians and in assuring the continued economic wellbeing of the Commonwealth. Many of the waters listed as impaired in Virginia have high fecal coliform counts, a condition that may be caused by untreated or improperly treated sewage discharges or by onsite sewage systems that are not working adequately. Nutrients (primarily nitrogen and phosphorus), some of which originate from onsite sewage systems, are also implicated in many of the impaired waters in Virginia. In its 2005 TMDL Progress Report¹ DEQ listed 220 waters with completed TMDLs, 202 waters contracted for TMDL development, and 1,210 in need of TMDL development. In all more than 1,600 waters were listed.

Once a TMDL has been developed for a watershed, DEQ works with stakeholders,

¹ "TMDL Program Five Year Progress Report, January 2005" <http://www.deq.state.va.us/tmdl/pdf/04prgrpt.pdf>

including DCR and VDH, to develop an Implementation Plan (IP) for re-establishing water quality in the watershed. Once an IP is in place restoration efforts begin. The IP for the North River Watershed provides an example of VDH's potential involvement in the TMDL program. Among the *best management practices* listed in DEQ's 2005 Progress Report were "Septic System Pump Out, Septic System Repair, Sewer Connections, Septic System Installation, and Alternative Waste Treatment System."

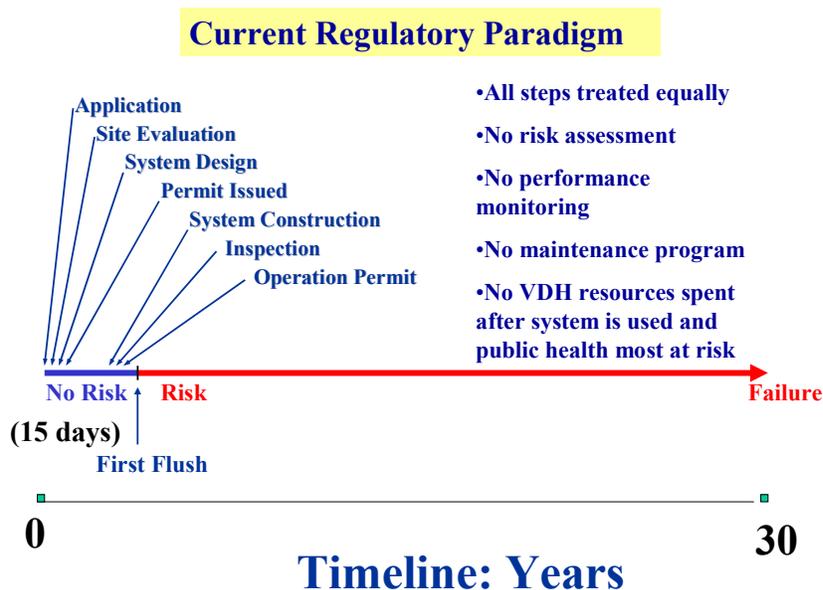
In July 2006 VDH representatives from OEHS met with DCR representatives to discuss potential collaboration between the agencies on water quality issues. The representatives discussed DCR's and DEQ's expectations that VDH will provide surveillance and enforcement resources when those are necessary to fully implement an IP. They also discussed VDH's responsibilities, authorities, and limitations as well as the shortcomings of existing funding sources for onsite wastewater (State Revolving Fund, Water Quality Improvement Fund, etc.). Looking toward the future, the group made plans to meet regularly and to seek avenues for cooperation and collaboration. Some potential areas for collaboration include: i) finding sources of financial assistance for owners of onsite wastewater systems located in the watersheds of impaired waters; ii) surveying watersheds to identify individual onsite systems and to catalogue those systems as to location, type, ownership, etc.; iii) programs to educate and involve the public and interested groups regarding water quality issues as they relate to onsite wastewater systems; iv) data collection and management with respect to the existing Chesapeake Bay Act requirements for septic tank pump outs; and v) the potential for VDH to assume a larger role, perhaps a primary role, in implementing all of the Chesapeake Bay Act requirements pertaining to onsite wastewater systems.

B. Managing Virginia's Population of Onsite Sewage Systems to Protect Ground Water, Surface Waters, and Public Health

From a random sampling of 9,343 private wells across Virginia from 1994 through 2000, Dr. Blake Ross with the Virginia Tech extension service reported that 44.2 percent of private wells tested were coliform positive and 11.6 percent were fecal coliform positive. Dr. Ross also reported that the average water sample had 1.2 mg/l of chlorides, a constituent found in wastewater that is often used to track effluent plumes.

Monitoring the impacts of onsite sewage systems and determining how those impacts affect the health of Virginians is a critical element of the onsite sewage and water programs that will demand an increasing percentage of VDH's resources. This important development coincides with the need to change VDH's role from that of primary service provider for services related to installing sewage systems to one of managing those systems to minimize environmental and public health impacts. Figure 3 illustrates how the current regulatory paradigm emphasizes those activities that occur prior to and during the installation of an onsite sewage system- site and soil evaluations, system design, permitting, installation, and inspection. The current paradigm focuses only a small portion of agency resources on the long-term operation of systems, the portion of the life-cycle of a system when actual threats to public health and the environmental occur. Under the current onsite sewage and water programs VDH investigates and monitors systems only when notified of a failure.

Figure 3



The overall rate and number of sewage system failures in Virginia and their effect on ground and surface water is, for the most part, unknown. In FY 2006, VDH received 5,453 applications for permits to repair failed sewage systems. VDH estimates that over 25 percent of onsite sewage systems (about 250,000 systems) are more than 30 years old. These older systems represent higher risks to public health and the environment, because they were installed in accordance with outdated regulations and are closer to the end of their design life. The impact of these older systems and failed systems (including those not reported) on groundwater and health status may be significant. As part of its strategic plan, VDH has evaluated strategies and services necessary to assess and manage the impact of sewage systems on groundwater supplies and public health. Among those strategies are implementation of the “10 Essential Services for Public and Environmental Health.”² Table 1 contains a partial listing of activities or services necessary to incorporate the 10 Essential Services into the onsite sewage and water programs in order to properly assess and manage the effects of sewage systems on water supplies and public health.

² *Public Health in America*, Osaki et al, Northwest Center for Public Health Practice, University of Washington School of Public Health and Community Medicine, 1994; developed from *The Future of Public Health*, Committee for the Study of the Future of Public Health, Division of Health Care Services, Institute of Medicine, National Academy Press, Washington, D.C., 1988. *The Future of Public Health* outlined the dilemma facing public health throughout the nation, recommended a return to focusing on the community, and laid out three core functions—assessment, policy development, and assurance. Osaki, et al worked to develop “The 10 Essential Services” as a template for organization and delivery of public health services; they were published in a position paper, *Public Health in America*, presented to the Public Health Functions Steering Committee, Washington D.C., 1994.

Table 1
Products and Services - Onsite sewage and water supply program

Service Rendered	Public Health Impact
1. Train new practitioners in the 10 Essential Services, risk assessment, and risk management.	Assure competent workforce. Appropriately trained staff in environmental public health that can understand, promote, and use the 10 Essential Services of Public and Environmental Health.
2. Investigate water and sewage complaints.	Protect groundwater supplies and prevent exposure to disease pathogens from partially treated or untreated sewage.
3. Collect and assess data. Develop accurate inventory of water supplies and sewage systems.	Monitor health status of community. Determine risk to groundwater contamination from onsite sewage systems.
4. Write community health status reports.	Communicate risk to citizens, public officials, and other decision-makers.
5. Assure systems are working in accordance with their approvals and assess their impacts.	Prevent unacceptable risk to public health and groundwater supplies. Verify that regulations and rules are adequate.
6. Monitor private sector activities and verify compliance with applicable regulations.	Assure competent workforce.
7. Observe trends in community health status.	Monitor health status of community. Determine risk to groundwater contamination from onsite sewage systems.
8. Develop coalitions to share and have access to relevant health and environmental data	Mobilize community partnerships with DEQ, DCR, VDOT to identify and solve environmental health problems.
9. Draft regulations and policies based on community assessments.	Protect groundwater supplies and prevent exposure to disease pathogens from partially treated or untreated sewage.
10. Perform site and soil evaluations, design sewage systems, locate water supplies, and inspect wells and sewage systems.	Direct service delivery. Assure compliance with the regulations. Protect groundwater and prevent exposure to disease agents.
11. Review plans for development and offer advice to local governments. Review engineering and AOSE designs and proposals for development activities. Perform quality assurance and quality control inspections of AOSE work (Level 1 and 2 reviews).	Direct service delivery. Assure compliance with the regulations. Assess risk to public health and groundwater supplies.
12. Review installed sewage systems by request of local building official.	Direct service delivery. Assure compliance with the regulations. Assess risk to public health and groundwater supplies.

13. Review manufacturer requests for different types of approvals.	Direct service delivery. Assure compliance with the regulations. Assess risk to public health and groundwater supplies.
14. Process claims for indemnification, variances, and manage informal and formal hearing processes.	Direct service delivery. Assure compliance with the regulations. Assess risk to public health and groundwater supplies.

Given the risk of groundwater contamination and potential adverse public health impacts from contaminants in onsite sewage systems, VDH’s strategic plan calls for moving resources to support understanding of the effects and risks associated with those systems after they are put into use. In the short term this change of focus will create challenges as the business model changes from one focused on processing permit applications to one where permitting activities share resources with an ongoing program to monitor the performance of onsite sewage systems and their effects on public health and environment.

C. Practice of Engineering

HB 936, introduced in the 2006 Session of the General Assembly, would amend the definitions contained in § 54.1-400 of the *Code* with respect to the design of wastewater systems. Concurrently the Department of Professional and Occupational Regulation (DPOR) received complaints from members of the engineering community regarding the onsite wastewater program administered by VDH. During the 2006 Session VDH met with the patron of HB 936 (Delegate Morgan), DPOR representatives, and others to express its willingness to seek mutually agreeable solutions if possible. HB 936 was carried over to the 2007 Session.

DPOR regulates Professional Engineers (PE) in addition to various other professional activities under its authorities found in Title 54.1 of the *Code*. Members of the engineering community complained that VDH was facilitating the unauthorized practice of engineering by establishing policies which allow Authorized Onsite Soil Evaluators (AOSE) to design onsite wastewater systems that, according to the *Code*, must be designed by PEs.

The Engineering Section of DPOR’s Board for Architects, PEs, Land Surveyors, Certified Interior Designers, and Landscape Architects (APELSCIDLA) met in February and May 2006 to consider the complaints. The full APELSCIDLA Board met June 15, 2006, to consider the recommendations of the Engineering Section. At the June 2006 meeting the APELSCIDLA Board approved a motion saying that VDH did not appear to be following its own regulations and § 32.1-163.5 of the *Code* (with respect to pre-engineered sewage systems) thereby allowing “non-professional engineers to design residential on-site sewage systems which should be designed by professional engineers.” The Board recommended that DPOR may want to enter into a Memorandum of Agreement with VDH to address short-term conflicts and to work with VDH to find long-term solutions “through the legislature in order to ensure that non-professional engineers are not permitted to practice engineering.”³

³ Draft Minutes of APELSCIDLA Board Meeting June 15, 2006, http://www.townhall.state.va.us/meeting/ViewMeeting.cfm?Meeting_ID=6559

VDH representatives from OEHS met with representatives from DPOR in August 2006, to begin discussions on a draft MOA and renew the agencies' commitments to work together to resolve the conflicts. At that meeting the representatives agreed to produce a draft MOA, and to form a working group of stakeholders that would seek solutions within existing statutory frameworks and to identify, if necessary, areas where legislation was needed.

APPENDIX A
Statutory Requirements
Code of Virginia

§ 32.1-163.2. Long range plan for onsite sewage.

In addition to the powers and duties provided in § [32.1-164](#), the Board of Health shall develop and revise as may be necessary a five-year plan for the handling and disposal of onsite sewage. Such plan shall include (i) the number of applications for onsite sewage permits per year; (ii) the number of households or facilities utilizing onsite sewage systems per year; (iii) the volume of onsite sewage to be disposed per year; (iv) the available and needed capacity in the Commonwealth for environmentally sound methods of disposal of septage in sewage treatment plants, other approved facilities and by land application per year; (v) descriptions of technology for alternative systems including the types of soils and conditions recommended as appropriate for such alternative systems; and (vi) recommendations for changes in the laws or regulations pertaining to onsite sewage and the system of permitting onsite sewage systems. *The Board shall also report every five years to the governor and the General Assembly, beginning in 1992, on the status of onsite sewage handling and disposal in Virginia and the progress in implementing its long range plan* [emphasis added].

(1987, c. 223.)

APPENDIX B
Alternative Systems – Synopsis of Options

System Type	Summary of Application Conditions
In-Ground Systems with secondary treatment	Trench bottom at least 18” deep and vertical separation distance of 12” to restriction.
Shallow-Placed Systems with secondary treatment	Minimum depth of 12” with vertical separation distance of 12”; time-dosed and may be ‘trenchless design’.
Fill Systems	Includes mounds (with or without secondary treatment, sand-on-sand (with or without secondary treatment), and mountain colluvium.
Puraflo™ (Irish peat system)	High water table, shallow installations, shallow depth to rock, limited area. Requires smaller absorption area. Status: General Approval.
Non-Gravel Systems	These systems provide an alternative to gravel. Status: Conventional approval and permitting. See GMP #127.
Reduced-Size Non-Gravel Systems	These systems provide an alternative to gravel and offer sizing based upon manufacturer’s recommendations. Status: Conventional approval and permitting. See GMP #116.
Drip Disposal Perc-Rite Whitewater	These systems provide an alternative to low pressure systems. The Whitewater system provides pretreatment which allows for shallower installation.

Spray Irrigation

Status: Conventional approval and permitting.

Spray systems allow wastewater and dispersal on sites with as little as 12 inches of suitable soil, provided adequate land is available. Status: Conventional approval and permitting. See GMP #74.

Aquarobic Filter Bed

This system can be used in site and soil conditions similar to a spray irrigation site. Status: Experimental approval and permitting. See GMP #85.

Advantex™

System may be used on sites similar to Puraflow™. Allows reduction in vertical separation distances, requires smaller absorption area. Status: General approval (Soil Types 2,3,4), Provisional approval (Soil Type 1).

Ecoflo®

System may be used on sites similar to Puraflow™. Allows reduction in vertical separation distances, requires smaller absorption area. Status: Provisional approval.

AlasCan/Clear Water™

Composting toilet with recycle/re-use system; may be designed for zero discharge. Requires approved backup system/site. Status: Experimental. See GMP #111.

APPENDIX C

Recommendations for Changes in the Law

1. New user fees to account for costs to deliver direct services. Processing “bare applications” (i.e., those with no supporting evaluation and design work from an AOSE/PE) is more time consuming than processing applications with supporting private sector work. “Bare applications” typically require 4 to 5 hours of VDH work at a cost of approximately \$350.00 to \$450.00 dollars per application. Processing applications with supporting work takes 30 to 60 minutes with an estimated cost of \$150.00 per application. The percentage of bare application requests is decreasing relative to the percentage of work supported by the private sector.

The consulting firm E.L. Hamm & Associates, in its report on the onsite sewage permitting process wrote:

The AOSE program has become a bit contentious between the AOSEs and the VDH permitting staff over the functions of site and soil evaluations, system design and system installation inspection. Direct competition exists between the public and private sectors over this work. The public sector competes for the direct services part of the permitting process with subsidized prices, i.e., its costs are not fully supported by user fees, while the private sector provides its services at market prices. The public sector and the private sector are providing the same services of site and soil evaluation, system design and inspection at different prices; while at the same time, the public sector maintains oversight and regulatory control over the private sector. This is a cause for friction and is holding the program back. (Page 2)

The situation presents several challenges for VDH in the short-term. First, VDH is proving to be the ground where AOSEs acquire training and experience before moving into the private sector. The loss of newly-trained employees represents a significant expense to the agency. Second, while VDH essentially competes with AOSEs for direct services in the onsite sewage permitting process, it also regulates and oversees their practice. This has resulted in complaints from AOSEs about double-standards and unfair review practices on the part of VDH staff. Finally, the fact that VDH’s fees are generally lower than those charged by private AOSEs tends to undercut competitive market forces, reducing competition and slowing the rate of growth and prosperity of the AOSE program. According to the E.L. Hamm report (Page 29), the AOSE program needs to be able to manage and monitor itself in order to nurture the necessary degree of professionalism for it to grow and prosper.

This suggestion would amend the *Code* to create a fee structure that minimizes or eliminates the subsidy that tends to undermine market forces and competition. A phased approach would probably be necessary to address economic impacts in those areas of the Commonwealth where there are not many AOSEs or where the citizens have not begun to voluntarily rely on the private sector for direct services in the onsite wastewater permitting program.

2. Certification program for onsite wastewater and alternative discharging sewage system installers. Amend Section 32.1-164 of the *Code of Virginia* to give the Board of Health authority to establish a program for qualifying or otherwise certifying individuals as Onsite Sewage System Installers. In 1994 the General Assembly gave the Board

authority to establish a program for AOSEs and additional legislation in 1999 expanded AOSE responsibilities. AOSEs and professional engineers (PEs) have authority and responsibility for performing site evaluations and designs that, when properly submitted and certified, result in the issuance of construction permits that may receive no field review by the Department. The *AOSE Regulations* require an AOSE or a PE to inspect a system he or she has designed while an inspection by VDH is optional.

The onsite sewage industry has seen an explosion in the use and availability of advanced wastewater treatment and dispersal technologies. Many in the onsite industry, including the Virginia Onsite Wastewater Recycling Association, believe that a certification program for installers is necessary to assure that contractors are competent to install the newer technologies and to fill a responsibility gap that can exist when an AOSE/PE evaluates a site and designs an onsite sewage system (without VDH field review) and the subsequent system installation also occurs without VDH field review.

VDH has identified installer certification as an element of its five-year plan for the onsite wastewater program. Under a certification program, an installer would have responsibilities to the public, to VDH, and to the designer of a system (AOSE or PE) to ensure that a system is installed in accordance with the permit and the Board's regulations. As a growing percentage of permitting activities is handled each year by private AOSEs and PEs, a program for certified installers will promote a smoother, speedier process for the public and can help ensure that public health and the environment are adequately protected.

3. Settle claims and demands for property damages up to \$15,000.00. Amend the *Code* to authorize the State Health Commissioner to settle and compromise small claims of no more than \$15,000 arising from the negligent conduct of VDH employees in the issuance of permits for private wells and onsite sewage systems. There is a steadily increasing number of small claims arising from VDH negligence related to the permitting and/or installation of private wells and onsite sewage systems. If alleged damages arise from the failure (within 3 years of construction) of a permitted onsite sewage system, current law allows claimants to apply for indemnification from the Indemnification Fund (§ 32.1-164.1:01, the "*Fund*"). The *Fund* was established by the General Assembly in 1994. It does not cover damages arising from other negligent conduct such as improperly locating a well or improperly issuing an onsite sewage system permit or other approval where no system has been installed.

VDH issues two types of approvals in situations where an owner does not intend to actually construct a system- certification letters and subdivision approvals. Citizens customarily seek and rely upon VDH approvals for wells and onsite sewage systems prior to purchasing property.

If a claimant is not eligible to apply under the *Fund*, there may be no other legal recourse against the Commonwealth. Where the Commissioner determines that a VDH official negligently approved a private well or septic system and the problem can be remedied for less than \$15,000, VDH would like to be able to administratively investigate, and quickly

resolve these situations for homeowners. There is precedent for this-VDOT currently has similar jurisdiction, (§33.1-200). The Commissioner would not have authority to settle claims arising from negligence by private parties.

4. Allow VDH to appeal decisions of the Sewage Handling and Disposal Appeal Review Board when it believes error of law has occurred. The Legislature established the Appeal Review Board in 1984 to hear the appeals of denials of onsite sewage system permits. In 1994 the Legislature expanded the Board's authority to include appeals of refusals of indemnification requests. The *Code* provides that the Board's decision is "the final administrative decision." In accordance with the APA an aggrieved citizen may appeal the Board's decision to Circuit Court, but because the Board's decision is the final agency action in a case, VDH does not have the option to appeal an adverse decision. The Board normally decides cases fairly on the basis of the facts presented. Infrequently, the Board has rendered decisions that were adverse to VDH and, in doing so, failed to act in accordance with established laws, regulations, and policies. VDH does not have standing to appeal the Board's decision to the Circuit Court. While the Board's decisions do not establish legal precedents, they do establish an expectation that the Board (and VDH) will act in the future in accordance with a decision. The Board creates a potentially serious problem for the agency when it decides a case contrary to existing laws, regulations, and policies. For example, does the agency follow the existing rules or does it follow a new one established by the Appeal Review Board (a role that exceeds its statutory authority)? Amending the *Code* would allow VDH to challenge an action by the Board in cases where VDH alleges that an error of law has occurred.
5. Civil penalties for onsite sewage violations. In its first Report to the Governor and the Legislature (1997) and Five-Year Plan, VDH indicated that the onsite wastewater program was changing in ways that would require more performance-based sewage systems and a permitting system to support such systems. Performance-based systems are distinguished from the traditional prescriptive systems in that they are required to meet a pre-determined set of performance criteria. Performance criteria may include levels of treatment, certain types of monitoring and reporting, or may be as simple as a routine pump-out of a tank. VDH's current enforcement tools include administrative options such as revoking an operating permit, holding an informal conference to discuss compliance, or holding an administrative fact-finding proceeding. Alternatively, VDH may initiate criminal proceedings in court (Class 1 Misdemeanor). There are currently no provisions in the *Code* for assessing civil penalties. Many alleged violations of performance criteria are relatively minor if dealt with early. They may signal larger, long-term problems, but they rarely rise to the level of criminal prosecution. Civil penalties would provide VDH with an enforcement tool that bridges the gap between administrative conferences and permit revocations and the heavy hand of criminal prosecution. In 2005 the Legislature established conditions and authorities allowing local governments to impose civil penalties for violations related to certain types of onsite sewage systems (§15.2-2157).
6. Remove the exemption for proprietary pre-engineered systems. Section 32.1-163.5 of the *Code* requires VDH to accept private evaluations and designs for residential development

for the purposes of construction permits, letters, and subdivision review certified by an AOSE or a PE in consultation with an AOSE to comply with the Board of Health's regulations. VDH is not required to perform a field check of these certified submittals and the submittals are deemed approved if VDH fails to issue or deny the application within the time limits specified in the section. Paragraph D of the section exempts "any locality that has entered into a contract with the Board of Health in accordance with Chapter 678 of the 1994 Acts of Assembly" as well as "a proprietary, pre-engineered septic system deemed by the Department to comply with the Board's regulations" from those requirements. VDH believes that the exemption for proprietary, pre-engineered systems was placed in the *Code* at the request of one manufacturer whose proprietary, pre-engineered system was undergoing evaluation via VDH's experimental permitting and evaluation program. The system has since received general approval, as have two other similar systems. The law, as currently written, allows a longer review time for proprietary, pre-engineered systems. VDH routinely receives complaints from citizens and AOSE/PE consultants regarding health department procedures and practices that result in long delays for processing applications containing evaluations and designs certified by the AOSE/PEs and which utilize proprietary, pre-engineered system designs. Removing the exemption from the *Code* would make the applications for proprietary, pre-engineered systems (when supported with evaluations and designs certified by an AOSE or a PE) subject to the time limits and deemed approval provisions of the *Code*.

7. Changes to the Indemnification Fund. Amend the *Code* to include a definition of the term "indemnify," to put an upper limit on payments from the *Fund*, and provide an option for citizens to receive low-cost loans from the *Fund* for repairing onsite sewage systems. The Legislature created the *Fund* in 1994 to "receive moneys generated by a portion of the fees collected by the Department of Health pursuant to subsections C and E of § 32.1-164 and appropriated by the Commonwealth for the purpose of assisting any Virginia real property owner holding a valid septic tank or other onsite sewage system permit when such system fails within three years of construction and such failure results from the negligence of the Department of Health."

The *Code* provides that "the Commissioner shall grant the request for indemnification" when an investigation reveals that the conditions for indemnification have been satisfied. The *Fund* may also be used to support the program for training and recognition of AOsEs. The *Code* does not establish any limits for payments nor does it provide a working definition for the term 'indemnification'. Black's Law Dictionary (*Black's Law Dictionary*, Eighth Edition, 2004) defines "indemnification" as "The action of compensating for loss or damage sustained." It defines the word "indemnify" as meaning "To reimburse (another) for a loss suffered because of a third party's or one's own act or default." VDH operated for several years without any guidance for reimbursements from the *Fund*. Most claimants assumed that the *Fund* was an insurance program designed to reimburse them for any and all expenses associated with a failed onsite sewage system. In almost every case the expectation was that the *Fund* would pay the costs of a replacement system in advance plus many other incidental costs such as soaked carpet, ruined floors, broken driveways, time in hotels and meals, etc. Some claims exceeded \$100,000.00.

In 2003 VDH adopted an administrative policy that sought to bring rational principles to bear on the operation of the *Fund*. Under the policy, VDH would reimburse owners for the cost of the system that failed, not for the cost of a replacement system. Amounts are capped at \$15,000.00 and the *Fund* cannot be used to reimburse consequential damages such as carpets and driveways. Some claimants have argued that there is no statutory language establishing the kind of limits contemplated in the policy.

The conundrum created by the current statutory language is that the legal definition of the term ‘indemnify’ is broad and runs the gamut from paying for the loss (the damaged item) to making the person whole by reimbursing all damages associated with the tort. There is a well established legal principal that one cannot ascribe meaning to a statute that is not expressed in the plain language of the statute. As the *Fund* is a limited waiver of sovereign immunity, the rights established pursuant to the *Fund* should be limited and narrowly construed. The statutes should be amended to reflect the fundamental principles expressed in VDH’s policy.