November 2011

Report to the General Assembly

Long Range Plan for Onsite Sewage

§ 32.1-163.2 of the Code of Virginia

Prepared by:

Virginia Department of Health

Office of Environmental Health Services

Division of Onsite Sewage, Water Services, Environmental Engineering and Marina Programs

Contents

Executive Summary

Va. Code § 32.1-163.2 requires the Board of Health (Board) to develop and revise a five-year plan for the handling and disposal of onsite sewage. The Board must report to the Governor and the General Assembly every five years on the status of the onsite sewage program in Virginia and the health department's long-range plan. The following report details the Virginia Department of Health's (VDH) progress and the current status of the onsite sewage program.

The Division of Onsite Sewage, Water Services, Environmental Engineering, and Marina Programs, Office of Environmental Health Services (OEHS) assists the Board and the State Health Commissioner with developing statewide regulation and policy for the onsite sewage program. Using the 10 essential services for environmental public health, OEHS prevents the spread of human diseases associated with water and wastewater. These diseases include, but are not limited to hepatitis, cholera, epidemic viral gastro-enteritis, shigellosis, salmonellosis, and amoebiasis. The basic tenet of the program is to prevent contact with the various forms of wastewater and sewage by ensuring that sewage systems and water supplies are properly designed, installed, inspected, operated, and maintained.

VDH implements regulations via 35 health districts comprising 119 local health departments. From 2001 through 2006, the agency struggled to deal with a dramatic rise in demand for onsite sewage services. At the height of that rise, VDH received about 38,000 applications for onsite sewage system permits per year. Since 2007, total applications have decreased to around 15,000. VDH continues to estimate there are about one million onsite sewage systems currently discharging about 82.5 billion gallons of wastewater into the soil each year.

Significant change resulted from several legislative mandates since VDH last submitted its five year plan in January, 2006. The past five years witnessed more legislative activity than any previous five year period in VDH's history. These legislative changes had dramatic impact on VDH's program and its funding sources. This legislation will continue to influence the onsite sewage program for the foreseeable future. Presently, the Board has eight regulatory actions in process from legislative activity during the past five years and from mandatory periodic reviews.

Several emerging issues are likely to affect the program over the next five years: operation and maintenance (O&M) requirements, wastewater reuse, rainwater harvesting, protecting the Chesapeake Bay from nutrient pollution, health equity initiatives for water and sewer, seeking ways to assist owners financially in upgrading onsite sewage systems and repairing failing systems, and increasing VDH's collaboration with the private sector. These emerging issues will impact the services VDH provides to the public to protect public health and groundwater supplies.

Legislative Changes Since 2007

2007

Several bills considered by the 2007 General Assembly significantly impacted the onsite sewage and water programs in Virginia. These included HB 2182, HB 1949, HB 1950, HB 2691, HB 2692, and HB 3134. HB 3134 relocated licensing requirements for onsite soil evaluators from VDH to the Department of Professional and Occupational Regulation (DPOR), required the Board to establish a program for operation and maintenance (O&M) of alternative onsite sewage systems (AOSS), required a state-wide web reporting system to track O&M of AOSS, and required operators to submit reports electronically and pay a $1.00 fee per report.

As a result of HB 3134 DPOR began licensing onsite soil evaluators (OSEs) and operators on January 1, 2009. VDH started a web-based reporting system for AOSS operators in early 2010 and started accepting payments for reports in October 2010. As a result of the new licensing requirements, VDH embarked on an extensive training process to ensure all staff obtained OSE licenses as required by DPOR's regulations.

Two bills were referred to the Housing Commission for study. HB 2182 was intended to clarify the roles of OSEs and professional engineers by modifying *Va. Code* § 54.1-402 to provide a specific exemption for certain designs of onsite sewage systems. HB 1950 was intended to address issues related to design flexibility for professional engineers.

HB 1949 required the State Health Commissioner to certify at the end of each fiscal year that no expenses were paid from the Onsite Sewage Indemnification Fund (Indemnification Fund) to support the program for training and recognition of authorized onsite soil evaluators in lieu of payment to any owner or owners qualified to receive payment from the Indemnification Fund. HB 2692 also made several changes affecting the Indemnification Fund, including establishing a maximum reimbursement limit of $30,000 and new time limits for filing requests for reimbursement. VDH implemented the changes initially through Guidance, Memoranda and Policy (GMP) #123.A. The Board adopted regulations for the Indemnification Fund in the fall of 2008 which are under executive review.

HB 2691 required the Board to establish a uniform schedule of civil penalties for violations of regulations as well an environmental health and training education fund. The Board adopted regulations to implement this legislation in the fall of 2008. Those regulations are under executive review.

2008

The 2008 General Assembly considered several bills that impacted the onsite sewage and water programs. These bills included HB 193, HB 517, HB 518, SB 681, HB 1408, and HB 1166.

HB 193 prohibited construction of a private well within 50 feet of the property line adjacent to an agricultural operation as defined by *Va. Code* § 3.2-300 as long as the agricultural operation was three acres or larger. The law provided two exemptions whereby the owner of the adjacent property used for an agricultural operation could grant written permission to construct the well closer than 50 feet, or the applicant could provide certification that no other site on his property complied with the Board's regulations for private wells. VDH implemented this legislation through GMP #141 and its successor policy, GMP #141.A.

Two bills resulted from the Housing Commission's review of legislation referred from the 2007 session (HB 2182). HB 517 required the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals to adopt regulations to divide OSEs into classes, one of which was restricted to designing only conventional onsite sewage systems. HB 518 modified Va. Code § 54.1-402 to allow OSEs to design certain onsite sewage systems by providing an exemption to the license requirements for architects, professional engineers, and land surveyors. The legislation allowed OSEs to design certain kinds of conventional and alternative onsite sewage systems permitted by VDH.

SB 681 allowed for the drilling, installation, maintenance, and repair of water wells less than 100 feet deep without requiring the provider of a certified water well system to be onsite. Before adoption of this legislation, a certified water well systems provider was required to be onsite for the drilling, installation, maintenance, or repair of any water well or water well system, regardless the depth of the well.

HB 1408, which was not approved, would have required the Board to establish a program for determining the eligibility of owners of failed septic systems, or systems in need of repair, for betterment loans, which would be provided by private lenders. The betterment loans would presumably be secured by a lien with priority over any lien, deed of trust, or mortgage other than an ad valorem tax lien.

HB 1166 developed from a 2007 bill (HB1950) referred to the Housing Commission. Although the Housing Commission was not able to study this issue in depth, VDH continued to work with the patron of the 2007 legislation (Morgan) and other stakeholders to reach consensus on the major provisions of the bill. HB 1166 addressed concerns from the engineering community that the Board's regulations did not easily allow deviations from prescriptive site, design, and construction criteria. The

engineers felt that as long as standard engineering practice and appropriate performance requirements were followed with reasonable care, then engineered sewage systems could be designed and constructed without unnecessary risks to public health and the environment. In addition to concerns about establishing appropriate performance requirements and 'standard engineering practice' as a regulatory benchmark, VDH's primary concerns were to maintain certain physical (horizontal) setbacks between onsite sewage systems and certain sensitive features such as water supplies and shellfish waters and to ensure proper management of an onsite sewage system once installed and turned over to the owner. There were no requirements for operation and maintenance in this legislation.

HB 1166 created *Va. Code* § 32.1-163.6 which has significantly affected the program. The effects are likely to persist through the upcoming five year period as well. The legislation allowed professional engineers to design onsite sewage systems that (1) met the performance requirements of 12 VAC5-610, the *Sewage Handling and Disposal Regulations (SHDR*), (2) complied with standard engineering practice, and (3) met the horizontal setbacks that protect public health and the environment. The designs submitted pursuant to *Va. Code* § 32.1-163.6 did not have to comply with the prescriptive regulations normally required by the *SHDR*. The legislation also imposed time limits for VDH review of designs: 21 calendar days for systems sized 1,000 gallons per day (GPD) or less, and 60 calendar days for systems greater than 1,000 GPD. It also established a four-member engineering review panel to review disputed designs.

VDH formed a technical advisory committee (TAC) to review the new legislation and provide advice on implementation. The SHDR had (and still has) two relevant, measurable performance requirements- prevent sewage effluent from discharging onto the ground surface and prevent sewage back-ups into dwellings. Although the *SHDR* contained a broad prohibition against polluting groundwater, there were no quantitative standards for determining when such pollution might be occurring. On July 8, 2008, VDH created GMP #146 to implement *Va. Code* § 32.1-163.6. Soon thereafter, licensed professional engineers began proposing and designing sewage systems that in design and location had historically been denied under the *SHDR*. The *SHDR* prohibited installations into flood plains subject to intermittent flooding and into transported deposits with extended periods of saturation (see 12 VAC 5-610-593). The *SHDR's* regulatory prescriptions also required at least 12-inches of naturally- occurring, unsaturated soil before installing a sewage system and prohibited installations of onsite sewage systems into swamps and marshes (i.e. wetlands).

The engineering statute increased the opportunity for owners to develop land that had been out of consideration for decades (the *SHDR* were adopted in 1982) and presented opportunities for engineers, under the standard engineering concept, to propose creative designs that previously were not possible. Some conflicts developed among private engineers and VDH staff over time (professional engineers and local health department environmental health specialists charged with reviewing designs prior to issuing or denying permits). To resolve disagreements and disputes among engineers, the Engineering Design and Review Panel (EDRP) heard nine disputed

cases from January, 2009 through August, 2010. At least two cases have gone to the Sewage Handling and Disposal Appeal Review Board and were subsequently appealed to Circuit Court. At this time those cases are still pending. As engineers continued to explore property development for their clients in wetlands and other areas where groundwater was at or near the surface, other stakeholders became concerned.

With development occurring on environmentally sensitive sites previously considered "no-perk" areas, many stakeholders realized the performance requirements in the *SHDR* were insufficient to implement *Va. Code* § 32.1-163.6. Concurrently, some local governments ramped up efforts to prohibit AOSS entirely, both in sensitive receiving environments where shallow groundwater or shellfish waters were found, and in other areas where AOSS have been successfully used since 1995. The development community became concerned about these local ordinances, meanwhile several manufacturers of proprietary equipment became concerned about how their equipment might be utilized by the professional engineering community. Environmental groups and local governments became alarmed that development into wetlands would hamper or reverse ongoing efforts to protect water quality in and around the Chesapeake Bay watershed.

2009

Most stakeholders agreed the performance requirements in the *SHDR* were insufficient to properly implement *Va. Code* § 32.1-163.6 given the possible creative designs in very sensitive receiving environments. To address concerns that the performance requirements of the *SHDR* were inadequate the General Assembly amended *Va. Code* § 32.1-163.6 via HB 2551 and SB 1468 in 2009. In addition to adding statutory language about ground and surface water quality standards, the legislation required the Board to implement emergency regulations to establish performance requirements for AOSS (including designs under *Va. Code* § 32.1-163.6). The legislation also required the Board to implement other mandates of the *Code of Virginia* pertaining to operation and maintenance of AOSS approved in 2007 (§§32.1-164.H and 32.1-164.I).

Additional legislation approved in 2009 impacted local government's ability to regulate AOSS. HB1788 prevented localities from prohibiting the use of AOSS approved by VDH and provided that local governments cannot require maintenance standards and requirements for AOSS which exceeded those of the state. This legislation contained an enactment clause that tied the effective date of the local preemptions to the adoption by the Board of final regulations for O&M of AOSS. VDH initially implemented temporary procedures required by HB1788 through development of GMP #149.

In drafting the *Emergency Regulations for AOSS* (*Emergency Regulations*) VDH attempted to balance stakeholder concerns, disagreements, and requests. VDH sought input from many sources and convened a stakeholder work group facilitated by the Institute for Environmental Negotiation at the University of Virginia (IEN). IEN convened

four meetings with the stakeholder group and offered its final facilitator's report on September 7, 2009. The *Emergency Regulations* were developed through an iterative stakeholder process, which included a 30-day public comment period. VDH also worked with the Weldon Cooper Center for Survey Research at the University of Virginia to understand owner perceptions and feelings about operation and maintenance of AOSS while the *Emergency Regulations* were developed.

On November 9, 2009, Attorney General William C. Mims offered an official advisory opinion stating that the *Emergency Regulations* would trigger the applicability of the local preemptions at *Va. Code* § 15.2-2157(C)-(D) upon the effective date of such regulations. Section C and D state the following:

> *C. When sewers or sewerage disposal facilities are not available, a locality shall not prohibit the use of alternative onsite sewage systems that have been approved by the Virginia Department of Health for use in the particular circumstances and conditions in which the proposed system is to be operating.*
>
> *D. A locality shall not require maintenance standards and requirements for alternative onsite sewage systems that exceed those allowed under or established by the State Board of Health pursuant to § 32.1-164.*

The *Emergency Regulations* expire on October 7, 2011.

On April 26, 2010, the Board published a Notice of Intended Regulatory Action (NOIRA) to promulgate final regulations to replace the *Emergency Regulations*. Stakeholders had a 30-day comment period on the NOIRA. VDH formed a second stakeholder work group to review the *Emergency Regulations*, discuss comments on the NOIRA, and develop changes to incorporate into the proposed permanent AOSS regulations. At that time VDH also began to participate in the US Environmental Protection Agency's (EPA) process for developing a TMDL (Total Maximum Daily Load) for the Chesapeake Bay. The Commonwealth of Virginia submitted a Watershed Implementation Plan (WIP) through the Department of Environmental Quality (DEQ) that included strategies for reducing nutrient loads from onsite sewage systems. Under the TMDL onsite sewage systems are considered a source of nitrogen pollution in the Chesapeake Bay. Working with the second stakeholder group and gaining understanding through the WIP process, VDH developed proposed regulations that included nutrient reductions for AOSS located in the Chesapeake Bay watershed. The Department of Planning and Budget (DPB) analyzed the economic impact of the proposed regulations, which VDH supported: http://www.townhall.state.va.us/L/viewstage.cfm?stageid=5632&display=documents.

The Board published its proposed (permanent) *Regulations for Alternative Onsite Sewage Systems (AOSS Regulations*, 12VAC5-613) on December 6, 2010. The 60-day comment period for the proposed regulations ended on February 4, 2011, and VDH received numerous comments. VDH formed a third stakeholder advisory group to review the comments and offer ideas for making changes to the permanent regulations.

Staff met and discussed this regulatory activity with several legislators, including Delegates Timothy D. Hugo, Joe T. May, Harvey Morgan, and Lynwood Lewis. Staff also consulted with DEQ and the Office of Attorney General. Through this iterative process, VDH proposed several changes to the proposed regulations. On June 9, 2011, the Board adopted the *AOSS Regulations* as drafted. The AOSS Regulations were approved for final adoption in October 2011.

Since the original legislation was proposed in 2007 to provide professional engineers greater leeway in designing onsite sewage systems, VDH has worked to formulate the right balance between protecting public health and adhering to the statutory spirit of *Va. Code* § 32.1-163.6. VDH first implemented a policy to address applications submitted by engineers given the technical complexity of the systems as designed and the sensitive environments where those systems were placed. Emergency regulations followed as the *SHDR* coupled with department policy proved inadequate at regulating the rapidly developing AOSS scheme. As mentioned above, the *Emergency Regulations* expired October 2011 and the *AOSS Regulations* fill that void, as well as build upon and improve VDH's management of the onsite sewage program in the Commonwealth.

Other bills approved in 2009 that impacted the onsite sewage program included HB1681, HB 2188, HB 2646, HB 2270, and SB 1128. HB1681 required VDH to accept site plans without survey plats for well permits and stated the owner was responsible for ensuring any well constructed was on the correct property. HB 2188 required VDH to establish procedures for accepting applications without a survey plat of property. VDH implemented this legislation through development of GMP #152. SB 1509 clarified the Board of Health may set nitrogen-reducing performance requirements for AOSS to protect public health and ground and surface water quality.

HB 2646 was a follow-up to 2008's HB 1408 which dealt with finding new and alternative funding sources for owners with failing or substandard onsite sewage systems. HB 2646 amended *Va. Code* §§ 32.1-163 and 166.6 and created *Va. Code* § 32.1-164.1:2 requiring the Board to establish a betterment loan eligibility program to assist owners with the repair, replacement, or upgrade of failing or noncompliant onsite sewage systems. Owners could receive a betterment loan to upgrade an onsite or alternative discharging sewage system that was not failing provided such upgrade was for the purpose of reducing threats to public health and ground and surface waters, including the reduction of nitrogen discharges. As with the 2008 legislation, betterment loans are private loans and no source of funding was provided. VDH implemented the legislation through GMP #148.

In the wake of the betterment loan legislation VDH received numerous inquiries from owners with failing and substandard onsite sewage systems. Unfortunately, private lenders have not demonstrated sustained interest in the program and to date owners have not had access to betterment loans. VDH has not issued any eligibility letters at this time. The legislation identified a significant need for funding sources to assist

private property owners who were experiencing sewage system malfunctions and seeking such sources remains a priority with the agency.

HB 2270 and SB 1128 affected private wells. HB 2270 required the Board to adopt regulations establishing minimum storage capacity and yield requirements for all private wells for only residential drinking water wells and requires the well driller to certify the requirements are met. VDH worked with stakeholders to develop fast track regulations that were combined with requirements of SB 1128 , which required the issuance of an express geothermal permit. The express geothermal permit must be taken by a properly licensed contractor who provides a registration statement to VDH prior to construction. The registration statement must accurately identify the property location and construction of the geothermal heating system, contact information for the contractor, a detailed site plan (drawn to scale) and any sources of contamination. VDH can only charge a single application fee for any geothermal well system and the fee would be as required in the *Private Well Regulations*. The Board adopted the amendments to the *Private Well Regulations* in the fall of 2009 and they are under executive branch review at this time.

2010

Two bills approved in 2010 changed implementation of the onsite sewage and water programs- HB 552 and HB 667.

HB 552 amended *Va. Code* § 15.2-2307, which addresses vested property rights. The amended code section became effective on July 1, 2010, and as a result, local health departments cannot deny issuance of construction permits in specific circumstances based upon more restrictive local ordinances. Previously, some applications to replace existing on-site sewage systems which complied with applicable state regulations were denied because they failed to meet the requirements found in more stringent local ordinances. Health department personnel often enforce ordinances specific to localities. Given the geographic variability of Virginia, this is certainly understandable. However, with the amendments to Va. Code § 15.2-2307, local health departments can no longer consider those ordinances when reviewing a permit application to replace an existing onsite sewage system. The newly adopted language did not impact the Board's or VDH's authority. Regulations promulgated by the Board continue to direct application review processes.

HB 667 amended Va. Code § 55-519 dealing with real estate disclosures. The legislation added a seller's representation to a prospective purchaser of residential property stating that the owner makes no representations with respect to the presence of any wastewater system, including the type or size thereof or associated maintenance responsibilities related thereto, located on the property and purchasers are advised to exercise whatever due diligence they deem necessary to determine the presence of any wastewater system on the property, in accordance with terms and conditions as may be contained in the real estate purchase contract, but in any event, prior to settlement pursuant to that contract.

2011

The 2011 General Assembly session enacted HB 1626, which allowed the owner of an onsite or alternative discharging sewage system that is not failing to obtain a construction permit to improve the system in the same manner as a failing system, provided such upgrade is for the purposes of reducing threats to the public health, or to ground and surface waters, including the reduction of nitrogen discharges. If the Board's regulations require an owner to provide pressure dosing, or treatment beyond what was required by the original permit, the owner may obtain a waiver from those requirements. Once obtained, the waiver can be transferred to future owners, provided the upgraded system does not fail. The bill contains an emergency clause that made it effective upon passage.

HB 1626 addressed a problem typically encountered by owners trying to sell a home served by a conventional onsite sewage system. When a private contractor declares a system to be unserviceable, the owner can only obtain a construction permit to if the system is failing, or if site and soil conditions meet current requirements. In many cases neither of these is true. The bill allows VDH to issue a non-conforming permit to an owner by applying the Board's rules governing failing systems. This provision allows an owner the option to replace his system with one of similar construction, without having to incur additional expenses necessitated by compliance with current regulatory requirements. VDH implemented this legislation through GMP #155.

HB 1734 required licensing of soil scientists, many of whom work in the onsite sewage program. The bill modified § 54.1-2205 to say that no person shall engage in, or offer to engage in, the practice of soil evaluation in the Commonwealth unless that person has been licensed under the provisions of the chapter. Persons licensed by another board, such as OSEs, were excluded.

SB 1427, SB 1056, and an addendum inserted in the Appropriation Act concerned reducing nutrients in sewage discharges by encouraging reclamation and reuse of treated wastewater. A report and recommendations are being developed through a stakeholder process led by the Department of Environmental Quality.

HB 2185, which was not approved, would have required VDH to establish procedures for requiring every application for an onsite sewage system permit, certification letter and alternative discharging system to include a site and soil evaluation report from an OSE or a professional engineer working in consultation with a licensed OSE. VDH would have been required to perform a field check of the private sector work as necessary to protect public health and/or the integrity of the Commonwealth's environment. VDH would have also been allowed to provide services without private input if the applicant's income fell below the federal poverty guidelines.

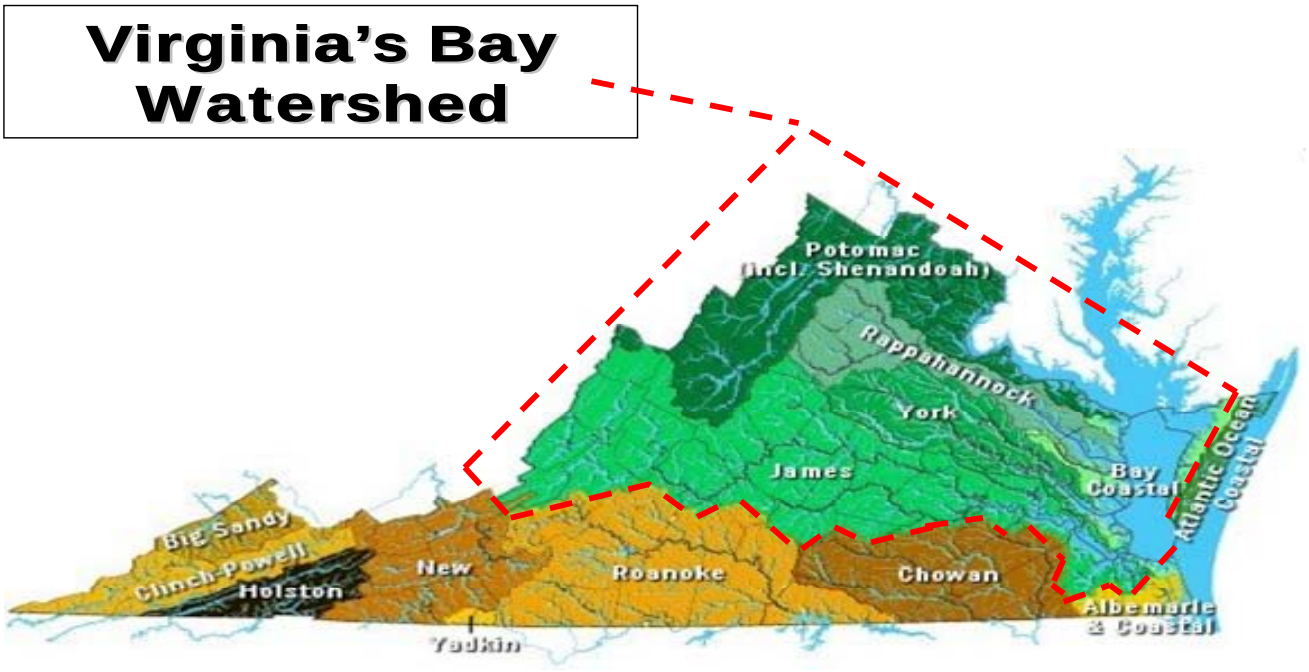
HB 2185 was assigned to the Committee on Health Welfare and Institutions (HWI). All parties agreed that VDH should engage in a stakeholder process to make

recommendations to HWI before the 2012 General Assembly session. VDH will complete its study in the coming months and submit its recommendations following a review of data and working with stakeholders to understand needs of the program.

WATERSHED IMPLEMENTATION PLAN/CHESAPEAKE BAY RESTORATION

Onsite sewage systems contribute nitrogen to ground water typically in the oxidized form, NO_3^- (nitrate). Nitrogen in raw wastewater exists primarily as ammonia or ammonium at a concentration of about 40 mg/l. Through aerobic biological processes (nitrifying bacteria) ammonia and ammonium ions are oxidized to nitrate. Some nitrogen escapes as gas through another biological process called denitrification through fluctuating aerobic and anaerobic environments.

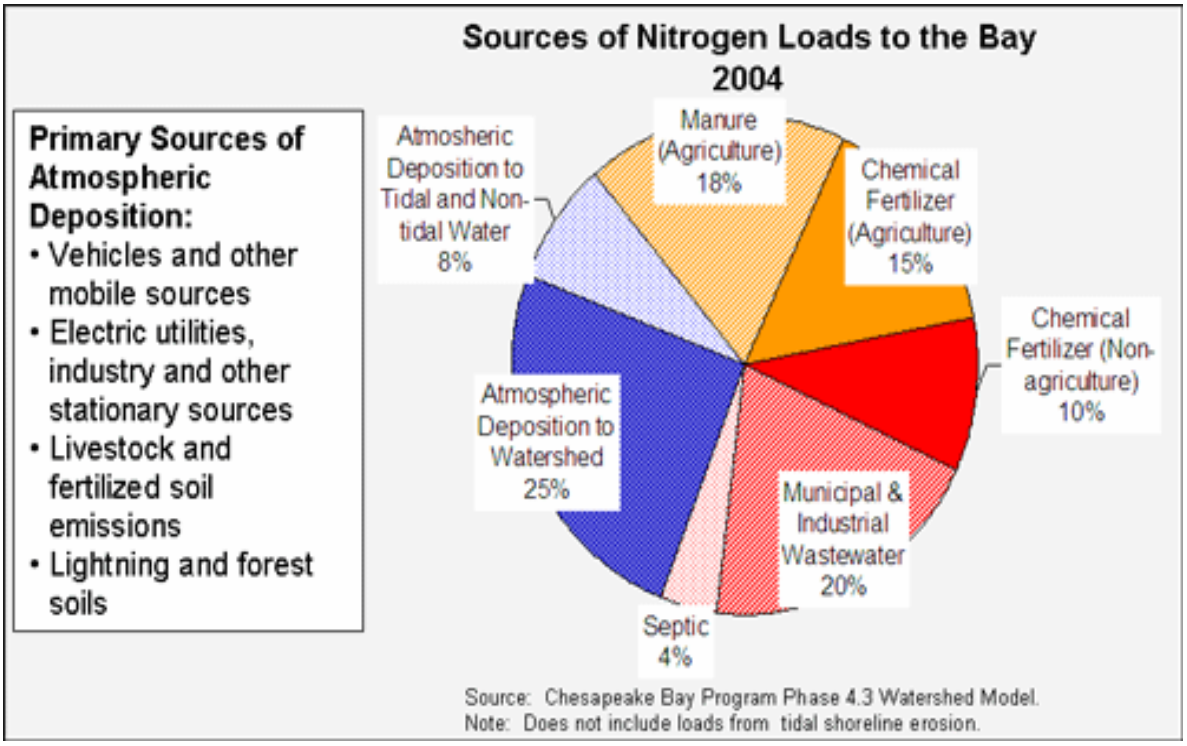
A properly functioning conventional onsite sewage system (septic system) achieves nearly perfect conversion of ammonia and ammonium to nitrate in the unsaturated soil environment. Nitrate is highly soluble in water and unless captured by plants or denitrified by other bacteria, it leaches from onsite sewage systems into ground water. The EPA's Bay Program Model assumes that 40 percent of the nitrogen from each onsite sewage system flows via ground water into nearby surface waters and then to the Bay. VDH does not believe the model has been verified through real-world testing and only represents the best approximation of many experts and stakeholders.



Onsite sewage systems are a source sector of nitrogen pollution in the Bay. According to the Chesapeake Bay Program, onsite sewage systems contribute about four percent (4%) of the total nitrogen loading to the Bay each year. The Bay Program estimates there are approximately 536,000 onsite sewage systems in the Virginia

portion of the Bay watershed, contributing approximately 2.9 million pounds of nitrogen pollution to the Bay each year. According to the Bay Program, nitrogen from onsite sewage systems is steadily increasing, whereas loads from most other source sectors, such as sewage treatment plants are decreasing. The Bay TMDL will address nitrogen and phosphorus as well as sediment, however only the nitrogen portion will affect onsite sewage systems in Virginia. For most onsite sewage systems, phosphorus is retained in the soil through chemical reactions on the surfaces of iron, aluminum, and calcium minerals and phosphorus is not considered a significant pollutant.

U.S. EPA is establishing a federal TMDL (Total Maximum Daily Load) for the tidal segments of the Chesapeake Bay and its tidal tributaries and embayments that are listed as impaired under Section 303(d) of the Clean Water Act due to excess nutrients and sediment. Sources that deliver pollutant loads to segments listed as impaired will also be affected by the federal TMDL. The TMDL will satisfy the requirements of both the 1999 and 2000 Virginia and District of Columbia consent decrees which required EPA to establish the Bay TMDL by December 2010. Additionally, President Obama issued *Executive Order 13508: Chesapeake Bay Protection and Restoration* which creates a new accountability framework to guide local, state, and federal water quality restoration efforts.



The TMDL process will require the states and D.C. to reduce nitrogen, phosphorus and sediment pollution from current levels while taking into account all future growth. The current projection for the 2025 implementation target for nitrogen shows an 18 percent reduction from 2008 levels from all sources. Section 7 of the

Watershed Implementation Plan (WIP Phase I) addressed the Onsite Sewage Sector. The WIP looks at current programs and capacity; how to account for growth; what gaps remain in attaining the target nitrogen loads based on current programs and capacities; proposals to address those gaps; and tracking and reporting protocols. In other words it evaluates what can be done with existing authorities and suggests what could be done with new authorities.

The Code of Virginia provides VDH with limited ability to control nitrogen from onsite systems. Va. Code § 32.1-164.B.15, implemented by SB 1509 from the 2009 General Assembly session, allows VDH to set performance requirements for nitrogen discharged from alternative onsite sewage systems; § 32.1-164.H allows VDH to establish an operation and maintenance program for alternative onsite systems; § 32.1-164.J allows VDH to establish civil penalties for violations not corrected within 30 days. These Code sections allow VDH to set and enforce nitrogen standards for AOSS and to require operation and maintenance for them. These same authorities do not extend to conventional septic tank and gravity drainfield systems.

VDH estimates 11,250 onsite systems are installed in the Chesapeake Bay watershed each year. About 10 percent of new applications are for AOSS. An unknown factor is how the presence of a nutrient cap for discharging systems in the Bay watershed would affect the number of onsite applications. VDH is beginning to see large onsite systems proposed in the Chesapeake Bay watershed as replacements for existing discharging systems. This trend may continue, or increase, as more discharging system owners experience difficulties obtaining offsets or allocations for nutrient loads.

The EPA TMDL model is based on gross assumptions for the onsite sector and assumes 25 percent of the population is served by onsite systems and that all of those systems are conventional. The model also assumes that each of these systems adds 40 percent of its nitrogen to the nearest stream. EPA only recognizes three Best Management Practices (BMPs) for nitrogen reduction in the Bay model for the onsite sector: (1) connections to sewer (100% nitrogen removal); (2) septic tank pump-outs (5% nitrogen removal); and (3) de-nitrification systems (50%).

To control nitrogen from all onsite systems in the Bay watershed, including conventional systems, the Board would need authority to set nitrogen limits for conventional onsite sewage systems. However, controlling nitrogen from newly installed onsite systems will only slow growth of the onsite sector‘s nitrogen contribution; it will not achieve a reduction in overall nitrogen from the onsite sewage sector. Only retrofitting existing onsite sewage systems will result in an actual decrease in nitrogen, according to EPA’s model.

On properties where a conventional system is located, adding nitrogen reducing technology to the conventional system could cost $5,000 to as much as $25,000 depending on a number of factors such as site and soil conditions, design expenses, and contractor knowledge. In contrast, adding nutrient removal technology to an AOSS

would likely cost $500 to $3,500 depending on those same factors. VDH expects strong opposition to any effort to achieve significant reductions in nitrogen pollution from onsite sewage systems because of current economic conditions and the potential economic impacts for existing property owners of conventional sewage systems. For this, and other reasons, the WIP for onsite sewage systems suggests that the Nutrient Credit Exchange may offer opportunities to offset nitrogen loads from onsite sewage systems, both existing systems and new construction.

Given the relatively small reductions potentially available and the high per unit cost associated with those reductions, VDH believes that onsite sewage systems as a source sector would provide a high-cost, low benefit option for achieving the Bay TMDL goals. It would seem more appropriate to seek the necessary reductions from other source sectors such agriculture and urban runoff where unit costs may be lower or where grants and other assistance are currently available. Presently, individual homeowners cannot access funds and grants that reduce pollution to the Bay. At the very least, VDH believes the TMDL and WIP processes must include an evaluation of the unit costs of nitrogen reduction across source sectors. Without real-world verification of the Bay Program's model with respect to onsite sewage systems, policy makers cannot make informed decisions about the cost benefit of requiring nitrogen reducing technology for all onsite sewage systems.

Nitrogen is more easily controlled in community systems and a mechanism to encourage or require community systems would result in additional reductions to the Bay. Access to the Nutrient Credit Exchange Program to allow offsets to be procured for septic loads from other sectors would provide local flexibility to use the most cost effective nutrient reduction method. Expansion of the septic tank pump-out requirement from the Chesapeake Bay Preservation Act area to the entire Chesapeake Bay watershed would also achieve additional, immediately measurable reductions.

HEALTH EQUITY INITIATIVE TO PROVIDE WATER AND SEWER TO COMMUNITIES IN NEED

The Office of Minority Health and Health Equity (OMHHE), the Office of Environmental Health Services (OEHS), and the Office of Drinking Water (ODW) and local health departments will be collaborating and promoting environmental health equity through access to safe drinking water and effective sewage treatment and disposal for at-risk communities that normally do not benefit from grants, loans, and other resources. Health equity is defined as achieving the highest level of health for all people with a particular focus on communities that have experienced socioeconomic disadvantage and historic injustice. Improving access to clean water and effective sanitation is a prerequisite to good health, quality housing, economic development, self-sufficiency, environmental protection, and the ability of the Commonwealth to benefit from the full potential of all of its residents.

The innovative collaboration will include several phases: community assessment and prioritization, community engagement and empowerment, and funding and implementation. An informal survey of district health departments conducted in July 2011 produced over 150 communities that might fit the target criteria of this initiative. VDH is currently selecting one to three communities for a pilot project. The pilot project will be used to identify, develop and refine resources, tools and techniques that can be adapted and applied to other communities and perhaps other environmental health issues in the Commonwealth.

An initial pilot community will be identified in which to promote environmental health equity and refine the methodology for subsequent program development and expansion. New data will be developed and existing data will be used in new and innovative ways. Data will be integrated into a GIS system to proactively identify high priority target areas for environmental health, social, economic, and public health promotion.

Once communities are identified, the VDH offices and respective local health departments will collaborate to engage all relevant partners, including local government; local planning district commissions; local, state, and federal agencies that provide related financial resources; businesses; environmental advocacy organizations, and disadvantaged residents and their advocates. A particular focus will be on identifying and engaging residents of the affected community, their social networks, and advocates. These partners could include faith communities, non-profits, advocacy groups, etc. The goal is to build capacity in this segment of the community to assure they can participate equally in determining the priority health issues, the steps that will be taken, and the resources acquired to address those issues. Further, this diverse group of stakeholders will be convened to strengthen an application for funding to address water and sewage issues, and to assure that the needs of residents and neighborhoods in greatest need of such services are satisfactorily addressed in the application and resulting project(s). There will also be efforts to build skills in grant writing, advocacy, etc. as necessary. As necessary, assistance will be provided to help

the pilot community identify potential resources and write grants.

FUNDING SOURCES AND FEES:

The Virginia Department of Health's (VDH) onsite sewage and water supply program offers many services, including:

- plan reviews for local governments
- courtesy reviews of private sector work
- engineering plan reviews
- inspections of wells and sewage systems
- site and soil evaluations
- sanitary surveys for well and sewage system installations
- designs of conventional onsite sewage systems
- complaint investigations
- proprietary product reviews
- repair evaluations and designs
- review of existing sewage systems
- quality assurance of private sector service providers
- voluntary upgrade evaluations
- review of existing sewage systems

Three primary funding sources support the onsite sewage and water supply program: the general fund, local matching funds, and permitting fees. VDH does not charge for many of the above services but customers do pay for VDH's work to process two types of applications: applications to construct an onsite sewage system and applications to construct a private water supply.

Prior to 2002, VDH charged $75 to process onsite sewage applications and $40 to process water supply applications. From 2002 through 2007, VDH charged $112.50 and $77.50 respectively for these services. During the 2008 Virginia General Assembly session, VDH was prompted to examine its costs for processing the two types of applications. VDH calculated its costs and suggested new fees to reflect its costs. New fees, shown in the following table, were contained in the 2008 Appropriation Act.

Fees Set in 2008

Service	Fee
Application to construct onsite sewage system (less than 1,000 gpd):	
A. with supporting AOSE/PE work	$200
B. without supporting AOSE/PE work	$355
Application to construct private water supply:	$205
Application for certification letter (less than 1,000 gpd):	
A. with supporting AOSE/PE work	$200
B. without supporting AOSE/PE work	$300
Application for certification letter (greater than 1,000 gpd):*	$1,075
Application to construct onsite sewage system (greater than 1,000 gpd):*	$1,075
Application to construct single family alternative discharging system:	
A. with supporting AOSE/PE work	$355
B. without supporting AOSE/PE work	$200

The above fees remained effective until 2010. During the 2010 Virginia General Assembly session, VDH was prompted to examine its costs for processing applications to replace general funds once again. VDH calculated its costs and suggested new fees to reflect its cost of service. The new fees, shown in the table below, were contained in the 2010 Appropriations Act.

Fees Set in 2010

Service	Fee
Construction permit with no supporting PE/OSE work (“Bare application”)	
System ≤ 1,000 GPD	$425.00
System > 1,000 GPD	$1,400.00
Construction permit with supporting PE/OSE work included	
System ≤ 1,000 GPD	$225.00
System > 1,000 GPD	$1,400.00
Certification letter with no supporting PE/OSE work (“Bare application”)	
System ≤ 1,000 GPD	$350.00
System > 1,000 GPD	$1,400.00
Certification letter with supporting PE/OSE work included	
System ≤ 1,000 GPD	$320.00
System > 1,000 GPD	$1,400.00
Private well	$300.00

Customers continue to receive non-fee services from VDH, including the following:

- processing applications to repair wells
- processing applications to repair onsite sewage systems
- processing applications when the customer's income is below federal poverty guidelines
- investigating complaints and public health issues (i.e., rabies investigations)
- providing courtesy reviews for private sector Authorized Onsite Soil Evaluators
- providing routine and follow-up construction inspections
- scheduling requests for preliminary engineering review

Some local governments charge an additional fee for onsite sewage and water supply applications to support local programs and needs.

WELDON COOPER STUDY

In spring 2009 VDH contracted with the Center for Survey Research (CSR) at the University of Virginia to design and conduct a survey of Virginia residents regarding proposed emergency regulations for AOSS. The survey was conducted by telephone from October 9, 2009 through January 22, 2010. Preliminary results on the first 359 completed interviews were shared with VDH prior to the close of the public comment period on the emergency regulations in October 2009. The survey can be read at http://www.vdh.virginia.gov/EnvironmentalHealth/Onsite/newsofinterest/index.htm.

The survey sample was designed to represent a wide variety of local conditions and provide statewide and regional level data. The survey covered twenty counties with at least three counties being selected in each of the five VDH planning regions. The sample was based on the statewide VENIS database with locally maintained lists used where needed. There were 671 completed interviews from 1,752 households contacted and the results were interesting. Most of the owners had sewage systems that were five years or younger, which meant the findings of the survey could not be extrapolated to older, or longer-used sewage systems. The relatively young nature of the systems was not surprising since VDH's VENIS database is relatively new and AOSS ownership started to spike in recent years. VDH used this survey in developing the *Emergency Regulations* for AOSS.

The survey found there was strong support for requiring inspections of AOSS although this support was weaker among those who owned an AOSS. There was also clear support for a new state law requiring a home seller to give the new buyer a document that describes the function and condition of the property's AOSS. There was strong opposition to requiring maintenance contracts. Satisfaction and reliability ratings for AOSS were very high. Thirty percent (30%) of those with AOSS and eighteen percent (18%) of those with conventional systems reported having problems at some time in the past with their current systems. Ten percent (10%) of those who said routine maintenance is done on their system reported it had ever failed. In contrast, eighteen percent (18%) failed among those who reacted only when problems occurred.

The survey indicated half to three-quarters (50-75%) of respondents reported they were relatively knowledgeable about and engaged in the inspection of their onsite sewage systems. Those who engaged in preventive maintenance were more familiar with pumping, inspecting, media/air blowers, and testing for onsite sewage systems. Those who performed preventative maintenance were also more likely to have had their system properly maintained in the last five years. The study identified the importance for O&M and found that increasing the proportion of owners who take on a proactive preventative maintenance philosophy could reduce problems and failures of onsite sewage systems.

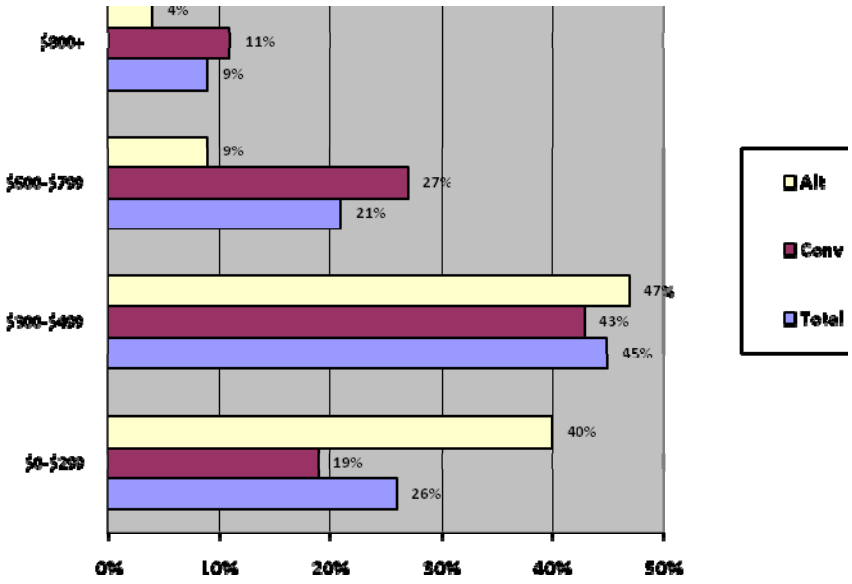
Eleven to thirteen percent (11-13%) of respondents with each type of system reported past failures with their current systems, which meant there was no noticeable

difference in the apparent function of conventional systems compared to AOSS. O&M appeared to have the most effect preventing alarms, problems, and other issues in newer systems rather than preventing failures. VDH anticipates the failure rate of older systems will rise the longer O&M is delayed. For younger sewage systems, respondents expressed a very high degree of satisfaction for all types of onsite sewage systems, including AOSS.

The most frequently mentioned sources of information for owners of sewage systems were private sector professionals and contractors (33% of respondents said they got "a lot" of their information here), with local and state health departments (17%) and friends, family and neighbors (17%) next. This result meant that VDH needs to do a better job of educating and empowering the public on how their sewage systems protect public health and groundwater supplies. Increasing knowledge would likely result in higher rates of voluntary compliance with the operational and maintenance needs of their sewage systems.

Respondents reported they felt a reasonable annual contract to perform O&M and inspections on their AOSS should be no more than $300.00 per year. Respondents also reported that any inspection of their sewage system should not be more than $100.00. Fifty-six percent (56%) of respondents with maintenance contracts believed their O&M service was either "somewhat expensive" or "very expensive." The table below describes what respondents with maintenance contracts were actually paying for O&M services. Costs depended on the type of system being maintained.

Survey Respondent Findings: Cost of O&M



The 269 respondents who supported required inspections for AOSS at a fixed interval were asked what time interval they supported. Most supported intervals of two to four years (34.4%) or five years (33.3%). Others supported intervals of six to ten years (11.6%), once a year (11.9%) or every six months (1.4%). Some (7.4%) volunteered other time intervals keyed to the manufacturer's recommendations or the specific system type. Respondents who supported required inspections were asked how long after their first use did they think the first inspection should be. The plurality (40.4%) said twelve months, fewer said six months (14.7%) or ninety days (13.9%), and about one-fifth (21.5%) volunteered another interval. When asked whether owners should be required to inspect their system, the following results were found:

Should people be required by law to have their alternative sewage system inspected?	AOSS Owner	Conventional Owner	Total
Yes	56.7%	70.8%	69.0%
No	43.3%	29.2%	31.0%

The survey found a greater percentage (18.1%) of respondents on the smallest lots—those less than 1-acre in size—had reported a past failure of their current system compared to medium-sized lots (8.8%)—those one to three acres in size--or the largest lots (11.5%)—those greater than three acres in size. This information suggests that there is a higher risk of installing a sewage system on a smaller lot, perhaps because the house, well, underground utilities, driveway and other lot features are more closely connected and could interrupt the function of the sewage system. Interestingly, respondents on the smallest lots were more likely to say their maintenance philosophy was to make sure that routine or preventive maintenance got done (84.4% said so) compared to respondents on lots of one to three acres (78.8%) or lots of more than three acres (69.2%).

Respondents in the Northern Virginia and Central regions tended to have had less involvement in the design and installation of their systems. They were more proactive with system maintenance and had a greater awareness for using their systems. They were also slightly more likely to have reported problems with their sewage system in the past. As a result, respondents in these regions had a somewhat lower satisfaction and reliability rating for their systems.

Respondents in the Northwest and Southwest regions of the state were less supportive of regulations or law requiring a home seller to give the new buyer a document that describes the function and condition of the property's AOSS. These groups were also less likely to say that pumping solids was an important maintenance need.

Quality Assurance Committee Summary

Early in 2006 State Health Commissioner Robert B. Stroube, M.D., M.P.H. directed OEHS to work with local health districts to develop a Quality Assurance (QA) Program for the onsite sewage program. OEHS created a committee to identify measurable standards for internal processes associated with the onsite sewage program, which would raise overall quality. The Committee was comprised of a cross-section of district staff from diverse disciplines and all regions of the state to obtain a broad spectrum of viewpoints. This structure enabled the committee to address issues from different perspectives and create corrective processes appropriate for statewide implementation.

Best practices were developed for processes within the onsite sewage program to reduce errors and inconsistencies among staff. The Committee's goal was to develop a readable map providing guidance for staff through the various permitting processes.

The committee focused on the following business processes: bare applications for permits and certification letters; Authorized Onsite Soil Evaluator (AOSE) applications; inspection and approval of sewage systems; and subdivision review and approval. The processes have individual action steps illustrated by flow charts. An accompanying narrative describes the process. The narrative includes the responsible party for each step, the purpose and required resources, the customer's requirements, along with applicable standards and measures.

The vision of the Committee was to combine the flow charts and narrative to create an implementation manual. As developed, the Procedures Manual identifies measurable standards for four major internal processes as mentioned above - Bare Applications, AOSE Applications, Inspection and Approval of Installations, and Subdivision Review. VHD expectations are that the agency needs a common tool for assessing the quality of the basic elements of the onsite program. The committee identified best practices believed to reduce errors and inconsistencies, and promote a quality program. In addition, the Procedures manual also provides a framework for collecting meaningful data on the quality of VDH services in the onsite sewage program. Following the action steps as shown in the flow charts and narratives for the individual processes reduced errors and inconsistencies and continuously promotes a quality program.

Implementing the QA program at the district and local level involved making sure local procedures aligned with the processes outlined in the document. Additionally, all staff was made aware of and recognized the standards and measures used to monitor the processes. Using data from the process measurements to "manage by fact" helped districts to manage service quality and continues to do so while incrementally improving processes across the service spectrum.

Collaboration with Private Sector Service Providers

Site and soil evaluations, septic system design, sanitary surveys for wells, and inspection services are all time consuming work and becoming more complicated as technological improvements continue. With the adoption of Va. Code § 32.1-163.6, more complexity in the program will continue as engineered sewage systems become more prevalent across the Commonwealth. With this complexity and no new input of resources to VDH, the agency must rely increasingly on private sector service providers to oversee and manage the onsite sewage program.

As reported in the previous 5-year report, The Council on Virginia's Future provided funding for VDH to review its business model and provide recommendations on how best to provide citizens with direct services such as a site and soil evaluations, sanitary surveys, and designs for onsite sewage systems and wells. E.L. Hamm & Associates performed an extensive review of VDH's business process in 2006 and ultimately recommended that VDH focus on the 10 Essential Services for Environmental Public Health rather than direct service delivery. E.L. Hamm's study can be viewed at www.vdh.virginia.gov/EnvironmentalHealth/Onsite/newsofinterest/index.htm

HB 2185 from the 2011 General Assembly session engaged VDH in another review of its business process with respect to direct service delivery. HB 2185 would have established procedures for requiring every application for an onsite sewage system permit, certification letter and alternative discharging system to include a site and soil evaluation report from a private sector service provider. VDH would have been required to perform a field check of the private sector work as necessary to protect public health and the integrity of the Commonwealth's environment. VDH would have also been allowed/required to provide services without private input if the applicant's income fell below the federal poverty guidelines.

HB 2185 was assigned to the Committee on Health Welfare and Institutions (HWI) and all parties agreed that VDH should engage in a stakeholder process to make recommendations to HWI before the 2012 General Assembly session. VDH will complete its study in the coming months and submit its recommendations following a review of data and working with stakeholders to understand needs of the program.

Local health departments continue to provide important direct services to the public, especially with respect to failing onsite sewage systems and review of existing systems. In addition, many citizens and communities depend on their local health departments for plan review, unbiased public health advice, interpreting VDH regulation and policy, providing programmatic awareness of the sewage system program, educating communities on public health impacts from wells and sewage systems, and communicating values and priorities for environmental public health. Private sector service providers also depend on VDH for these services and sometimes direct service delivery is a joint effort, especially with respect to repairing failing sewage systems.

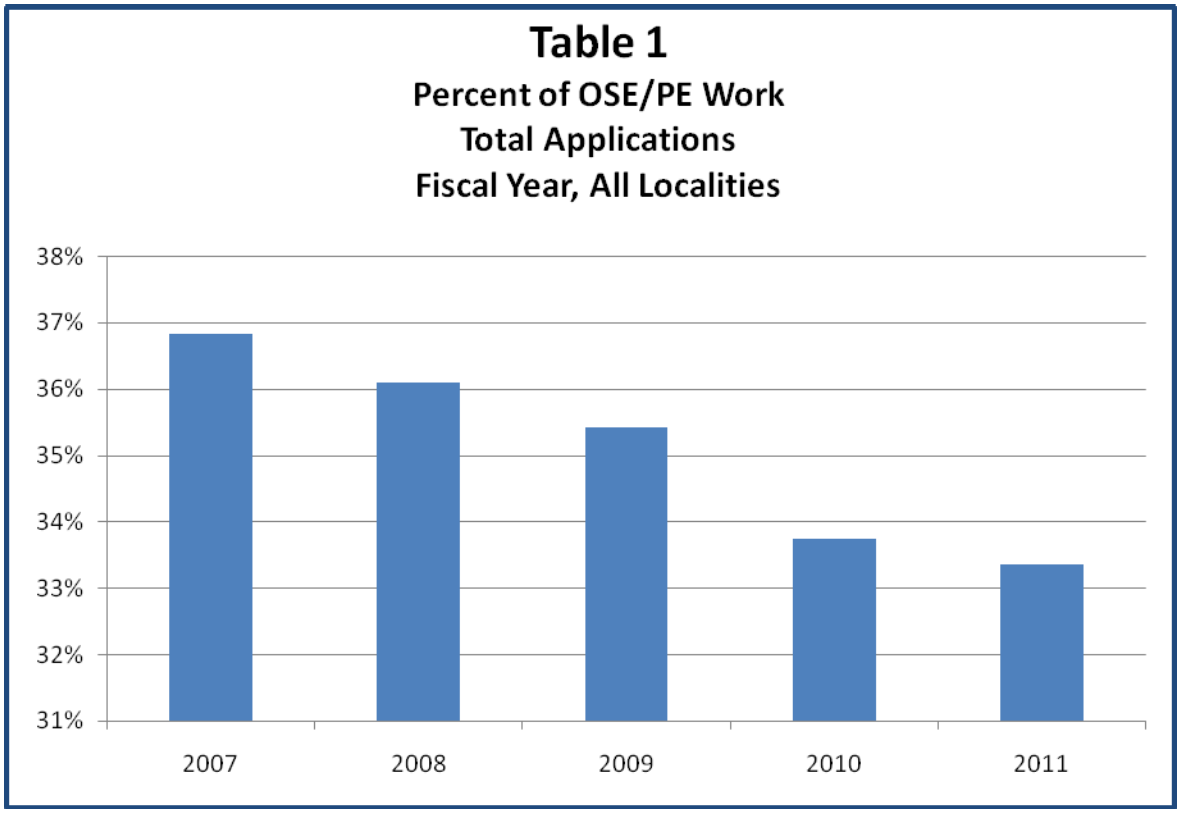
The overall percentage of private sector service delivery for all types of service categories has been declining over the past five years. This is because private sector service providers have historically concentrated their services in more lucrative areas; namely new development for subdivisions and new housing development. Both of these services have seen dramatic declines over the past five years as building applications have fallen in the slow economy. Table 1 below shows the decline in the percentage of private sector inputs in total applications; Table 2 shows how the private sector is continuing to do a greater percentage of work in the more lucrative service sectors for new development.

Another important consideration is to understand the significant variability of private sector input across the Commonwealth. The northern and eastern regions of the Commonwealth have a high percentage of private sector input while southwestern Virginia has an extraordinarily low percentage. The majority of private sector providers live in the northern and eastern regions of the Commonwealth. As one progresses to more rural communities, greater amounts of time and resources are needed as compared to more densely populated areas. More densely populated areas tend to have higher land values and smaller lot sizes, both of which tend to increase the likelihood for AOSS and higher-profit proprietary products. Generally, private consultants can perform more work per day, at a higher margin, in more densely populated regions.

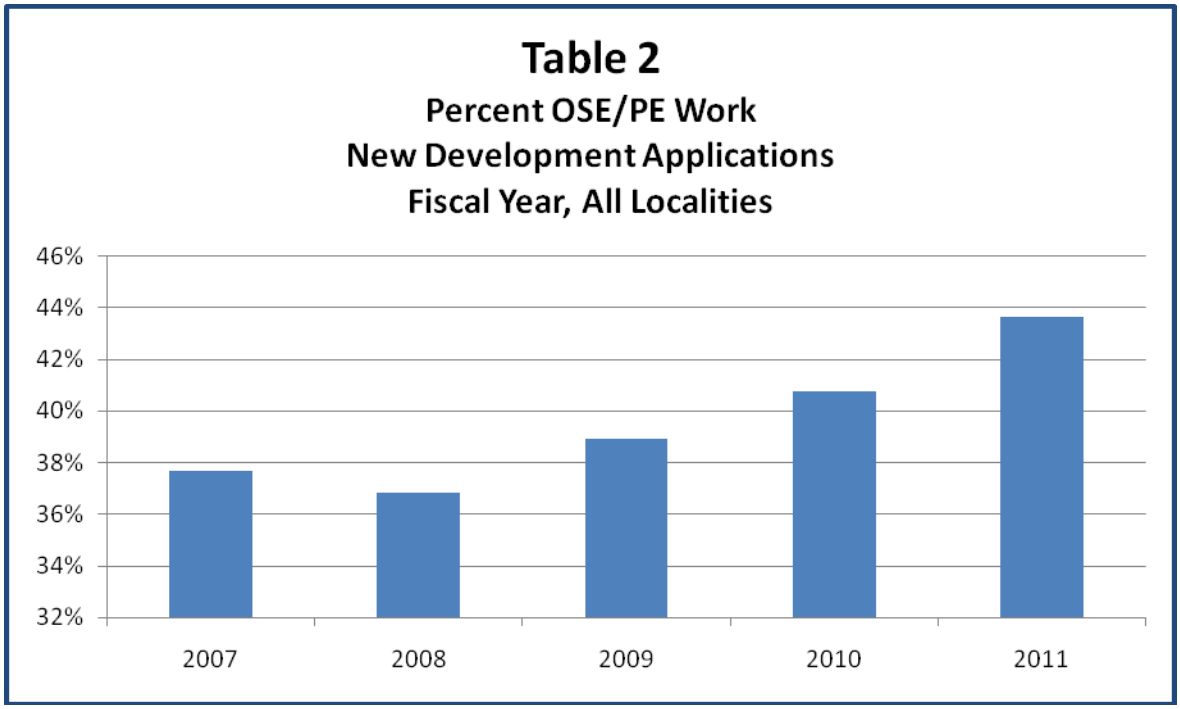
Responding to failing sewage systems is a time-critical need. Often, the initial response is by the local health department; considerable amounts of time and resources are expended working with the owner to identify solutions. In cases of failing onsite sewage systems, VDH has an expectation for staff to respond to a customer's needs within 24 hours. This may not be possible or practical for those working in the private sector. Following the local health department's initial review and evaluation, staff sometimes recommend the owner contact a service provider in the private sector because the necessary design will require additional consulting to choose among various proprietary products and services. VDH staff does not recommend or choose specific products because VDH reviews those products and there would be an inherent conflict of interest in picking products for use which are also evaluated by staff for listing.

Most owners do not choose private sector involvement initially for repairs because of the extensive amount of work required, the need for a quick response, and economic reasons (i.e. inability to pay for services). As a result, private sector input for repairing failing sewage systems has consistently been between 10 and 16 percent over the past five years. VDH does not charge for its services with respect to failing sewage systems because it wants to expedite repairs in order to reduce threats to public health and the environment and to encourage owners to come forward to repair their systems. Failing sewage systems pose numerous risks to public health and groundwater supplies so any increase in private sector input must be timely.

Tables: Percent of OSE/PE Work



Source: VDH Environmental Information System (VENIS)



Source: VENIS

Septage Disposal

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 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 were pumped on a five-year cycle, approximately 205 million gallons of septage would be generated annually.. VDH has not received reports of chronic shortages of septage disposal capacity; however, local sewage treatment plants periodically refuse to accept septage causing intermittent, localized problems.

An emerging issue deals with the disposal of spent media that is used in the treatment of wastewater for an AOSS (peat, fabric, styrofoam pellets, etc.). In January 2008, VDH provided guidance to deal with the disposal of peat media (GMP #148). VDH continues to receive sporadic reports of owners having difficulty disposing of spent media from an AOSS.

DATA MANAGEMENT

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 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 used to generate individual permits and letters, decreasing the need for paper files. The primary benefit of the system, however, is 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 database was implemented in health departments across the state in late 2003. After implementation, a number of changes to the onsite sewage module were made in response to new program requirements and initiatives—for example, the need to track waivers granted to homeowners from the requirement to use alternative onsite sewage technologies to fully comply with the *SHDR*. Over time, it became clear that these "ad hoc" changes to the database structure had created problems with data integration. VDH and HealthSpace Integrated Solutions are currently working on a significant overhaul to the database that will improve data entry, better integrate the data collected, and enable more reliable and precise reporting from the system.

In the fall of 2010, VDH fully implemented a web-based reporting system for AOSS operation and maintenance reports, as required by *Va. Code* § 32.1-164. The system allows operators to enter their reports and pay the required report fee using a credit card. The reports are automatically distributed to the correct district health department database for review and follow up. VDH and HealthSpace have worked with two other software vendors to create a function that allows operators who choose to do so, to use separate proprietary software for their businesses but to periodically up-load data from those proprietary systems into the VDH database automatically. Operators submitted over 2,700 operation and maintenance reports to VDH by June 30, 2011 using the web-based reporting system either directly or through a third-party software system.

VDH continues to refine the database to better serve the Commonwealth. To piggy-back onto the success with the web-based operation and maintenance reports, VDH plans to create web-based reporting functions for other professionals, such as water well drillers who are required to submit reports to VDH. The agency desires to

allow citizens to submit applications for sewage disposal systems via the Internet. Both these efforts, if successful, would produce time and financial savings to customers and improve our data collection.

VDH is also committed to using the database to better share information with our external customers. The database contains extensive information that would be useful to homeowners, onsite sewage design professionals, and the real estate community, among others. VDH will explore creating functionality that will allow citizens to access information in the database via the Internet.

Fiscal Year 2007 (July 01, 2006 through June 30, 2007)

	All Applications							OSE/PE Applications			
	# Application	# Approval	# Admin Denial	# Site Denials	# Conditional	# Being Processed	# Other	# AOSE App	# AOSE Admin Denial	# AOSE Site Denial	# PE Plan
(not set)	5	5	0	0	2	0	0	0	0	0	0
Component Replacement Permit	175	169	0	2	10	0	4	6	0	0	2
Construction Permit	19636	15567	1164	958	768	426	1319	7401	170	256	1430
Courtesy Review	138	76	3	14	0	40	5	86	0	7	0
Expansion Permit	517	361	39	43	44	27	43	72	1	4	15
Legacy Documentation	38	17	0	1	0	5	0	0	0	0	0
Modification Permit	422	324	9	14	100	21	31	38	0	1	10
Multi-Lot Certification Letter	989	905	21	5	0	12	46	975	15	4	6
New	15	11	0	0	6	0	1	0	0	0	0
Repair Permit	3516	2543	197	155	78	164	383	417	5	11	94
Safe; adequate and proper evaluation	2068	1514	64	130	15	86	72	7	0	0	5
Sewage Disposal Discharge System	126	92	11	1	0	6	11	13	1	1	56
Single Lot Certification Letter	4918	3823	403	304	0	109	195	2933	136	92	58
Subdivision	58	24	10	4	0	20	0	50	8	2	9
Totals	***32621***	***25431***	***1921***	***1631***	***1023***	***916***	***2110***	***11998***	***336***	***378***	***1685***

Fiscal Year 2008 (July 01, 2007 through June 30, 2008)

	All Applications							AOSE/PE Applications			
	# Application	# Approval	# Admin Denial	# Site Denials	# Conditional	# Being Processed	# Other	# AOSE App	# AOSE Admin Denial	# AOSE Site Denial	# PE Plan
(not set)	1	1	0	0	1	0	0	0	0	0	0
Component Replacement Permit	282	245	5	2	2	0	25	8	2	0	1
Construction Permit	15678	12344	1093	734	670	353	929	5775	132	135	1244
Courtesy Review	161	30	3	4	0	120	4	78	0	1	0
Expansion Permit	522	399	28	27	48	13	49	97	2	1	32
Legacy Documentation	376	41	3	0	6	269	2	5	0	0	9
Modification Permit	496	375	10	13	94	25	32	66	1	1	16
Multi-Lot Certification Letter	547	535	5	2	0	2	3	536	5	2	2
New	10	9	0	0	2	0	0	0	0	0	0
Repair Permit	3151	2218	171	164	55	190	247	457	8	8	117
Safe; adequate and proper evaluation	2001	1420	82	142	22	73	55	4	0	0	1
Sewage Disposal Discharge System	115	80	10	5	0	5	7	12	0	0	34
Single Lot Certification Letter	3809	2797	277	308	1	178	119	2412	88	155	76
Subdivision	342	221	5	46	0	70	0	334	2	46	32
Totals	***27491***	***20715***	***1692***	***1447***	***901***	***1298***	***1472***	***9784***	***240***	***349***	***1564***

Fiscal Year 2009 (July 01, 2008 through June 30, 2009)

	# Application	# Approval	# Admin Denial	# Site Denials	# Conditional	# Being Processed	# Other		# AOSE App	# AOSE Admin Denial	# AOSE Site Denial	# PE Plan
(not set)	99	21	1	9	0	36	13		68	1	9	0
Component Replacement Permit	336	306	1	1	3	2	20		9	0	0	2
Construction Permit	8498	6944	522	384	413	148	402		3278	63	62	978
Courtesy Review	128	3	0	0	0	125	0		74	0	0	1
Expansion Permit	278	222	17	14	33	3	21		66	4	0	20
Legacy Documentation	151	35	0	1	1	64	0		0	0	0	1
Modification Permit	327	248	10	6	51	15	24		57	1	0	25
Multi-Lot Certification Letter	103	103	0	0	0	0	0		102	0	0	2
New	9	7	0	1	0	1	0		1	0	0	1
Repair Permit	3011	2268	152	141	68	147	184		430	8	5	114
Safe; adequate and proper evaluation	1688	1179	69	104	4	69	49		3	0	0	8
Sewage Disposal Discharge System	120	80	7	3	0	21	6		15	1	1	45
Single Lot Certification Letter	2503	1676	137	198	1	206	57		1794	62	126	30
Subdivision	256	196	11	4	0	39	5		252	11	3	9
Totals	***17507***	***13288***	***927***	***866***	***574***	***876***	***781***		***6149***	***151***	***206***	***1236***

Fiscal Year 2010 (July 01, 2009 through June 30, 2010)

	# Application	# Approval	# Admin Denial	# Site Denials	# Conditional	# Being Processed	# Other	# AOSE App	# AOSE Admin Denial	# AOSE Site Denial	# PE Plan
(not set)	48	5	0	6	0	13	1	25	0	6	0
Component Replacement Permit	335	304	1	3	3	4	13	13	0	0	4
Construction Permit	8513	7074	479	337	391	213	251	3466	57	63	1093
Courtesy Review	74	0	0	0	0	74	0	50	0	0	0
Expansion Permit	261	209	12	15	28	9	15	72	1	3	20
Legacy Documentation	141	70	1	0	0	6	1	1	0	0	13
Modification Permit	300	237	13	7	53	17	4	60	3	1	32
Multi-Lot Certification Letter	54	53	0	1	0	0	0	54	0	1	2
New	9	9	0	0	0	0	0	0	0	0	0
Repair Permit	3075	2309	145	134	64	182	191	555	15	22	152
Safe; adequate and proper evaluation	1631	1121	52	104	9	83	24	8	0	1	9
Sewage Disposal Discharge System	72	38	9	2	0	13	1	11	2	0	28
Single Lot Certification Letter	1633	1254	113	74	1	99	49	999	28	20	35
Subdivision	158	120	7	0	0	29	1	151	6	0	13
Totals	***16304***	***12803***	***832***	***683***	***549***	***742***	***551***	***5465***	***112***	***117***	***1401***

Fiscal Year 2011 (July 01, 2010 through June 30, 2011)

	# Application	# Approval	# Admin Denial	# Site Denials	# Conditional	# Being Processed	# Other		# AOSE App	# AOSE Admin Denial	# AOSE Site Denial	# PE Plan
Component Replacement Permit	305	266	8	3	6	12	12		18	4	0	3
Construction Permit	6655	5451	395	229	319	299	113		2903	85	34	907
Courtesy Review	121	1	0	0	0	120	0		83	0	0	1
Expansion Permit	243	194	15	11	32	15	8		70	3	0	28
Legacy Documentation	376	280	2	1	1	5	0		1	0	0	3
Modification Permit	294	217	8	4	49	39	6		55	3	0	23
Multi-Lot Certification Letter	27	12	0	2	0	13	0		15	0	2	1
Repair Permit	2957	2132	164	123	54	255	112		520	17	9	147
Safe; adequate and proper evaluation	1624	1064	46	109	9	149	26		2	0	0	4
Sewage Disposal Discharge System	90	34	7	0	1	20	2		5	1	0	32
Single Lot Certification Letter	1118	791	101	41	0	117	36		630	27	9	19
Subdivision	302	282	4	3	0	11	1		297	4	3	3
Totals	***14112***	***10724***	***750***	***526***	***471***	***1055***	***316***		***4599***	***144***	***57***	***1171***