Virginia Regulatory Town Hall

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Final Regulation
Agency Background Document

Agency name	Virginia Department of Health
Virginia Administrative Code (VAC) citation	12 VAC5-613
Regulation title	Regulations for Alternative Onsite Sewage Systems
Action title	This regulatory action will create new regulations for the design, operation, inspection and reporting for alternative onsite sewage systems (AOSS) in the Commonwealth of Virginia. The regulation will also establish performance requirements and horizontal separations necessary to protect public health for designs submitted in accordance with Title 32.1-163.6 of the Code of Virginia.
Date this document prepared	May 20, 2011 and amended on October 3, 2011

This information is required for executive branch review and the Virginia Registrar of Regulations, pursuant to the Virginia Administrative Process Act (APA), Executive Orders 14 (2010) and 58 (1999), and the *Virginia Register Form, Style, and Procedure Manual.*

Brief summary

Please provide a brief summary (no more than 2 short paragraphs) of the proposed new regulation, proposed amendments to the existing regulation, or the regulation proposed to be repealed. Alert the reader to all substantive matters or changes. If applicable, generally describe the existing regulation. Also, please include a brief description of changes to the regulation from publication of the proposed regulation to the final regulation.

The regulations create an inspection, sampling, and reporting frequency for all alternative onsite sewage systems (AOSS). The regulations establish the performance requirements for AOSS as well as horizontal setbacks for those designed in accordance with §32.1-163.6 of the Code of Virginia. The regulations establish nitrogen limitations for all large AOSS and require all small AOSS to reduce nutrient loads within the Chesapeake Bay Watershed. The regulations establish treatment levels for performance and provide a methodology for evaluating treatment unit efficacy. The new regulations are supplemental to the existing Sewage Handling and Disposal Regulations (12VAC5-610-20 et seq., "SHDR") which contain permitting and enforcement procedures and other requirements for onsite sewage systems, including AOSS.

The Board of Health adopted final regulations for executive branch review on June 9, 2011. The regulations approved by the Board of Health required owners to have a relationship with a licensed

operator for the purpose of providing operation and maintenance to the AOSS. The regulation included a definition for "relationship with an operator" (12 VAC 5-613-10), a requirement that a relationship with an operator be established prior to issuance of an operation permit (12 VAC 5-613-60.A), and a requirement for the owner to maintain a relationship with an operator (12 VAC 5-610-140.1).

On October 3, 2011, at the request of the executive branch, the Board struck the definition for "relationship with an operator" and deleted other references in 12 VAC 5-613.60.A and 12 VAC 5-613.140.1. This action, taken by the State Health Commissioner acting under authority provided at Va. Code § 32.1-20, makes the final regulation consistent with Va. Code § 32.1-164, which requires the AOSS to be "operated by a licensed operator and visited by the operator as specified in the operation permit."

Statement of final agency action

Please provide a statement of the final action taken by the agency including (1) the date the action was taken, (2) the name of the agency or board taking the action, and (3) the title of the regulation.

1. June 9, 2011 and October 3, 2011
2. State Board of Health
3. Regulations for Alternative Onsite Sewage Systems

Legal basis

Please identify the state and/or federal legal authority to promulgate this proposed regulation, including (1) the most relevant law and/or regulation, including Code of Virginia citation and General Assembly chapter number(s), if applicable, and (2) promulgating entity, i.e., agency, board, or person. Describe the legal authority and the extent to which the authority is mandatory or discretionary.

1. The Board is authorized to promulgate and enforce regulations pursuant to Va. Code § 32.1-12. Under Va. Code § 32.1-164, the Board is authorized to promulgate regulations governing onsite sewage systems to protect public health and is required to exercise due diligence to protect the quality of both surface water and ground water. Va. Code §§ 32.164.H and I require the Board to establish a program for operation and maintenance of alternative onsite sewage systems and to promulgate regulations for AOSS. Legislation approved in 2009 (Chapter 220 of the 2009 Acts of Assembly) required the Board to adopt emergency regulations for operation and maintenance of alternative onsite sewage systems. The legislation also required that the emergency regulations set forth performance requirements for alternative onsite sewage systems and horizontal setback requirements necessary to protect public health and the environment. The emergency regulations became effective on April 7, 2010 and are set to expire on October 6, 2011. This current regulatory action is intended to replace the emergency regulations.

2. The State Board of Health is the promulgating entity. The regulation is discretionary in that the Board is not required to promulgate regulations that replace the emergency regulations. The regulation is mandatory in that §§ 32.164.H and I require the Board to establish a program for operation and maintenance of alternative onsite sewage systems and to promulgate regulations for AOSS.

Purpose

Please explain the need for the new or amended regulation. Describe the rationale or justification of the proposed regulatory action. Detail the specific reasons it is essential to protect the health, safety or welfare of citizens. Discuss the goals of the proposal and the problems the proposal is intended to solve.

The new regulation is necessary to carry out the agency's mandate regarding AOSS with respect to: (1) performance requirements; (2) operation and maintenance requirements; and (3) horizontal setbacks for AOSS designed pursuant to Va. Code § 32.1-163.6. The needs and goals for this regulation fall into three conceptual areas:

1) The current performance requirements contained in the Sewage Handling and Disposal Regulations (12VAC5-610, SHDR) are inadequate for AOSS.

2) Statutory changes in 2008 (Va. Code § 32.1-163.6) allow licensed professional engineers to design AOSSs that are not required to comply with the SHDR. Instead, these designs must be compliant with performance requirements established by the Board. Since current performance requirements are inadequate, these regulations seek to establish measurable performance requirements appropriate for all AOSS, including the engineered designs under Va. Code § 32.1-163.6.

3) Proper operation and maintenance are essential to ensure that AOSS function as designed to protect public and environmental health.

Substance

Please identify and explain the new substantive provisions, the substantive changes to existing sections, or both where appropriate. A more detailed discussion is required under the "All changes made in this regulatory action" section.

There are new definitions: "state waters," and "point source discharge." Some definitions were modified: "general approval," "large AOSS," "project area boundary," "reportable incident," "Sewage Handling and Disposal Regulations," small AOSS," "soil treatment area," "TL-2 effluent," and "wetlands." One definition was deleted: "biochemical oxygen demand." The definition for "relationship with an operator" was removed.

Saturated hydraulic conductivity was added alongside percolation rates in Table 1.

Dispersal of septic tank effluent for large AOSS is allowed.

While the *Emergency Regulations* were silent on whether sewage systems installed into wetlands required a VPDES (Virginia Pollutant Discharge Elimination System) permit from DEQ, the regulations explicitly inform stakeholders the Board of Health lacks authority to regulate activity within wetlands that are adjacent to waters regulated by the Department of Environmental Quality (DEQ) under the Clean Water Act.

All designs submitted by professional engineers will be evaluated pursuant to §32.163.6 of the Code of Virginia unless otherwise directed.

A new Part V will allow professional engineers to waive certain performance requirements in 12VAC5-613-80.10, 11, and 13. The new Part V (12VAC5-613-210) will allow in situ monitoring of effluent prior to leaving the treatment works and allow the engineer to set intermediate compliance points for treatment. The use of TL-2 and TL-3 would not be a performance measure if waived. With these changes, professional engineers could propose septic tank effluent, with or without the use of drip dispersal, shallower than 18-inches. There would also not be any performance requirement for maximum loading rates other than what standard engineering practice would dictate. Part V would also remove the performance requirement for 12 inches of soil cover on shallow installations.

All large AOSS have a TN limit of 5mg/l at the project boundary; all AOSS with direct dispersal to ground water will have a TN limit of 5mg/l as measured before the point of application to the soil treatment area, in addition to the ground water limits from 9VAC25-280.

Additional nutrient reductions for the Chesapeake Bay Watershed were included. The implementation date for the additional nutrient reductions in the Chesapeake Bay Watershed (12VAC5-613-90.D) will be delayed until July 1, 2013 or two years after the effective date of the regulation, whichever occurs later. Small AOSS--those less than or equal to 1,000 GPD with no direct dispersal to groundwater--will require a 50 percent reduction of Total Nitrogen (TN). National Sanitation Foundation (NSF) Standard 245 will be added as Best Management Practice (BMP). Large AOSS less than 10,000 GPD with no direct dispersal to groundwater will require a 50 percent reduction of TN. The TN for large AOSS less than 10,000 GPD with no direct dispersal to groundwater can be verified with a measure of 20 mg/l TN or less prior to application to the soil treatment area or prior to leaving the treatment works via in situ monitoring. The design engineer may also designate an intermediate compliance point if an in situ sample cannot be obtained.

Nitrogen performance requirements for AOSS over 10,000 GPD with no direct dispersal to groundwater in the Chesapeake Bay Watershed will require 8 mg/l TN or less before dispersal to the soil treatment area or 5 mg/l TN or less prior to leaving the treatment works as demonstrated via in situ monitoring or an intermediate compliance point if an in situ sample cannot be obtained. For designs without direct dispersal, standard engineering practice and 9VAC25-280 will dictate phosphorous treatment. When there is direct dispersal to groundwater, in addition to the ground water limits of 9VAC25-280, nutrient limits are 3 mg/l or less TN and 0.3 mg/l or less for Phosphorous prior to dispersal to the soil treatment area.

Flow is mostly expressed in thousands instead of millions. A performance requirement was added to prevent the bulking of solids to the treatment area.

Enforcement guidance in 12VAC5-613-50 states that a single grab sample can only be used to establish a violation if there is additional evidence or an operator report supporting the conclusion that the system cannot be returned to normal function with routine operation and maintenance. Operators do not have to report when a business relationship with an owner ends and operators are not accountable when an owner refuses to perform O&M. The Department must receive a receipt of the recordation document before an operation permit is issued.

The ground water standards, 9VAC25-280, and the Sewage Collection and Treatment Regulations, 9VAC25-970 were incorporated by reference.

Issues

Please identify the issues associated with the proposed regulatory action, including:
1) the primary advantages and disadvantages to the public, such as individual private citizens or businesses, of implementing the new or amended provisions;
2) the primary advantages and disadvantages to the agency or the Commonwealth; and
3) other pertinent matters of interest to the regulated community, government officials, and the public.

If there are no disadvantages to the public or the Commonwealth, please indicate.

1. The primary advantage to the public is providing access to adequate performance requirements, horizontal setbacks that protect public health, and operation and maintenance requirements for AOSS. The proposed regulations also include nitrogen reduction requirements for all large AOSS regardless of locality and small AOSS located in the Chesapeake Bay Watershed. The public would enjoy more environmental protection with greater regulatory oversight. Less pollution and pathogens will better protect Virginia's natural resources, including the Chesapeake Bay.

Legislation approved in 2009 (Acts of Assembly, 2009, Ch. 0220) required the Board of Health (Board) to promulgate emergency regulations to establish performance requirements and horizontal setbacks for AOSS necessary to protect public health and the environment and to establish operation and maintenance requirements consistent with the requirements for AOSS contained in Va. Code § 32.1-164. The emergency regulations expire October 6, 2011. To the extent the emergency regulations fostered protection of public health and the environment, such protection would be lost if these replacement regulations are not adopted.

The primary disadvantage could be considered to be the costs AOSS owners would incur to achieve compliance with the regulations. See the economic impact analysis for more information about the costs owners of AOSS would incur as a result of these regulations.

2. The primary advantage to VDH is having cogent, enforceable regulations. Without these regulations, VDH will not have enforceable requirements to protect public health and the environment with an adequate margin of safety. The SHDR provide inadequate performance, operation and maintenance requirements for the protection of public health and the environment against the potentially injurious effects of malfunctioning or failing AOSS treatment systems. Additionally, the regulation implements requirements in Va. Code §§32.1-164.A and I and the legislative mandate contained in Chapter 220 of the 2009 Acts of Assembly.

3. N/A.

Changes made since the proposed stage

Please describe all changes made to the text of the proposed regulation since the publication of the proposed stage. For the Registrar's office, please put an asterisk next to any substantive changes.

Current section number	Proposed new section number, if applicable	Current requirement	Proposed change and rationale
10 *		This section defines terms.	The definition for BOD was removed because BOD_5 was already defined and is what is referred to in the body of the regulation. The definition of general approval was modified to clarify its purpose and authority. The term "point source discharge" and "surface waters" were added to make the regulation consistent with permitting from the Department of Environmental Quality.

			The definition for project area boundary was updated to provide more clarity based on comments. The definition of relationship with an operator was changed based on comments. The definition was later removed on October 3, 2011 based on executive branch review. The definition of reportable incident was changed based on comments. The definition of Sewage Handling and Disposal Regulations was amended to provide more clarity. The definition of soil treatment areas was changed based on comments. The definition for TL-2 was changed to provide more clarity. The definition of wetlands was changed based on comments from DEQ and to make it consistent with DEQ's implementation. The definition of large and small AOSS was modified to provide greater clarity of expectations.
20		This section discusses authority and purpose	A reference to the Code of Virginia was updated.
30 *		This section describes the agency's scope and applicability	An edit was made in 30.I to reflect a new regulatory section (Section 210). The additional nutrient reduction requirements for the Chesapeake Bay will not take effect until July 1, 2013 or two years after the effective date of the regulation, whichever occurs later. This change addressed comments that EPA's model and the Watershed Improvement Plan were in flux. Additional clarification was provided in paragraph J to reflect the limits of the agency's authority with respect to wetlands that are regulated by the Department of Environmental Quality.
40 *		This section describes regulatory relationships and methods of review.	Numerous comments were received that Section 40.E was confusing. The section was changed to address comments. All applications from a professional engineer will be reviewed pursuant to §32.1-163.6 unless the engineer specifically directs a different review under §32.1-163.5 of the Code Virginia. One stylistic edit was made to Section 40.C. Section 40.G was edited to make it clear that a soil report was expected. The agency received comments that more clarification with respect to soil reports was needed. A reference was added to Section 210 for clarity. The word, "including" was removed based on a comment to

			improve clarity.
50 *		This section provides enforcement guidance.	Section 50 was modified to address concerns that operators could be unfairly held accountable to an owner's unwillingness to pay for operator services. The Board received comments that the agency could unfairly use an effluent sample so additional clarification was provided.
60		This section describes requirements for operation permits and recording documents in the land records.	Stylistic edits were made to Section 60.C to provide more clarity. The agency clarified "owner" to be either the property owner or the owner of the AOSS. This change was made to make it consistent with the Code of Virginia. An additional sentence was added to show the expectation of verifying recordation to the local health department.
70 *		This section defines review and evaluation processes for technologies wanting general approval for TL-2 and TL-3 treatment.	One stylistic edit was made to improve clarity. The agency considered numerous comments. Stakeholder consensus was not apparent so changes were not made.
80 *		This section describes performance requirements for AOSS. The section had 16 performance requirements.	The agency received a significant number of comments seeking change and clarification with respect to performance requirements. The updated performance requirements now total 15. In response to comments from the Virginia Society of Professional Engineers (VSPE), the Board added Section 210 to provide certain waivers from the performance requirements. Section 80 was amended to notice the waiver option in Section 210. Section 80.5 was amended based on comments. Based on comments, the dispersal of septic tank effluent was changed to allow its use for large AOSS. The Board added saturated hydraulic conductivity to Table 1 based on comments. The agency also amended language to provide clarity where comments indicated confusion. Spray irrigation was deleted since it is not subject to the regulation. The agency received numerous comments about vertical separation requirements and calculations for water mounding. The performance requirements for water mounding calculations were modified. The agency received comments that organic loading should not be a performance requirement so this expectation was removed. The agency received comments that treatment units should

			protect against by-pass protection of untreated effluent. The agency added a performance expectation with respect to bulking of solids.
90 *		This section describes performance requirements for AOSSs installed in the Chesapeake Bay Watershed as well as AOSS that disperse directly into groundwater.	The agency received a substantial number of comments regarding the performance requirements in this section. Some comments expressed concern the regulations were too costly and too burdensome. Other comments thought the regulations were too lenient. The additional nutrient reductions for Chesapeake Bay Watershed protection found in Section 90.C was moved to Section 90.D. Section 90.D has an implementation date two years from the effective date of the regulations, or July 1, 2013, whichever happens later. This change was made to address comments about costs and the unfinished framework being developed to protect the Chesapeake Bay (e.g., EPA modeling and nutrient credit exchange program). In response to the comments, Table 3 was deleted. The phosphorus limit outside of the Chesapeake Bay Watershed was removed. Phosphorus limits inside the Chesapeake Bay were moved to Section 90.D. In response to comments, the agency added a new category for large AOSSs up to 10,000 GPD. The Board included in situ monitoring for large AOSS to address comments. Instead of approving best management practices, the agency will recognize them.
100 *		This section described laboratory sampling and monitoring requirements.	References were added to address the addition of Section 210. Stylistic edits were made in Section 100.D to improve clarity. The agency received comments that the owner could have samples submitted rather than submitting them directly. A stylistic edit was made to the table to clarify disinfection. Based on a comment, the word “continuously” was replaced with “remotely” to clarify expectations. Based on concerns and comments about the reliability of treatment units and processes, regulatory language was added to clarify back-up power requirements for systems over 40,000 GPD.
110		This section addresses sampling and field measurements for large AOSSs	Based on comments, the table was deleted. One sentence was added to clarify expectations. In an effort to provide greater clarity, stylistic edits were made to state flows in thousands rather than millions.

120 *		This section addresses operation and maintenance requirements.	A reference was added to reflect the addition of Section 210. Based on comments, Section 120.E was deleted. It also reflects a change in the definition of relationship with an operator and the subsequent decision on October 3, 2011 to remove the definition of "relationship with an operator."
140		This section addresses owner responsibilities.	Based on comments, the Board amended the language to improve clarity of expectations.
150		This section addresses operator requirements.	In an effort to provide greater clarity, stylistic edits were made to state flows in thousands rather than millions.
160		This section addresses operator requirements.	In an effort to provide greater clarity, stylistic edits were made to state flows in thousands rather than million. To address a comment about a lack of clarity, Section 160.C was modified to improve understanding of expectations. Section 160.B was changed because of a lack of clarity.
170		This section addresses operation and maintenance (O&M) manuals.	In an effort to provide greater clarity, stylistic edits were made to state flows in thousands rather than millions. A misspelled word was changed. Based on comments, the regulation was changed to allow designers, operators, or other qualified persons to submit an O&M manual. The owner must ensure an O&M manual is submitted.
180		This section addresses inspection requirements.	Based on comments, the word "function" was replaced with "operation."
200		This section addresses horizontal setbacks	One edit was made to clarify that horizontal setbacks apply to wetlands that are regulated by a VPDES permit.
Not applicable	210 *	This section waives certain performance and sampling location requirements in Section 80.	The section was added based on staff's understanding of comments received from the Virginia Society of Professional Engineers (VSPE). The regulation allows professional engineers to use standard engineering practice to waive the TL-2 and TL-3 performance requirements, to waive the maximum loading rate performance requirements, and to use the natural soil or fill to accomplish treatment. The professional engineer must substantiate the design using applicable standards, texts, publications, published research, or other technical guidance to propose the treatment works. The new section does not set a maximum hydraulic performance requirement in gallons per day per square foot. The professional engineer can identify in situ monitoring to

			verify whether the design is operating properly and meeting the performance requirements. The engineer must identify an intermediate compliance point if a representative in situ sample cannot be obtained. In situ performance requirements are set for BOD_5 and fecal coliforms.

The ground water standards, 9VAC25-280, and the Sewage Collection and Treatment Regulations, 9VAC25-970 were incorporated by reference.

Public comment

Please summarize all comments received during the public comment period following the publication of the proposed stage, and provide the agency response. If no comment was received, please so indicate.

Summary of Comments	Agency Response
Gloucester County felt the regulations place the burden of failing and non-functioning systems on local governments without providing the regulatory authority to regulate the design or location of those systems through permitting activities. There is no requirement to upgrade systems should their performance be substandard. The suppliers of equipment should be required to upgrade the units at their expense should the units prove unable to meet performance standards.	The Virginia Department of Health (hereinafter referred to as "VDH" or "the agency") believes the regulations specifically require compliance with the performance requirements of the regulations. Repairs and upgrades must be performed when the alternative onsite sewage system (AOSS) does not meet the performance requirements. If the unit is substandard, the owner will need to work with the designer and operator to comply with the performance requirements. The regulations require upgrades when the performance of the treatment works does not comply with the performance requirements. The regulations cannot dictate that suppliers upgrade treatment units that they do not own. The owner of the AOSS and the property owner have control over what work can and cannot be done. The agency considered these comments. The owner of an AOSS has the burden of fixing that system whenever it is not complying with the performance requirements of the regulations.
The Virginia Association of Counties (VACO) had the following comments: 1. Because the Commonwealth has usurped local authority over the installation, operation and maintenance of AOSS, these regulations must require all AOSS owners to maintain a relationship with an operator and have their systems maintained on a regular basis. 2. Require VDH to notify local governments on a monthly basis of the number of AOSS not in compliance at the time of an operators visit; the number maintained but not in compliance; and the number that could not be brought into compliance during the operators visit so that localities can take proper action to protect their citizens. 3. Require VDH to report to local governments on a monthly basis:	Va. Code § 32.1-164 requires a licensed operator to operate the AOSS. The regulations do not need to require the owner to continually maintain a relationship with an operator because Va. Code § 32.1-164 states the AOSS must be operated by a licensed operator and visited by the operator as specified in the operation permit. Local health departments and local governments can coordinate and share information about alternative onsite sewage systems. The regulations do not need to specify the details of reporting to local governments. Each locality can work with each local health department to coordinate what information is important to share. By collaborating with the local health department, the local government can receive information best tailored to its needs without having a one-size fits all approach.

• Systems with no operators • Gallons of septage or WAS pumped • Number of AOSS violations in previous month • Number of AOSS violations resolved within 30 days • Number of AOSS violations unresolved over 30 days • Additional actions taken to achieve compliance • Current number of AOSS not in compliance within the previous month • List of AOSS that have not had an operator's report filed within 411 days Local governments need assurance that VDH manages the program effectively.	VDH will manage its program effectively and local governments can partner with each local health department to ensure local government concerns are addressed.
Mathews County recommended that all AOSS owners be required to comply with VDH standards, regulations and processes. They noted that a proposal before the General Assembly would exempt AOSSs with less than 1,000 gallon per day flow for a single-family dwelling from compliance with VDH regulations. Such an enactment would have negative consequences, for example, on Gwynn's Island which has a large concentration of seasonal residents. AOSS operating recommendations, such as regular toilet flushing for some designs, does not happen with intermittent and seasonal use. In this example, small systems require more, not less, monitoring to ensure no leakage or other contamination.	All owners must comply with the regulations. The regulations set the minimum requirements for operation and maintenance. Designers and operators can perform additional monitoring when it is deemed necessary. Presently, all owners of AOSS must adhere to the requirements of the regulations.
The Home Builders Association of Virginia (HBAV) voiced their support for the proposed regulations, and would urge "expedited" adoption of those regulations, but for the following exception: VDH should amend the proposed regulation to incorporate the compromise provisions of House Bill 2492, by Delegate Tim Hugo, which was unanimously approved by the House Committee on Counties, Cities and Towns – Subcommittee Number 2. House Bill 2492 states: Notwithstanding any other provision of law, general or special, the owner of an alternative onsite sewage system installed prior to January 1, 2010, with flows less than or equal to 1,000 gallons per day that serves a church or an individual single-family dwelling that is his own residence and is occupied by such owner shall be exempt from the requirements for the operation and maintenance of the alternative onsite sewage system contained in the Board's regulations promulgated pursuant to subsection H of § 32.1-164 and Chapter 220 of the Acts of Assembly of 2009. However, notwithstanding the preceding sentence, a visit and inspection shall be performed and reported to the Virginia Department of Health by a licensed operator once every two years in accordance with the Board's requirements for such visits and inspections in accordance with the Board's regulations. This subsection shall not be applicable upon a determination by the Virginia Department of Health that the alternative onsite sewage system has failed. The HBAV states that the adoption of this phase-in of	HB 2492 was not adopted and no changes to the proposed regulations were made as a result.

"Maintenance Requirements" for the owners of Alternative Onsite Sewage Systems prior to January 1, 2010 will reconcile the proposed regulation to what is likely to become state law, and will soften the impact and cost of the regulations.	
The Piedmont Environmental Council (PEC) stated the following: These regulations, in conjunction with existing law, open up vast areas of Virginia with marginal soils to development. Expanded use of alternative septic systems in high risk areas adjacent to the Chesapeake Bay will likely face the same maintenance problems and failure rates as conventional systems, further contributing to nitrogen pollution from septic systems. AOSSs pollute, and these regulations will not help improve the Bay, but will contribute to a continuing decline of the Bay. The AOSS nitrogen discharge level must be set at 0 and system maintenance must be strictly followed if these regulations are going to help clean up the Bay. These regulations must be revised to allow re-opening of existing permits and ratcheting down the amount(s) of pollutant(s) being discharged when the carrying capacity of the receiving environment is reached or exceeded. Additional, section specific comments are included elsewhere in this document.	The regulations implement § 32.1-163.6 of the Code of Virginia. The Board of Health does not have authority to regulate point source discharges into wetlands. The regulations recognize that the watershed improvement plan, the EPA model, and the possible nutrient credit exchange program are processes in a state of flux. As such, the regulations were changed to implement additional nutrient reductions on July 1, 2013 or two years after the effective date of the regulations, whichever happens later. The nitrogen discharge limits set in the regulations protect public health and groundwater supplies. Standard engineering practice will require compliance with DEQ's anti-degradation of groundwater.
The Virginia Onsite Wastewater Recycling Association (VOWRA) expressed general support for the regulations. VOWRA recommended certain changes in Section 10 regarding definitions. VOWRA stated the definition of best management practice was appropriate. VOWRA recommended changing the definition of reportable incident such that the word "maintenance" was replaced with "cleaning" if unlicensed persons could perform that work. VOWRA recommended excluding from reportable incidents those alarm events that are less than 24 hours in duration and, based on the judgment of the operator, are not symptomatic of a problem that requires further investigation or remediation. VOWRA recommended that the definition of Large AOSS and Treatment System be expanded to encompass the collection system by making it clear that the collection system must comply with the SCATS regulations (or other regulations) that can place limits on inflow and infiltration, require pretreatment of high strength wastes, etc. Due to the lack of addressing the collection side of the Large AOSS, the homeowner's role in large system is not addressed and VOWRA recommended more clarity that the collection system must comply with the	Some expressions are terms of art and specific definitions were not necessary. Other terms, such as "operator," are defined in § 32.1-163 of the Code of Virginia and could not be changed. The definition of large AOSS includes the term "AOSS." AOSS is defined as a treatment works. Treatment works is defined in Title 32.1-163 of the Code of Virginia and includes the collection system. All large AOSSs require a single owner for all infrastructure. The definitions soil treatment area and reportable incident were changed. Following executive branch review, the definition for "relationship with an operator" was removed. The definition for septic tank effluent is already found in the Sewage Handling and Disposal Regulations ("SHDR") and the agency feels that an additional term called TL-1 is not necessary. The commenter did not specify why septic tank effluent should be defined differently (60-60 mg/l) than specified in the existing regulation, 12VAC5-610. The regulations do not recognize a specific benefit for <2000 cfu/100 ml so the definition for TL-3 was not changed to include a fecal limit.

SCATS regulations (or other applicable regulations) that can require enforceable sewer use requirements. VOWRA suggested more clarification with respect to the definition for operator and relationship with an operator. VOWRA believed the Department of Professional and Occupational Regulation had determined a person working under the direct supervision of a licensed operator could perform certain activities where as the VDH definitions implied otherwise. According to VOWRA, the code had specific language and that companies may not be considered the operator, which could present confusion about who the operator was for a particular system. One person commented that septic tank effluent should be defined as effluent with a BOD and TSS greater than 60 mg/l. One person suggested that septic tank effluent be defined as Treatment Level 1 (TL-1) to provide additional clarification when speaking to homeowners. One person asked that the definition of TL-3 be changed to include a fecal limit of 2,000 cfu per 100 ml. One person asked that the last sentence in the definition of groundwater be deleted. This person stated that the definition of groundwater was defined in Title 62.1-255 of the Code of Virginia. Two persons noted that a definition for “treatment unit/treatment system” references the term “treatment works” in Section 20. All such inconsistencies in terminology should be corrected. One commenter, representing a private Responsible Management Entity (RME), expressed concern that several sections of the proposed regulations may hinder the ability of citizens to take full advantage of the financial and environmental benefits that may be obtained from AOSSs. Specific sections of the regulations and proposed revisions are as follows: Responsible Management Entity (RME) to mean a legal entity responsible for providing various management services with the requisite managerial, financial, and technical capacity to ensure long-term, cost-effective management of Alternative Onsite Sewage System in accordance with these regulations and performance criteria. Ground water by deleting the final sentence, which states “Ground water includes a seasonal or perched water table.”	The definition for ground water includes the seasonal and perched watertable. Staff confirmed this understanding with DEQ. Treatment unit, treatment system, and treatment works all have specific and different understandings and meanings. The regulations cite the appropriate term where necessary. For subsurface drainfield, treatment works is a term used in § 32.1-163 of the Code of Virginia. With respect to the definition of pollution, the commenter did not state why the definition as currently provided would cause hardship or misunderstanding. The term as defined is applicable to AOSS and specific to implementation of this regulation. The regulations do not use the term responsible management entity so a definition was not deemed necessary. RME is not a term used in the regulations.

One commenter did not object to requiring vertical separation between seasonal and perched water tables to the dispersal system, but the commenter felt it was inappropriate to include seasonal or perched water tables in the definition of "ground water." One commenter asked to change the definition of pollution by replacing it with the State Water Control Law of Virginia §62.1-44.3: The commenter stated that, since "pollution" has already been defined in state law, it is unnecessary to provide a different definition.	
In Section 10, one person representing local government stated the following: • Definitions for direct dispersal to groundwater and wetlands were good additions. The removal of wetlands from these regulations was appropriate. • Clarify 'relationship with an operator' to address where the agreement may be between an organization that employees the operator and not the operator directly. There also may be multiple operators on a site under that scenario so naming an individual is not appropriate. • 'reportable incident' change the word 'maintenance' to 'cleaning' in the line "The routine maintenance of effluent filters is not a reportable incident". Maintenance requires an operator, but effluent filters are allowed to be 'cleaned' by an owner. • It should be clarified that the collection system of a large AOSS is not considered part of the system.	The definition for reportable incident was changed. The collection system is part of a large AOSS. The definition for relationship with an operator was clarified and later removed following executive branch review.
DEQ suggested clarification for the term 'point source discharge' used within the definition for alternative onsite sewage system by adding a definition for 'point source discharge' as found in 9 VAC 25-31.	The agency added a definition for point source discharge which parallels the definition found in the Clean Water Act.
DEQ proposed adding the term 'spray field' back to the definition of 'soil treatment area' so that there was no confusion over who was issuing the permits for small spray irrigation systems.	The agency edited section 30.K to exclude spray irrigation since it is a land application activity regulated by DEQ or jointly by agreement with DEQ.
DEQ noted that the deletion of the qualifying statement of 'each on a 30 day average basis' in the definitions of effluent quality for TL2 and TL3 may be interpreted as requiring compliance with the standards at all times which would viewed as more stringent than the equivalent discharge limit.	Staff re-examined the definitions. Following extensive deliberation, the agency determined that the definitions for TL-2 and TL-3 did not need further clarification. The agency determined that it would be cost prohibitive to require owners to measure 30 day averages for small AOSSs.
DEQ requested that the definition of 'wetlands' be replaced with the definition found in the state wetland regulation, 9 VAC 25-210-10.	The agency modified the definition of wetlands to address this comment.
Gloucester County commented that a mere relationship is insufficient and maintenance contracts should be required prior to issuance of the operation permit and that VDH be notified when a contract expires.	Two different stakeholder groups evaluated maintenance contracts in development of the emergency and proposed regulations. The Weldon Cooper Center also interviewed hundreds of owners and found that maintenance contracts were not necessary to ensure that systems were being properly operated and maintained. The regulations reflect

	the findings and agreements developed from the above evaluation and stakeholder processes.
For Section 20, one person commented that the regulation indicated VDH would only inform and assist owners, applicants, onsite soil evaluators, system designers, and other persons of the requirements for obtaining a permit or other authorization for an AOSS. This person thought the word "inform" indicated that owners would receive limited assistance from VDH.	The commenter did not offer a specific change to the regulations. Customer service is taken very seriously and agency staff always strives to inform and educate owners so that they can be empowered to make decisions with all available information.
The Piedmont Environmental Council noted that, although Section 20 includes an admission that AOSSs pollute, the regulations neither prohibit pollution nor instruct the division as to what kinds of pollution to abate. In the absence of such guidance, these regulations cannot and do not meet the goal set forth in Subsection (a)(5) to "[p]rotect the quality of surface water and ground water."	The regulations implement §32.1-163.6 of the Code of Virginia.
For Section 20.A, one person asked that "of Health" be added after "Board."	In 12 VAC 5-613-10, "Board" means the "State Board of Health." The agency believes the regulation clearly identifies both terms as interchangeable and no change to Section 20.A is required.
One person suggested Section 20.B be changed. Instead of using "pollution," this person suggested using the phrase "failing AOSS" or "non-compliant" AOSS.	The regulation allows identification of best management practices (BMPs) that are designed to protect the Chesapeake Bay and groundwater supplies from pollution of groundwater. The agency believes that a failing or non-compliant alternative onsite sewage system (AOSS) would cause pollution as defined in the regulations. The agency does not see a need to change the language.
Loudoun County commented: • The relationship between the final regulation and the Emergency regulations is unclear, especially so for applications submitted under the Emergency Regulations. • It is unclear that when an engineer submits a design where it may fall for review. This commenter suggested that all plans sealed by an engineer be required to comply with the proposed regulation.	Section 40.E was modified to add clarity.
The Virginia Association of Counties (VACO) suggested that VDH require all small AOSS operating permits to be renewed every 5 years. This would ensure that systems are working in accordance with state regulations and manufacturer's requirements. VACO also suggested that VDH should require all large AOSS to have financial assurance to ensure continuity of system performance. VACO noted that failure of systems owned by a homeowner association often fall to local governments who are forced to take over poorly maintained, poorly functioning systems at great expense to the local government.	With or without a renewable operating permit, owners must always comply with the performance and reporting requirements of the regulations. At a minimum, owners must annually report on the condition and function of their system through a licensed operator. These requirements obviate the need for a renewable operating permit for small AOSSs. VDH will evaluate the need for continuing the operation permit after it receives an operator's report every year. Staff considered the comment about seeking financial assurance. The State Corporation Commission (SCC) regulates financial assures for utility owners that meet a certain threshold. Given the state's policy for when financial assurances must apply, a change to the regulation was not deemed necessary.
In Section 30.J, ten people, Wetlands Watch, the Piedmont Environmental Council (PEC), Mathews County, and the	The dispersal of effluent into a wetland is excluded from the regulation and is subject to requirements administered

Goose Creek Association supported the prohibition of AOSSs in wetlands. The Goose Creek Association asked that more comment from conservation groups be heard. The PEC stated that this prohibition remedies an ongoing violation of federal law previously/ currently sanctioned by VDH – the point-source discharge of pollutants into U.S. waters without an NPDES permit. Mathews County expressed disagreement with the statements by others that the prohibition against AOSS in wetlands will devalue land.	by the Department of Environmental Quality. While the *Emergency Regulations* were silent on whether sewage systems installed into wetlands required a VPDES (Virginia Pollutant Discharge Elimination System) permit from DEQ, the proposed *AOSS Regulations* explicitly informed stakeholders that the Board of Health does not have authority to regulate activity within wetlands that are adjacent to waters regulated by DEQ under the Clean Water Act. Some stakeholders viewed the notice on wetlands contained in the proposed *AOSS Regulations* as a significant change in policy for the Board of Health and VDH. This issue is determined strictly by jurisdiction and the Board of Health does not have the authority to regulate in this area
Since Section 30.J excludes dispersal of effluent into wetlands, one person stated that there should be a specific requirement for wetlands delineation to identify those excluded areas. Suggested language: "In any case in which an AOSS is proposed on a site with soils having seasonal, perched or permanent groundwater indicators at less than 12 inches depth or which otherwise can be identified as hydric soils per the Field Indicators of Hydric Soils document used by the Army Corps of Engineers, a wetlands delineation report and field delineation will be required to verify that the proposed site is not a wetland." The commenter also noted that it should be clearly stated that local Chesapeake Bay Preservation Area ordinances must be followed where applicable.	Wetlands will be identified using present day procedures. Staff will develop additional permitting guidance if it becomes necessary. Section 140 of the regulations clearly mandates owners to comply with local requirements to protect the Chesapeake Bay watershed.
In Section 30.K, one person thought that spray irrigation systems were alternative systems, since spray irrigation systems <1000 gpd are provided for in GMP 74 under a general permit from DEQ to VDH.	The Code defines alternative onsite sewage system (AOSS). VDH permits spray irrigation systems through a memorandum of agreement with DEQ as a point source discharge. The commenter did not suggest a change to the regulation.
In Section 30.L, one person asked for the following change: Treatment units for small AOSSs that are recognized by the department as generally approved for TL-2 or TL-3 prior to April 30, 2009 shall retain such status. The person stated that those companies evaluated and tested prior to April 30, 2009 should use the different evaluation method than those tested after that date. The person asked that the evaluation after five years be removed.	The agency considered this comment and devoted a significant amount of time for discussion with the technical advisory committee that examined the proposed regulations. The advisory committee did not find consensus on any change to the regulation.
For Section 30.M, one person asked for the following change: After the effective date of this chapter, new applications for general approval for TL-2 or TL-3 shall be subject to the requirements of this chapter. The department may continue to evaluate any treatment unit for small AOSSs for meeting TL-3 that is undergoing field performance evaluation in Virginia as of the effective date of this chapter using the protocol in place	The department considered this comment. The agency believes that all technology should be evaluated using criteria developed in accordance with Section 70. Manufacturers will have five years to complete testing and evaluation of their proprietary products.

on the date of application for general approval The person stated that a verification process was very important.	
In Section 40, VOWRA recommended more clarity with respect to how the regulation is supplemental to all other regulations and when in conflict, this regulation supersedes.	The agency modified Section 40.E to say that all designs from professional engineers would be reviewed pursuant to §32.1-163.6 unless a different evaluation was requested.
In Section 40.D, one person asked for more clarity with respect to the exemption to the practice of engineering found in Title 54.1-402 of the Code of Virginia. The commenter also referenced the regulations implemented by the Virginia Board for Waterworks and Wastewater works Operators and Onsite Sewage System Professionals Regulations. This person thought the regulations did not clearly identify what kinds of work Alternative Onsite Soil Evaluators could perform. One person stated that Section 40.D should be made consistent with Section 80.11.d. One person suggested that Section 40.D be revised to replace "This chapter supersedes…" with "Section 12VAC5-613.80-11 and Table 1 of the chapter supersede…"	The Board of Health does not have authority to determine what work is legitimately performed under the exemption to the practice of engineering found in §54.1-402, which is implemented by the Department of Profession and Occupational Regulation (DPOR). . A reference was added in Section 40.D to Section 210.
In Section 40.G, one person asked for the following changes: Depth to limiting features, ~~including seasonal perched water tables, pans, restrictions, or pervious or impervious bedrock.~~ This person thought the wording was redundant and inconsistent with the definition. ~~2. Slope of the project area.~~ ~~4. Landscape and landform~~ Combine as *2. Morphometry, including aspect, gradient shape and positio*n. 3. Ksat or percolation rate *at the appropriate depths* ~~proposed installation depth and at depths below~~ in the soil treatment area to demonstrate compliance this chapter. ~~Ksat or percolation rate may be estimated for small AOSSs~~. Ksat or percolation rate must be measured using an appropriate device *or method* for large AOSS. Test depths should be the determined by the engineer or OSE. As written this requirement allows the regulators to determine the test depth after the fact. In this person's opinion, "standard engineering practice" did not allow rate and other limiting factor estimates for design purposes. Estimates could not be easily defended in a courtroom. All systems should require testing according to this person.	The agency has determined that inclusion of the term limiting feature and its various components provides clarity of the expectations. The agency evaluated the reference to "morphometry" and determined that the word is" typically associated with the study of size and shape and that its inclusion may lead to confusion about reporting expectations. The agency retained use of the terms landscape, landform, and slope as these are terms that have historical use and are well understood terms of art within the profession. While the regulation allows estimated soil permeability for small AOSS, the designer must determine whether that option is a reasonable and viable alternative. The agency views the phrase "appropriate depths" as overly subjective and more confusing than more clearly specifying the regulatory expectation to measure or estimate soil permeability at the proposed installation depth and below. The designer chooses the installation depth so VDH cannot retrospectively apply its own expectation. The agency removed the word "including" in Section 40.G to improve clarity.

Regarding 40.G, the Piedmont Environmental Council stated that engineers designing under §32.1-163.6 should also be required to provide an analysis demonstrating non-degradation of receiving waters.	Section 40.G addresses the site and soil characterization report. The engineer is required to conform to the Commonwealth's anti-degradation policy for ground water.
One person suggested the addition of the following two items to Section 40: H. "In accordance with Title 54.1 of the Code of Virginia, construction of all AOSS must be carried out by someone licensed by the Department of Professional and Occupational Regulation as an Alternative On-site Systems Installer." I. "In accordance with Title 54.1 of the Code of Virginia, all operation and maintenance of an AOSS as required in Part III of this chapter must be carried out by someone licensed by the Department of Professional and Occupational Regulation as an Alternative On-site Systems operator."	The regulations address the design and operation of alternative sewage systems, not installer requirements. Title 32.1 of the *Code of Virginia* mandates that the agency will only accept operator reports from licensed operators. The Department of Professional and Occupational Regulation (DPOR) enforces licensing requirements. Staff has procedural guidance on verifying that a properly licensed person is performing work that requires a license.
Loudoun county commented that civil penalties have not been adequately addressed so a bond of financial surety should be required for these systems during their useful life. Loudoun county thought the other option was to loan funds from the indemnification fund until fault can be assessed and then collect the funds back from the responsible party.	The indemnification fund has specific statutory mandates and is currently being implemented in accordance with the law. The regulations for civil penalties are under executive review. Three different stakeholder advisory committees looked at development of the emergency regulations, the proposed regulations, and the final regulations. Weldon Cooper interviewed hundreds of owners of AOSS. All of these evaluations found that bonding was not necessary or desired.
In reference to Sections 20 and 50, Loudoun County does not believe that the proposed regulation complies with §32.1-164.H of the Code of Virginia in several critical areas, especially in regards to the operation and maintenance program: • Unless civil penalty authority is contained in or tandem to this regulation, it will be difficult to administer. • The language between the proposed civil penalties regulations and this regulation do not correspond. • Expand section 50 to include the requirements for civil penalties associated with this regulation. • VENIS, the information management system (IMS) used by VDH, is resource intensive and does not provide functional tracking of non-compliant systems. There are other online reporting systems (Carmody and online RME) that are more functional and Loudoun requests that VDH evaluate using those systems rather than building a new IMS. The Code requires that the IMS "…shall have the capability for pre-notification of operation, maintenance, or monitoring to the operator or owner."	The commenter did not identify how the proposed regulation conflicted with the regulations for civil penalties, which are currently under executive review. While civil penalties would assist with enforcement, Title 32.1 of the *Code of Virginia* prescribes that all violations of these regulations are punishable as a Class 1 misdemeanor. The civil penalties regulations are under executive review. The proposed regulations address designs for alternative systems. The agency has evaluated this comment and determined VENIS is not resource intensive and fully complies with statutory requirements. The agency would like to retain discretion and flexibility in matters of enforcement. The agency has determined setting a regulation to require compliance within 30 days would handicap the agency under certain circumstances where imminent public health threats would demand expedited action.

• Requests that section 50 of the regulation be modified to require that any system out of compliance and not returned to compliance within 30 days be published as non-compliant on the VDH website.	
Loudoun County commented: • The regulation should require that owners repair systems within 30 days of notice by an operator that the system is in need of a repair. • If the repair or an O&M adjustment cannot return a system to compliance within 30 days, the operation permit should be revoked and the owner should be required to submit a corrective action plan within a specified period of time. • Corrective action plan should be picked up by the new operation permit • Failure to submit a corrective action plan or meet deadlines in the corrective action plan should have civil penalties associated with them.	The agency would like to retain discretion and flexibility in matters of enforcement. The agency has determined setting a regulation to require compliance within 30 days would handicap the agency under certain circumstances where imminent public health threats would demand expedited action. Enforcement is a highly discretionary activity that should be approached through a case by case evaluation with action determined on the facts.
Mathews County recommended that Section 50 be amended to enumerate fines and other penalties for violations. In Mathews County, penalties for septic system violations consist primarily of letters sent to property owners. If an owner did not respond or comply, there was no next step since the Health Department has been clear in its reluctance to take owners to court. Developing, publicizing and enforcing escalating penalties for violations were recommended.	The civil penalties regulations are under executive review and are independent of this regulatory activity. If the local government has specific concerns about the enforcement philosophy of the local health department, then staff is willing to discuss this issue in greater detail to better collaborate.
In Section 50, two people commented that VDH should not hold operators in violation of the regulations since owners may not pay for required services or authorize operators to perform the work. The person also felt that owners should be able to appeal operator decisions with which they disagree. One person asked how VDH would resolve disputes between operator opinions.	The Board cannot adjudicate private party disputes between an operator and property owner. The property owner has the option of hiring a different operator and submitting a new O&M report if the owner does not believe the original operator's report is accurate. The agency edited Section 50 to make it clear that ultimate responsibility for operation and maintenance of the system rests with the owner. The regulation was also edited to ensure that operators are only accountable to actions permitted by the owner. The commenter did not offer specific regulatory language about how VDH should resolve disputes between operator opinions. The Administrative Process Act (2.2-4000 et seq. of the *Code of Virginia*) provides mandates on how the agency decides cases, disputes and conflicts.
In Section 50.A, one person asked VDH to clarify that only AOSS issued an operation permit after April 7, 2010 needed to comply with the performance requirements of 12VAC5-613.	The agency amended Section 30 where appropriate based on the totality of comments received.
The Piedmont Environmental Council voiced agreement with section 50.D, which makes it a violation not to follow an approved O&M manual. However, they noted that a	The agency updated sections 120 and 140 to make them consistent with Section 50.D with respect to the O&M manual.

requirement to comply with that manual is neither imposed on the operator (section 120) nor the owner (section 140). Those three sections should be reconciled.	
In Section 60, one commenter asked that the regulation and the Code of Virginia be expanded to include recorded user agreements for sewage systems owned and operated by a utility, which would be in accordance with the EPA's management model 5.	The regulations allow for renewable operating permits for large AOSS. The §15.1-2157 of the *Code of Virginia* sets the requirements for what can be recorded. The regulation cannot supersede the Code requirement.
Mathews County recommended that Section 60 be amended to add a new requirement for notification to the health department and recordation of a change in ownership with the circuit court whenever a property with an installed AOSS is sold or otherwise transferred. As proposed, the health department and circuit court will have a record of the initial owner of each property without the ability to track the chain of ownership going forward. This gap effectively negates the ability of localities, prospective owners, and the health department to know where AOSS are installed, how they are to be maintained, and any history of malfunction or failure, prerequisites to protecting public health and water quality.	The §15.1-2157 of the *Code of Virginia* sets the requirements for what can be recorded. The regulation cannot supersede the Code requirement. Owners are required to submit annual reports on their AOSS. Change of ownership will be reflected in the annual reports.
The Piedmont Environmental Council (PEC) supports the decision to not issue an operation permit unless the owner has hired a qualified operator as stated in 60.A. The PEC also supports the requirement that a permit not be issued until the owner records an instrument identifying by reference the applicable maintenance regulations for each component of the system in the land records of the clerk of the circuit court as provided in 60.B.	The commenter's support is noted.
One person suggested that Section 60.C be revised to read: The department shall not issue an operation permit for a large AOSS when all or part of the project area is to be used in the management of nitrogen until the owner records legal documentation in the land records of the circuit court having jurisdiction over the site of the large AOSS. The commenter asked for documentation to protect and preserve the land area in accordance with the management methods established by the division and be in a form approved by the division.	Section 60 was revised after reflection on this comment.
One person suggested that Section 60.D specify the circumstances under which a renewable operating permit would be renewed.	A renewable operating permit allows the agency to re-assess the operating permit. The owners of large AOSSs will be routinely reporting and monitoring. The renewable operating permit will be based on the body of information submitted over time.
Loudoun County commented that VDH should clarify the regulations to address not only the property where the system is located, but also the property served to address those cases with remote soil treatment sites.	The commenter did not specify specific regulatory language or a change to a specific section of the regulations. The regulations currently address recordation requirements for AOSS located on property not owned by the owner of the AOSS.
The PEC supported Section 60.D's requirement for renewable permits.	The commenter's support is noted.
For Section 70, three persons, including a manufacturer,	The agency considered this comment and added Section

asked that the agency develop a new evaluation and listing protocol for proprietary products as follows: B. The Department shall develop a protocol for general approval, proprietary treatment works that meet the requirements of this chapter that are not applicable for verification under 12VAC5-613-70 A. Verification will be in consideration of standardized testing, technology verification, institutional studies, additional third party evaluations, and additional information acceptable to the Department. Two people thought that there was no method provided in the regulations for evaluating and listing treatment works. The regulations only provided a mechanism for evaluating and listing proprietary treatment devices. These persons thought the regulations should be expansive in its listing procedures to address future technology that was currently unknown or not foreseen at this time. The manufacturer thought this addition would allow for the request for approval of proprietary approval of soil based treatment systems that do not have an accessible sample point. One person asked how VDH would evaluate, test, and list best management practices in accordance with Section 70.	210 so that engineers using standard engineering practice could evaluate the effectiveness of treatment works. The regulations identify a method for evaluating TL-2 and TL-3. The regulations provide for TL-2 and TL-3 so a methodology for evaluating this type of technology was deemed necessary. Evaluating other kinds of technology for TL-2 and TL-3 was not deemed necessary. Best management practices (BMPs) are recognized through a specific process that EPA uses for its Chesapeake Bay model.
For Section 70.2, one person commented the agency should make it clear by regulation that influent sampling for General Approval is not required for treatment systems that cannot collect an influent sample. The commenter noted that health department policy presently acknowledges this allowance.	Influent sampling will be required for all technology. In those cases where a representative sample cannot be easily collected, the third party overseeing the evaluation will collaborate with agency staff to develop an appropriate methodology for reviewing treatment efficacy.
For Section 70.2, one person asked for the following change: The manufacturer shall provide the division with quarterly results of influent and effluent samples measuring, at a minimum, BOD and TSS for each installed treatment unit. In addition to BOD and TSS results, treatment units of small AOSS that meet TL-3 shall provide the division with quarterly results of influent and effluent samples measuring fecal coliform. The commenter asked that a new sentence be added into Section 70 as follows: A manufacturer that provides evidence of completion of NSF/ANSI 360-2010 for treatment units of small AOSSs are exempt from paragraphs 1-4 if the influent and effluent sample results meet the TL-2 or TL-3 standard.	The agency evaluated NSF/ANSI 360-2010. The methodology can be incorporated into the agency's evaluation procedures without a regulatory change.
For Section 70.4, which requires "an independent third party with no stake in the outcome of the approval process" to oversee and administer the general approval testing and evaluation protocol, one person noted that a "licensed	The agency will determine whether an independent third party has been appropriately identified before evaluation is begun.

professional engineer experienced in the field of environmental engineering" cannot be automatically presumed to meet that requirement.	
Gloucester county commented that field evaluations should be conducted by an independent third party experienced in the field of environmental engineering and evaluated against a nationally recognized standard such as NSF ANSI Standard 40 and 245. Two people commented that VDH should have a field test for TN and TL-2, just as it has for TL-3.	The agency considered this comment. NSF 40 and NSF 245 do not verify field performance of treatment devices. The agency will examine its evaluation procedures to determine whether NSF 40 can continue to be used for evaluating TL-2 treatment devices. The agency added a reference to NSF 245 in Section 90 since it is recognized as a BMP by the EPA. TN evaluation is a function of what EPA will recognize for its Chesapeake Bay model.
For Section 80, one person representing the Oyster Bay II community commented that the Board of Health should carefully consider the comments by designers that indicated the regulations could be prohibitively expensive. The commenter thought that the regulations could prevent sewage system installations because of cost prohibitions. Another person commented that he could believe some felt the regulations were prohibitive. This person felt that Table 2 was a means to get approvals.	The agency has carefully considered and evaluated these comments. Changes have been made in a number of sections, including Section 80 along with Section 210, to address concerns about costs. The comments did not suggest a change to the regulations.
The Piedmont Environmental Council (PEC) stated that Section 80 should make it illegal to pollute or degrade State waters. The PEC also stated that Section 80 has several references to direct discharges to groundwater. Such discharges – similar to wetlands discharges – will exacerbate impairment of the Chesapeake Bay and represent point-source discharges to state waters that require NPDES permitting.	The agency consulted with the Attorney General's office and DEQ. The Board of Health has authority to permit discharges to groundwater and there is not a conflict with the VPDES permitting program. DEQ has reviewed the proposed language and confirmed that the proposed language is protective of the groundwater quality standards. The agency added a definition for state waters.
For Section 80, one person commented the following: • Delete the prohibition against the dispersal of septic tank effluent for large AOSS in G. The commenter stated that the prohibited option should remain available to system designers. • Delete K and the associated Table 1. The commenter stated that this section provides inappropriate prescriptive requirements. If K and Table 1 are to be retained, the commenter suggested the following revisions: - Add an exemption to the prescriptive requirements for "designs prepared by Professional Engineers and supported by RME." - Add columns for "Saturated Hydraulic Conductivity (Ksat, cm/day)" and "Texture" to Table 1 as follows:	The agency has deleted 80.7 which prohibited the dispersal of septic tank effluent for large AOSS. VDH added a new Part V, which allows many of the commenter's changes to occur. VDH modified Table 1 to add the saturated hydraulic conductivity. VDH did not add the soil type to the table as VDH received comments previously that structure can modify a soil type's conductivity to a great degree and that limiting conductivity ranges to a certain soil type would be restrictive and not recognize the actual rates encountered. VDH is concerned with contaminants moving more rapidly and over greater distances in saturated soil conditions. VDH determined that it is critical that the design basis (i.e. unsaturated zone depth) be identified and that the designer documents that the separation distance is maintained. Based on comments from DEQ and discussions with the Attorney General's Office, VDH must consider sites with less than six inches of vertical separation to groundwater.

≤15 MPI >17 cm/d Sand & Loamy Sand 15-25 MPI 15-17 cm/d Sandy Loam >25-45 MPI 10-<15 cm/d Loam & Sandy Clay Loam >45-90 MPI 4-<10 cm/d Silt Loam, Clay Loam & Silty Clay Loam >90 MPI <4 cm/d Sandy Clay, Silty Clay & Clay • Delete the vertical separation requirements in L and M. The commenter stated that there is no scientific basis for those requirements and they impose unnecessary and inadequate restrictions on the cost-effective and environmentally-sound use of AOSS. • Revise Table 2 by changing "0 inches to <12 inches" to "<12 inches." The commenter stated that designers must retain the freedom to place systems beneath limiting features and the proposed change would more-adequately reflect that freedom.	Designers must follow Section 90.C for direct dispersal to groundwater.
Gloucester county commented • that remote monitoring of all AOSS should be mandatory • all AOSS be pumped out every 5 years in order to comply with Chesapeake Bay Preservation Act Requirements • Require reserve area for new construction on lots platted after October 1, 1989	Remote monitoring is necessary for direct dispersal to groundwater. VDH does not believe that the cost of remote monitoring is warranted for AOSS systems that disperse to unsaturated zones. The Chesapeake Bay Preservation Act requirements are still in effect and are not set aside by this regulation with respect to reserve areas. The regulation requires owners to comply with the performance requirements and standard engineering practice.
Loudoun County commented that Part II was much improved over Emergency Regs and offered the following comments • 80.7. The ban on use of septic tank effluent for large AOSS does not appear to be justified as it would seem to prohibit systems with even distribution which are superior to gravity fed conventional systems which would still be allowed. Request removal or clarification. • 80.11.b. Change "maximum sizing" to "maximum trench bottom hydraulic loading rate" • 80.11.f. Remove 'spray irrigation'	The prohibition of septic tank effluent for large AOSS was removed. Section 80 was changed based on the totality of comments received. Section 210 does not set a maximum loading rate and spray irrigation was removed.
One person commented that Section 80, 90, Table 1 and Table 3 were prescriptive regulations and should be removed from the regulations. The person asked that Section 80.11 be deleted because it was a prescriptive regulation.	Part V was added to address these comments.
The Piedmont Environmental Council stated that the undefined term "waterways" used in 80.1 should be replaced with "State waters."	The term "state waters" was defined in the proposed regulation. The term "waterways" is used in 12VAC5-610 and includes state waters.

The PEC stated that the term "wastewater strength" used in section 80.5 should be defined.	VDH modified Section 80.5 to reflect wastewater characteristics instead of strength
For Section 80.6, one commenter stated this section was not clear and asked about peak design flow and its relationship to sewage flows referenced in 12 VAC5-610-670.	The agency considered this comment. The design may not allow peak flows to enter the treatment unit beyond its rated capacity. Terms and phrases are understood within the practice of engineering. The commenter did not provide alternative language that would make the regulation more clear.
For Section 80.7, VOWRA recommended that the prohibition of septic tank effluent for large AOSSs be removed. VOWRA also recommended adding a reference for justifying a need to use gravity dispersal for large AOSS. One person stated that there was not a technical reason to prohibit dispersal of septic tank effluent for large AOSSs. The person also felt that VDH should require uniform distribution across the entire dispersal field.	The prohibition of septic tank effluent for large AOSS was removed. Standard engineering practice would dictate the use of uniform distribution.
The Virginia Association of Counties commented that VDH should require all single family residences with AOSS to have an auto dialer, telemetry device, or other acceptable remote notification device connected to an operator. This is needed due to the remoteness and often critical nature of the areas where AOSS are installed.	Remote monitoring requirements are included for direct dispersal to groundwater systems. VDH does not believe that the cost of remote monitoring is warranted for AOSS systems that disperse to unsaturated zones.
One person suggested that the use of licensed installers be required to ensure compliance with the requirements of 80.9.	DPOR's basic law requires installers to have a license. This regulation addresses performance requirements and operation and maintenance of AOSS.
For Section 80.11, one AOSS manufacturer suggested the following revisions to provide consistency with EPA and other guidelines and make Table 1 more user friendly: 11. Maximum hydraulic loading rates for using TL-2 and TL-3 effluent are found in Table 1 and are to be used as follows: a. The designer is responsible for reducing loading rates according to the features and properties of the soils in the soil treatment area; b. Adherence to the maximum sizing criteria herein does not assure or guarantee that other performance requirements of this chapter, including effluent dispersal or ground water quality, will be met. It is the designer's responsibility to ensure that the proposed design is adequate to achieve all performance requirements of this chapter; c. Hydraulic loading rates shall be incrementally reduced from the TL-2 values in Table 1 when a treatment unit or system is not designed to achieve TL-2 or TL-3. In such cases, the designer shall, for monitoring purposes, specify the effluent quality of the treatment unit. If the specified BOD5 exceeds 90 mg/l, the designer shall use loading rates for septic tank effluent; e. Trench bottom hydraulic loading rates for gravity dosed systems shall not exceed the hydraulic loading	The agency considered these comments. Changes were made to Section 80 and Section 210 was added to address these comments. Sixty (60) mg/l provides sufficient room for high strength and/or poorly functioning treatment units. If desired, a designer could propose a higher strength effluent under Part V. The loading rates in Table 1 are clearly pressure dosed rates and allowing gravity systems to apply at the same loading rates is not prudent.

rates for TL-2 effluent found in Table 1; and f. Area hydraulic loading rates for drip dispersal, spray irrigation, pads and mounds shall not exceed the hydraulic loading rates for TL-2 effluent found in Table 1.	
For Section 80.11.a, one person thought that gravity dispersal of effluent was not appropriate. Another person said that virtually all research included pressure distribution of treated effluent and that many states required pressure distribution of treated effluent.	Pressure distribution is a superior method to gravity distribution. The regulations address minimum standards. Proper design and O&M with gravity distribution is a viable alternative on some sites.
For Section 80.11.b, VOWRA recommended changing "maximum sizing" to "maximum trench bottom hydraulic loading rate."	This change was made.
For Section 80.11.c, one commenter stated it should read as follows: recommended maximum trench bottom hydraulic loading rates for pressure-dosed systems using TL-2 and TL-3 effluent are found in Table 1. Trench bottom hydraulic loading rates for pressure-dosed systems shall not exceed the values in Table 1 except when designed under Section 32.1- 163.6 of the Code of Virginia; if alternative trench widths are proposed the area loading rate (gpd/square foot of drainfield area) should not exceed 1/3 of trench bottom rate as indicated in Table 1. Higher area loading rates shall be justified and additional safety factors included in the design of the treatment works.	Table 1 describes the performance expected for all system designs. Without Table 1 guidance, maximum performance standards would be unknown. Part V was added to provide a waiver to certain parts of Section 80, which included Table 1.
For Section 80.11.d, one commenter thought that pressure distribution should be required if the effluent was less than 60 mg/l.	The historical experience in Virginia is that pressure distribution, while superior to gravity flow, is not required in all situations.
One commenter stated that the performance requirement of Section 80.11.d makes no sense and stated: • Absorption areas for treatment units not producing TL-2 or TL-3 should be designed using Table 5.4 of the SH&DR, rather than Table 1. • "Septic tank effluent" should be described in its entirety (i.e. TSS and FOG levels as well as BOD). • If the proposed regulations address treatment units producing effluent falling between TL-2 and septic tank effluent, they should be addressed via maximum loading rates – stated in Regulation – that are significantly lower than those for TL-2 and be placed under a testing protocol. Or, they should be required to have absorption areas sized under Table 5.4 of the SH&DR.	VDH received comments from engineers who were using existing treatment units, such as lagoons, or who were not confident in the effluent quality of their treatment unit who wanted to be able to oversize their drainfield to accommodate slight increases in the organic loading. This section provides that flexibility by incrementally increasing the drainfield to treat the higher strength waste. Section 210 was added to provide greater flexibility for the design engineer.
For Section 80.11.e, VOWRA recommended that gravity flow for nitrified effluent be prohibited. If gravity flow for nitrified effluent were allowed, then VOWRA believed Table 1 did not have sufficient guidance. Designers should be required to demonstrate protection of groundwater with additional sampling as required for non-generally approved systems.	Staff reviewed Section 80 in light of all the comments and made changes as possible. Part V was added to provide greater flexibility to the designer.
For Section 80.11.e and f, one commenter stated that there was no proof or consensus that the regulations should have different loading rates for TL-2 and TL-3. The person stated that nitrified effluent travelled in saturated flow and gravity flow	The commenter did not provide a recommended change to the regulation. Section 210 was added so that designers would not have to use the maximum loading rates for TL-2 and TL-3 when

created saturated conditions. He asked for more guidance if nitrified effluent was allowed with gravity dispersal.	standard engineering practice dictated a different method.
One person asked that Section 80.K.3 remove a reference to spray irrigation because spray irrigation systems were exempt. The PEC also noted that 80.11.f. references "spray irrigation", which is specifically excluded from the regulations by 30.K.	The agency made this edit.
For Section 80.11.f and Table 1, one person stated that the percolation test was not standardized and its use as a basis for application rate was inappropriate. This person questioned whether TL-2 and TL-3 required a different loading rate. The person noted that a maximum percolation rate or 120 mpi was mentioned.	The commenter did not provide a recommended change to the regulation. Section 210 was added so that designers would not have to use the maximum loading rates for TL-2 and TL-3 when standard engineering practice dictated a different method.
For Section 80.12, one person thought septic tank effluent should be defined as being less than 60 mg/l BOD and TSS.	The Sewage Handling and Disposal Regulations define septic tank effluent. VDH considered creating another treatment level but decided it was not necessary. The commenter did not provide a reason why the definition for septic tank effluent should be changed.
The PEC stated that the term "wet season" used in section 80.13.a needs to be defined.	The phrase is a term of art within the profession.
For Section 80.13.a, one person asked what constituted limited permeability. The person said that soil restrictions had permeability. The person thought a hydraulic gradient sufficient to move the applied effluent off the site should imply that the soil treatment area should exceed the application area. This person thought it was a concept often overlooked during site evaluation. The person asked about standardized water mounding equations.	The commenter did not provide a recommended change to the regulation.
For Section 80.13.a and b, one person provided the following comments: • If there is a hydraulic gradient sufficient to move effluent off the site and an AOSS is not operating properly, then untreated or partially treated effluent will be moved through or into groundwater and/or surface waters. Proliferation of such systems may collectively cause pollution as defined in Virginia. • "Wet season" should be defined. Presumably the use here is that period of the year when evapo-transpiration is less than precipitation and in combination with other factors such as elevation, landscape position, etc., results in ponding of water on the ground surface. There seems to be confusion in the public that wet season may mean the same as rainy season, which is not the intended meaning. • See also the need for wetland delineation as discussed for Section 30.J.	The operation and maintenance requirements for AOSSs will reduce the potential for an improperly functioning AOSS to cause offsite impacts. Wet season is a term of art within the profession. Section 90.E. prohibits the installation of a soil treatment area in wetlands that require a VPDES permit. The agency evaluated this comment and determined that there was no need to add additional language to this section.
DEQ made a comment on 80.13.a and b that the standards of section 90.C should be applied for an indirect discharge of wastewater to groundwater.	The regulations identify when direct dispersal of effluent to groundwater occurs.
For Section 80.14, one person stated that the currently-allowed 0-inch vertical separation to a water table should be halted. Dry ground is needed beneath dispersal systems.	Based on comments from DEQ and discussions with the Attorney General's Office, VDH must consider sites with less than 6 inches of vertical separation to groundwater based on Title 32.1-163.6 of the Code of Virginia. Designers may place systems into groundwater, but only if

	the standards of 90 C are met.
For Section 80.14, one AOSS manufacturer suggested that Table 2 be revised as follows to allow greater site flexibility, fewer mechanical systems on marginal sites and overall lower life cycle costs to homeowners: Vertical Separation — Minimum Effluent Quality ≥18" (requires naturally occurring, undisturbed soils) — Septic <18" to 12" (requires minimum 6" of naturally occurring, undisturbed soils) — TL-2 12" to 6" (requires minimum 6" of naturally occurring, undisturbed soils) — TL-3 with timed dosing of treatment unit 0" to <6" — TL-3 and disinfection* TL-3 effluent meeting 10/10 BOD/TSS and a FC standard will adequately protect water sources and public health.	The agency cannot create a regulation with standards that are in conflict with the existing Ground Water Regulations 9 VAC 25-280. Section 210 was added to allow alternate design methods.
Gloucester County stated that no system should be installed where the seasonal ground water is within 12 inches of insitu soil. (Re: 80.14 and definitions)	The regulations conform to §32.1-163.6 of the Code of Virginia. Vertical separation to groundwater cannot be restricted. Staff consulted with DEQ and found the regulations are consistent with groundwater standards.
For Section 80.15, VOWRA recommended that the requirement be deleted because it was inconsistent with other sections of the regulations. One other person stated Section 80.15 was inconsistent with other sections of the regulations and should be deleted.	The agency evaluated this comment and deleted reference to the organic loading rate.
For Section 80.16, one AOSS manufacturer suggested revisions to read: "The designer shall specify methods and materials that will achieve the performance requirements of this chapter whenever sand, soil, or soil-like material is used to increase the vertical separation. Sand, soil, or soil-like material may be mounded on ground surface to achieve vertical separation if the site has a minimum of six inches of naturally occurring soil." The practice of mounded systems is used extensively in certain states. Various mound configurations will allow for lower cost, less mechanically complex systems and less reliance on disinfection to achieve treatment goals.	VDH reviewed all comments regarding Section 80 and made changes to reflect the totality of thoughts on the performance requirements. Section 210 was added.
One AOSS manufacturer suggested the addition of Section 80.17 as follows: 17. All treatment units or treatment systems shall incorporate solids by-pass protection prior to the dispersal of effluent. Solids by-pass protection shall be done by one of the following: 1. Outlet filter that conforms to the following: a. Tested under NSF/ANSI Standard 46;	Section 80 was changed based on the totality of comments received. Standard engineering practice would dictate the use of many of these design ideas.

b. Maintain a current product listing with an ANSI accredited third-party certifier; c. Bear a listing mark; and d. Be rated by the manufacturer with a daily flow rate of one and one-half (1½) times the total required treatment unit capacity. 2. Media filtration that meets the following: a. Media filter is the treatment unit; or b. Media filter is used as polishing filter for another treatment unit. 3. Other methods approved by the Division.	
For Section 90, one commenter asked for more clarity about how wetlands would be identified. This person felt that in low lying areas, such as Chincoteague Island, that all development could be precluded if term wetland were broadly defined. This person asked that VDH identify wetlands as only marshes, swamps and bogs.	The Board of Health does not have authority to permit onsite sewage systems within wetlands as implemented by the Department of Environmental Quality through the VPDES permitting process. Anyone can apply for a VPDES permit to develop property where wetlands are encountered. VDH must identify wetlands in accordance with the routine procedures presently used by federal and state agencies when implementing the Federal Clean Water act. The commenter did not offer any specific change to the regulation and VDH could not identify a way to better clarify how the federal Clean Water Act is implemented.
For Section 90, one person representing the Northumberland County Board of Supervisors stated that the nitrogen and phosphorus limits were cost prohibitive and would impact fees and property taxes that the county collected. The commenter asked that more time be spent in making the regulations work for the people in the communities and local governments. Another person questioned the fiscal impacts of the regulations.	The Department of Planning and Budget analyzed the fiscal impacts of the regulations and VDH concurs with that analysis. The implementation date for additional nutrient reductions is July 1, 2013 or two years after the effective date of the regulation, whichever is later. The nutrient requirements were changed. Section 210 was added.
For Section 90, one person asked for the following changes: • Delete the requirements imposed on direct dispersal of effluent to groundwater in C.1, C.3 and C.5. The commenter stated that there is no scientific basis for those requirements and they impose unnecessary restrictions on responsible professionals. • Replace the existing D with the following: "All AOSS in the Chesapeake Bay Watershed shall be designed such that the mass loading of total nitrogen does not exceed 10 lb/year/acre at the project area boundary and groundwater concentration of total nitrogen does not exceed 3mg/l." The commenter stated that, as written, the section will unnecessarily increase capital and operational expenses for small rural communities operating large AOSSs.	The agency considered these comments. Changes were made to Section 90 based on the totality of comments. The requirements in C.1 and C.3 are based on the State's Ground Water Quality Standards. The loading rate is based on standard engineering practice. Designers must adhere to anti-degradation of groundwater requirements. Onsite systems, like any newly installed discharging wastewater treatment system, are not allocated a nutrient load under EPA's Total Maximum Daily Load (TMDL) program. The commenter's idea to specify a nitrogen load per acre would assume EPA will allocate nutrient loads as part of the TMDL program, which has not happened. The TN effluent requirements in Section 90 were changed. The regulations do not typically refer to specific methodologies for design as the methods change over time and are replaced with more current methodologies as they develop.

• Delete the effluent TN requirements imposed by Table 3. The commenter stated that the proposed requirements do not allow designers to properly account for nitrogen reduction that occurs in soil. • Add a reference to the following design tool: "Quantitative Tools to Determine the Expected Performance of Wastewater Soil Treatment Units, Guidance Manual; 2010, Water Environment Research Foundation, Project # DEC1R06" The commenter stated that the above design tool allows designers to determine the level of nitrogen removal that can be provided by soil, and thus will assist in the determination of an appropriate end-of-pipe nitrogen concentration for a given project. The entire tool kit can be downloaded at no cost from WERF. • Add language that allows designers to propose and utilize similar, science-based tools that have been published in peer-reviewed technical literature.	Section 210 allows designers to use science based, peer reviewed methods for the basis of their designs.
For section 90, DEQ had two comments: • For section 90A, DEQ suggested that the statement "The AOSS shall not pose a greater risk of groundwater pollution than systems otherwise permitted pursuant to 12 VAC 5-610" was too general. DEQ suggested that a specific reference to the groundwater standards such as found in 90C would be more appropriate. • DEQ suggested that since some larger direct dispersal projects may constitute groundwater recharge, VDH may want to consider some language from 9 VAC 25-790-880 for rapid infiltration basin designs requiring geologic or hydrologic studies of project sites prepared by a geologist, hydrologist or other technical specialist knowledgeable in geo-hydrologic principles.	The agency considered these comments. All designs must conform to standard engineering practice, which would include necessary geotechnical and hydrological evaluations. The statement in Section 90.A is consistent with the requirements of Title 32.1-163.6.
For Section 90, five persons expressed support for the nitrogen performance requirements. Four persons did not support the direct dispersal of effluent into groundwater. One person stated that nitrogen reductions should not be required for treatment works that fully complied with the site and soil conditions of the Sewage Handling and Disposal Regulations. This person suggested that all sewage systems should be required to reduce nitrogen if the regulation did not change in accordance with this specific recommendation.	The agency considered these comments. The commenter did not suggest a change to the regulations. Title 32.1-163.6 allows the dispersal of effluent directly to groundwater. This regulation does not address all onsite sewage systems, just AOSS. The Sewage Handling and Disposal Regulations do not address nitrogen removal.
For Section 90.A, one person noted that if there is a hydraulic gradient sufficient to move effluent off the site and an AOSS is	The addition of operation and maintenance requirements will reduce the potential for an improperly functioning

not operating properly, then untreated or partially treated effluent will be moved through or into groundwater and/or surface waters. Proliferation of such systems may collectively cause pollution as defined in Virginia.	AOSS to cause any impacts offsite.
For Section 90.C, one person stated that direct discharge to groundwater should not be an option. If it is allowed, all AOSS directly discharging to groundwater should be required to provide independent redundancies for all treatment components, backup power generating capacity, and additional operation and monitoring visits to avoid periods of malfunction.	VDH cannot prohibit discharges to groundwater but has provided increased monitoring and design requirements in accordance with 90C and 100.G. VDH agrees that large AOSS should comply with the Reliability Class I requirements as found in 9 VAC 25-790. This requirement was added to 100.G.2
For Section 90.C, one person said that septic tank effluent should not be dispersed directly into groundwater.	The regulation does not allow for septic tank effluent to be dispersed directly to groundwater.
For Section 90.C.1, one person noted that since no groundwater testing is required, it cannot be known if any constituents meet or don't meet the referenced limits.	Section 100.G details the required monitoring, including groundwater monitoring for large AOSS.
The Piedmont Environmental Council (PEC) reiterated their belief that direct discharges to groundwater referenced in 90.C represent point-source discharges to state waters that require NPDES permitting. The PEC concurs with the groundwater quality standards in 90.C.1, but states that those standards should be made a part of the general performance standards for all AOSSs. The PEC also states that section should be revised through deletion of the final sentence regarding the granting of variances, since there are no provisions in the regulations authorizing "variances." Absent articulated standards for a variance, neither the commissioner nor anybody else has the authority to set aside duly promulgated regulations.	The agency consulted with DEQ and the Office of Attorney General. The regulations correctly identify the Board of Health's authority with respect to permitting onsite sewage systems. Section 90 was changed to address numerous comments, including these specific comments. The AOSS regulations are supplemental to 12VAC5-610, which have variance procedures.
Gloucester County - Section 90.C The discharge of effluent from an AOSS directly to groundwater should not be permitted. If the intention is to comply with the Phase I Watershed Implementation Plan, no discharge to ground or surface water should be allowed.	Section 32.1- 163.6 of the *Code of Virginia* prevents VDH from categorically prohibiting the discharge of AOSSs to groundwater.
For Section 90.D, one person asked for the following deletion: ~~A.~~ The AOSS shall not pose….~~the concentration of fecal coliform organisms shall not exceed 2.2 cfu/100 ml at the lower vertical limit of the project area boundary.~~ The commenter stated that 2.2 cfu/100ml could not be met with gravity dispersal and would not likely be met with pressure distribution for TL-1 and TL-2 with 6 and 12 inch separations. The commenter suggested removal of the standard or changing it.	The commenter did not posit a reason why the 2.2 fecal coliform standard was inadequate or what standard would be appropriate. VDH evaluated the standard and determined that the expectation is appropriate. For septic tank effluent, there is a minimum 18-inch standoff and for TL-2, there is a 12-inch separation. These standards have been historical norms and have been empirically demonstrated. The standards are generally understood as protective of public health and the environment. Research at Virginia Tech with septic tank effluent applied to a soil column to simulate a drainfield, reported no fecal coliforms at 45 cm (<18 inches). Section 210 was added to provide designers with greater

	flexibility.
For Section 90.D, one person commented that applying a nitrogen standard for the entire Chesapeake Bay was too broad and burdensome. The regulation was not in line with how Maryland was handling the issue regarding critical areas. This person thought that the Board of Health had not provided sufficient information for having this requirement given its estimated cost to implement. This person felt it was unfair to require owners of AOSS to reduce nitrogen loads but not require the same measure for owners of conventional sewage systems. This person asked for more research and real world testing be completed and to seek a study bill from the General Assembly before instituting the nitrogen requirements. One person commented that VDH should establish critical areas within 300 feet of Chesapeake Bay rivers and tributaries to require the 50 percent reduction. This person thought that dilution and calculations should not be allowed for determining the 50 percent reduction. This person asked VDH to work with the legislature to require nitrogen reductions for conventional septic systems. One person commented that the median value of TN for single family homes was 40 mg/l so a 50 percent reduction required treatment devices to reduce nitrogen to less than 20 mg/l. The commenter did not believe there was any TL-2 approved treatment device that could reduce TN to less than 20 mg/l. The person thought that there would be areas in the Chesapeake Bay where water supplied to the homes would not have sufficient alkalinity to reduce TN. This person thought that VDH had greatly underestimated the operation and maintenance costs by ignoring the variability of groundwater alkalinity. One person stated that the proposed nitrogen reductions for facilities within the Chesapeake Bay watershed should remain in the regulations.	Section 90.D was changed. Section 90.D will not take effect until two years after the effective date of the regulations or July 1, 2013, whichever is later. This delay will give stakeholders time to prepare for additional nutrient reductions for the Chesapeake Bay Watershed pursuant to the Commonwealth of Virginia's efforts to protect the Bay through the Watershed Improvement Plan. The Environmental Protection Agency accepted the Commonwealth of Virginia's Watershed Implementation Plan, which includes limits of nitrogen discharges to the Chesapeake Bay from alternative onsite sewage systems. The commenter did not specify how the health department's technical information was not sufficient. The commenter did not offer an alternative to the present requirement. The idea of creating zones in the state with different standards was discussed by the Technical Advisory Committee, but was ultimately dismissed as being too arbitrary. TL-2 units are not designed to reduce N, however, there is a category of tested small AOSS treatment units (NSF 245) that have been tested and demonstrated to remove 50% TN. It is true that to nitrify 20 mg/l of N you need about 140 to 150 mg/l alkalinity. However, if you denitrify as well, you can recover up to 50% of that alkalinity and the net alkalinity need is reduced to 70 or 75 mg/l. The Department of Planning and Budget evaluated fiscal impacts of the regulation and the Board concurs with those findings.
The PEC stated their belief that the requirement for a 50% reduction in TN for small AOSS in the Chesapeake Bay water shed was insufficient, and that consideration should be given to requiring a 100% reduction. The PEC also stated that the performance of nitrogen-reducing systems should be objectively verified, either through systematic third-party effluent nitrogen testing and evaluation of a limited number of sites at the manufacturer's expense, or through individual second-party site monitoring of all small AOSS. The PEC believes that the regulations should commit VDH to systematically collecting and statistically analyzing the cumulative nitrogen testing results and publishing those results to openly identify the most cost-effective nitrogen reducing technologies.	Current technology cannot completely reduce TN 100 percent for small flows. The small AOSS TN section has been modified to clarify that the BMPs will include NSF 245 tested units. Any BMP adopted by the Division will have to be tested. The agency considered whether testing and evaluation of treatment units for TN were necessary as other stakeholders recommended for Section 70. Since TN removal efforts are a function of what EPA accepts in its modeling for the Chesapeake Bay Watershed, the agency believes there is not a need to evaluate and test for TN beyond what EPA accepts. Virginia will follow the Chesapeake Bay Program Nutrient Subcommittee Policy on "Protocol for the Development, Review, and Approval

	of New or Revised Best Management Practices Definitions and Effectiveness Estimates for Nutrients and Sediment Reductions". Requiring all homeowners to conduct TN monitoring is considered to be cost-prohibitive.
Gloucester County made the following comments: • that the regulations (section 90) appear to run counter to the Watershed Implementation Plan submitted for compliance with EPA's TMDL for nitrogen and phosphorus in the Chesapeake Bay. The regulations remove control of permitting, oversight of operation, and design of AOSS systems from the VDH and local authorities. The placement of nitrogen discharges from AOSS units into marginal and sensitive resource areas will impede the localities ability to comply with the TMDL. • The regulation allows AOSS units to operate in ways which will lead to degradation of the environment • Lack of performance validation for nitrogen reduction technologies provides no objective validation. The use of poorly defined 'best management practices' and unverifiable assumptions should not be substituted for compliance demonstration • Recommend adopting a 'Best Available Technology' approach instead of best management practices, following the Maryland model.	The WIP calls for AOSSs in the Chesapeake Bay to reduce N by 50% as compared to a conventional onsite sewage system. This regulation includes that requirement. VDH still has control of permitting, O&M and design within the limits of these regulations. The regulations protect ground water supplies and public health. These regulations require the owner to have their AOSS operated and maintained. BMPs must be properly vetted. Virginia will follow the Chesapeake Bay Program Nutrient Subcommittee Policy on "Protocol for the Development, Review, and Approval of New or Revised Best Management Practices Definitions and Effectiveness Estimates for Nutrients and Sediment Reductions".
For Section 90.D.1.a, one AOSS manufacturer suggested the following revisions to list methods that have been demonstrated to significantly reduce TN, allowing homeowners more cost-effective systems while achieving water quality targets: a. Compliance with one of best management practices listed below: 1. TL-3 effluent combined with effluent dispersal in shallow trenches, shallow in-ground and mounded pads, mounds, or drip irrigation; 2. TL-3 effluent and upflow filtration; 3. TL-3 effluent and carbon dosing/anoxic reactor; 4. TL-2 or TL-3 effluent and constructed wetlands; 5. Certification to NSF/ANSI 245-2007; or 6. As approved by the division.	To date, the only BMP properly vetted for use with the EPA model is the NSF 245 certified treatment unit. The commenter did not provide supporting information for this list.
For Section 90.D1.b (2), VOWRA requested additional guidance regarding the reference to 4.5 lbs N or less at the project boundary to make it clear that a 50% nitrogen reduction was required. VOWRA also thought the regulation should not allow nitrogen reduction when effluent is applied deeper than 12 inches. VOWRA recommended dilution not be allowed for all systems, large and small. VOWRA further recommended systems meet	Section 90.D was changed. VDH changed the definition of "project area boundary." In order for the large AOSS to comply with the Chesapeake Bay N reductions contemplated by EPA's model, dilution must be prohibited. A change was made to allow large AOSS up to 10,000 GPD to use a 50% N reduction and a BMP approach. For the remaining large

the 20 mg/L for flows up to 40,000 GPD and 10 mg/L of Total Nitrogen at the end of pipe requirement for larger flows. In addition, VOWRA recommended that those with daily discharges of less than 10,000 GPD be exempted from the 20 mg/L requirement or have the requirement implemented via best practice protocols. (See Section 90.D.1.a (1). One person commented that he reviewed DCR and EPA models for nitrogen loading and that alternative systems would comply with Section 90.D.1.b(2). This person asked why there was so much emphasis on regulating a small percentage of alternative systems when conventional systems had a larger impact on nitrogen discharges to the Bay. One person commented Chapter 6 of the EPA Design Manual stated the following: *Effluent standards can be met by either system design or performance, as verified by third party design review or field verification. Except in sandy or loamy sand soils, a 5 mg/L N reduction credit is given when using time dosed, pressurized effluent dispersal within 1 foot of the ground surface and more than 1.5 feet above a limiting soil/bedrock condition."* Three people commented that VDH should allow dilution for TN. Two people thought that the prohibition of dilution would be cost-prohibitive for low and moderate income population. The other person thought the project area boundary was a mixing zone used to model effluent limitations for wastewater plant discharges. The owner and client could not perform a cost benefit analysis to meet TN if there was no benefit in increasing the size of the project area boundary. This person commented that atmospheric precipitation had a minimal impact on TN and that mixing of unpolluted water was a long established method for meeting TN limits. This person thought that increasing the project area boundary was a green initiative that was in line with EPA and DEQ water reuse requirements. The Goose Creek Association expressed support for the TN limits.	systems, VDH received a number of comments that Table 3 should be eliminated and it was. In setting the 50 percent reduction limit VDH was recognizing that there is accepted and affordable alternative systems that can easily meet that level. The EPA model assumed 8.92 lbs/person/year at the edge of a conventional drainfield. To achieve a 50% comparative reduction requires that the 8.92 be reduced to approximately 4.5 lb/person/year. The commenter did not offer a change to the regulation. This regulation only addresses alternative systems so conventional systems cannot be addressed in this regulatory activity. The agency evaluated the comments and determined that chapter 6 of the EPA manual is consistent with the regulation. Dilution is not an acceptable method for AOSS to comply with the Chesapeake Bay N reductions contemplated by EPA's model. The same amount of N will still reach the Bay if dilution were allowed. Wastewater treatment plants are not allowed a mixing zone for N limits based on the Bay TMDL; they are held to a total load. The regulations allow a reduced limit of 50 percent reduction for facilities less than 10,000 GPD.
For Section 90.D and Table 3, one person thought the regulation would encourage the use of multiple small AOSSs that were deemed to comply with the regulation rather than using one cluster system. The commenter suggested that the regulations allow deem to comply for large AOSS up to 10,000 gallons per day. The commenter stated that dilution could be allowed outside of the Chesapeake Bay based on his understanding of the regulation because he thought Table 3 only applied to the Chesapeake Bay watershed. The commenter agreed that the 20 mg/l TN limit was appropriate for flows between 10,000 GPD and 40,000 GPD. The commenter thought 3 mg/l was	The regulation was changed to allow the same performance expectations for small AOSS and large AOSS up to 10,000 GPD. Table 3 was eliminated. Section 90 was changed to address this comment and related comments.

technically feasible but that a percent reduction might be more appropriate. Above 40,000 GPD, the commenter observed that the regulations had 10 mg/l compliance.	
Three persons reiterated the following issues with Section 90.D.2 and Table 3: Table 3 and its implementation are confusing; The <3 mg/l TN requirement for large systems may push people toward single-family home systems rather than community systems; and Smaller "large" AOSS may be unable to demonstrate compliance with 20 mg/l TN. Those three persons suggested the following compromise: Create a category of 1000-10000 gpd. This range was selected as it already exists in DPOR regs (above 10000 you need a wastewater operator license as well); and it is a breakpoint in our O&M tables as well. We discussed having this be either a 50% or 75% N reduction category with deemed to comply via BMPs with the ability to propose something else to demonstrate compliance with <4.5 lb/person/year or <2.25 lb/person/year leaving the site. The actual TN limit to the drainfield would be backed out for each individual design based on the design of the dispersal field. Above 10,000 gpd, all systems would have to comply with a maximum TN loading to the soil of 10 mg/l with nitrogen management to reduce it to <3 mg/l at the project boundary. Additional clarifying language would need to be added to clearly discuss the need to provide additional N reduction in the dispersal area design.	This comment was considered along with many other comments on this same subject. Section 90.D was changed. Some of the comments conflicted so the agency considered comments in their totality before revising Section 90.D. Section 90.D takes effect two years after the effective date of the regulation or July 1, 2013, whichever is later.
Loudoun County offered the following ideas regarding Section 100, which addresses sampling and monitoring: • 100.D. should read 'The owner of each small AOSS is required *to have the operator of the AOSS* submit…" • Table 4 should be modified so that visits required under 150 and 160 as well as reports under 190 are all addressed together. • Adjust the rule to provide consistency between reporting for large discharging systems and large AOSS. Large discharging systems report monthly. The attendance is more frequent than smalls, but submitting a daily report, in some cases is onerous. • For large systems consider reporting monthly averages and any grab/daily samples in excess of limits.	VDH modified the regulations to address this comment. The regulations should not require an owner to compel another private sector person to take action. As such, the regulation requires the owner to have a sample submitted. The reporting for large discharging and large AOSS should be similar to provide consistency. Monthly reporting for large AOSSs is sufficient unless there is an incident that may release untreated or substandard effluent released to the environment. A modification to 'reportable incident' was made.
For Section 100.D, VOWRA recommended the following language: "The owner of each small AOSS is required to have his operator submit an initial grab sample…."	This section was modified. VDH is responsible for regulating the actions of AOSS owners; as such, it would not be prudent to draft a regulation that would compel an owner to require another person to take actions in accordance with the regulations as it is the owner who is ultimately responsible for compliance with the regulations.

	The DPOR licensing board determines whether a license is required and which regulant can perform which activities.
For Section 100.D, one commenter requested elimination of the sampling requirement for small AOSSs that are generally approved by VDH, since those AOSSs have already been shown to produce the required effluent quality. Small AOSS influent wastewater flow and strength cannot be controlled, and the expense of the proposed sampling will be a burden to homeowners. If VDH wants additional data on those systems, they should be responsible for collecting and tracking it.	The sampling for systems with general approval was developed through an iterative stakeholder process. Generally approved treatment devices have undergone a higher degree of testing than other systems. Data collected from these sites has value for the homeowner, VDH, and the public. Sampling is necessary to augment understanding of the individual system's function.
For Table 4, VOWRA recommended that the table identify "measured or estimated" where "estimate is provided.	Table 4 was edited.
For Table 5 in Section 110, one person asked whether the requirements were recommended or required.	Table 5 was deleted.
For Section 120, one person asked whether compliance was voluntary since 12VAC5-650 has not been enacted. The commenter included regulatory portions of 12VAC5-650. Another person expressed support for the operation and maintenance requirements. VOWRA commented that the regulations would be more effective if 12 VAC5-650 were adopted and recommended that VDH include the schedule of civil penalties within this regulatory action. VOWRA recommended adding language to this section that would exempt operators from filing reports for large systems each and every time a regularly scheduled or "routine" site visit is made as long as a monthly or quarterly report is filed according to the approved O&M manual.	The commenter did not provide or recommend a change to the regulation. VDH is not statutorily authorized to add a schedule of civil penalties within this regulatory action. The regulations for civil penalties (12VAC5-650) are currently under executive review and are independent of this regulatory action. VDH amended the regulation to allow for periodic reporting for large AOSSs that have daily or weekly operator activities.
The Piedmont Environmental Council (PEC) stated that 140 should prohibit owners from polluting or degrading State waters.	Section 140 was re-examined in light of this comment and related comments and the agency made some changes to this section.
For Section 140, one owner objected to the requirement that he must hire a licensed operator to operate the 7-year-old AOSS that he, himself, has been operating and maintaining. He stated that the licensed operator requirement should not apply to previously-constructed AOSS.	The licensing requirements are set through DPOR. VDH cannot change those requirements.
Mathews County recommended that Section 140 be amended to add that the owner must maintain a contractual relationship with an operator; require an electronic copy of an AOSS O&M manual be kept at the VDH so the manual can be transferred to a new owner; and require auto-dialer, telemetry, or other acceptable remote notification device on all AOSS systems, except those specifically exempt because they have no electronic, chip-dependent or like-components required for effective operations.	VDH does not monitor whether an owner maintains a contractual relationship with an operator other than monitoring the performance of the treatment works. Three advisory committees and the Weldon Cooper Center for Public Policy reviewed whether contracts should be required. These reviews did not find a need for requiring contracts. The O&M manual can be submitted in electronic form. The cost of remote monitoring is not warranted for most

	AOSS.
In Section 140.6, VOWRA recommended that the operator be given authority to create an operation and maintenance manual.	VDH changed Section 170 to allow other persons to create an O&M manual.
In Section 140, VOWRA recommended adding the following: "8. Clean the effluent filter(s) to assure proper flow or specifically make it your operator's responsibility in your operator relationship agreement."	Section 140 requires the owner of an AOSS to have the system operated and maintained by an operator. Whether cleaning a filter requires an operator is not a determination made by VDH. This change was made but it does not change the licensing mandates as to what work requires an operator.
In Section 140, the Virginia Association of Counties suggested the following: • to require a homeowner to have maintenance and repairs made within a specified number of days or contact VDH and prepare a compliance plan in accordance with 50.E. to bring the system into proper operation. • Amend 140 so that homeowner has to notify VDH of change of ownership so that VDH can ensure that the new owner has a relationship with an operator. • Define term 'reasonable effort' in 140.5 and 6 • Require owner to shut down AOSS and institute pump and haul at the direction of the operator until the system returns to proper operation • Specify who is to take necessary actions to return an AOSS to proper operation – owner, operator, or VDH. • Amend 120 and 140 to require the operator or owner to immediately report any failure of the AOSS to comply with the performance requirements in 80, 1-3.	Enforcement requires a case by case evaluation of the facts. The agency's enforcement and discretion would be too limited by regulating corrective actions. Owners must submit annual inspections and if not submitted, an enforcement action authorized by Title 32.1 of the *Code of Virginia* will follow. This mandate is sufficient to ensure that change of ownership will not hinder compliance with the regulations. The term "reasonable effort" is dependent on the facts of each situation and cannot be defined in greater detail. The owner is ultimately responsible for ensuring compliance with the regulations. VDH, through enforcement of the SHDR, has always imposed a duty to correct and report a failing sewage system to the local health department by filing an application as quickly as possible. Nothing in this regulation alters or minimizes those enforcement activities.
For Section 150, one commenter stated that AOSSs installed prior to 2007 should be on a one to five year inspection schedule (similar to conventional systems). Those installed in 2007 and later should be on the proposed one year schedule.	The inspection and monitoring frequency established in the regulation was vetted through three stakeholder advisory groups. The Weldon Cooper Center interviewed hundreds of AOSS owners. The inspection and monitoring schedule in the regulation reflects the findings of the stakeholder groups and Weldon Cooper.
For Section 170, one person commented that persons who are not engineers and design alternative systems should not be required to submit an operation and maintenance (O&M) manual. This person suggested that operators could provide O&M manuals.	The agency changed Section 170.B to acknowledge that other professionals could submit an O&M manual.
For Section 170.C.1, VOWRA recommended changing the word "unity" to "unit."	This change was made.
The Piedmont Environmental Council stated that 170.C.1 should be expanded to require O&M manuals to include basic qualitative and quantitative information for the installed treatment system (i.e., its design flow and the types of wastes	Licensed professionals will create O&M manuals. The standard practices of those professions and the professionals' ethical responsibilities to the client should include qualitative and quantitative information as

it is designed to treat). Further, the use of a system for wastes other than it is designed to treat should be prohibited.	necessary. The agency considered this comment and felt that licensee discretion was warranted rather than regulatory prescription. The designer will specify the sewage flow and strength of the system and the owner must adhere to those requirements.
Mathews County recommended Section 180 be amended to require the owner to perform maintenance or make repairs within a specific number of days or, alternately, prepare a compliance plan with the health department within a specific number of days from the date of owner notification to ensure an AOSS is functioning properly.	Enforcement decisions are fact dependent and determined on a case by case basis. The agency needs flexibility in addressing enforcement
Loudoun County and VACO requested that VDH change 'normal function' to 'normal operation' in 180.C.	VDH made the requested change.
For Section 190, VOWRA asserted that the regulation was inconsistent with the requirements of the Code of Virginia with respect to component tracking. VOWRA recommended changing Section 190.5 to replace the word "or" with "and" so that it read, "All maintenance performed and adjustments made, including parts replaced."	Section 190 complies with the requirements of §32.1-164.H and has direct reference to the code section. Section 190 requires the operator to report adjustments and parts replaced. The regulation requires reporting of adjustments even if maintenance were not performed. By adding "and," the operator would only have to report when doing both activities. The regulation is clear as written.
For Section 200, one commenter, representing the Fairfax County Water Authority, expressed strong concern that the horizontal setbacks referenced and required by the proposed regulations do not adequately protect surface water supply sources such as the Occoquan Reservoir and the Potomac River. The commenter noted that other agencies and localities have established both policies and setbacks that are more protective.	This regulation maintains the setbacks for drinking water sources that are contained in the SHDR.
One person asked that technical sections of the Gloucester County's ordinance Section 19-17 be included into the regulation. The commenter included the ordinance. The commenter noted that the ordinance prohibited use of provisionally approved systems and alternative onsite sewage systems unless expressly permitted by the ordinance. Permits are issued with the following conditions: (1) the health director is responsible for all enforcement; (2) the alternative system must comply with all regulations of the state board of health; (3) verification of six inches of separation between the point of effluent application and the groundwater table; (4) requirement for a watertable study with dataloggers whenever redoximorphic features were within 12 inches of the ground surface; (5) mandate for a report of all data within 30 days of completion of the watertable study. All decisions to issue or deny a permit rest on compliance with the Sewage Handling and Disposal Regulations; (6) requirement that all systems comply with NSF 245 requirements for a 50 percent nitrogen reduction; (7) requirement to record an agreement approved by the county attorney that ensures perpetual maintenance of the alternative system and the agreement had to include (a) a yearly inspection, (b) notice to future owners, (c) a permanent maintenance agreement, and (d) permit the installation and operation; (8) requirements for inspections by a qualified inspector. The ordinance further required the owner to repair	Some of the comments conflict with statutory requirements. Title 32.1-163.6 allows designs within six inches of the groundwater and provisional systems are not prohibited from use. Issuance or denial of an application is not dependent on compliance with the Sewage Handling and Disposal Regulations (12 VAC5-610). Title 15.2-2157.E establishes the requirements for recordation. Some of the comments are consistent with the proposed regulations and no change is necessary. The regulation already requires a 50 percent reduction in total nitrogen for systems within the Chesapeake Bay. There is a requirement to record a document in accordance with Title 15.2-2157. Owners are already required to repair and replace their systems if an operator's report identifies a failure to comply with any performance requirement. The commenter did not express a reason for requiring a watertable study whenever redoximorphic features are within 12 inches of the ground surface. Watertable studies are presently performed on an as-needed basis and that process has historically worked well. The proposed regulations require remote monitoring in specific situations. The commenter did not express a reason why remote monitoring must be required in all

or replace the system within 30 days of an inspection report noticing deficiencies; (9) establishment of remote monitoring in certain cases with limits on access and requirements on who will pay for services; (10) requirement for two years of manufacturer oversight; and (11) a requirement for the establishment of civil penalties.	cases. The report from Weldon Cooper on the experiences of homeowners with alternative systems did not identify a need for remote monitoring in all situations. The commenter did not identify why a two year oversight of the system from the manufacturer of the treatment device was necessary. A yearly report on the system's compliance with the regulations by a licensed operator is sufficient oversight based on the Weldon Cooper findings and past work with two technical advisory committees. The proposed regulations cannot include civil penalties, which are established through a separate and ongoing regulatory process. See 12 VAC5-650 for more information about the establishment of civil penalties.
Three persons asked the Board of Health to establish a field verification process for total nitrogen reduction. One person thought VDH should use the similar criteria found in the health department's policy to determine field verification of TL-3. One person stated that NSF 245 testing allowed suspension of testing during extreme weather events, which did not replicate real world events. The second objection of using NSF 245 was that it did not have a numerical pass/fail standard. This person said that the NSF 245 protocol did not provide incentives for doing better than a 50 percent reduction. This person suggested an abbreviated testing protocol for treatment devices that had received NSF 245 approval. One person commented that the Board of Health should establish objective performance validation requirements for nitrogen reducing technologies. This person asked why verification processes were not established in the regulation for nitrogen reductions. The regulations did not include verifiable, end-of-pipe, performance data. The commenter thought that best management practices and engineering calculations were insufficient and involved assumptions that could not be proved or validated. The commenter suggested use of incentives, such as reduced fees, if costs increased to verify nitrogen reduction. The commenter observed that 12VAC5-613-70 and 30(L) required verification for BOD and TSS and that the lack of validating treatment for nitrogen was inexplicable. Without validating total nitrogen removal, the commenter believed the goal of cost-effective solutions would not be realized. The commenter recommended the regulations include verification of nitrogen reducing technologies that included a systematic and statistically valid process. The commenter	BMPs are evaluated through the Chesapeake Bay Program. The Chesapeake Bay program procedures are sufficiently rigorous to address these concerns. For the option where a 'unique' design may be used, Section 210 can be applied using standard engineering practice. Incentives for nitrogen reduction are outside the scope of these regulations. Engineers, using standard engineering practice, may determine that calculations are insufficient to assess whether a particular design is appropriate.

suggested use of the Maryland Department of the Environment's Bay Restoration Fund Best Available Technology Program as a model for adding the regulation.	
One AOSS manufacturer suggested an addition to the regulations to create a Technical Advisory Panel (TAP) to provide a technical review and recommend to the Division approval/denial of treatment units, components or treatment systems. The TAP would meet at least quarterly, if necessary, and consist of: 1. Two Professional Engineers licensed in the Commonwealth of Virginia; 2. Two Alternative Onsite Soil Evaluators licensed in the Commonwealth of Virginia; 3. One small AOSS Installer; 4. One small AOSS Operator; and 5. Three at-large small AOSS professionals selected by the Division.	The agency considered this comment and felt that the Sewage Handling and Disposal Advisory committee could review and recommend approval and denial of treatment units, components, and treatment systems if it is necessary. The agency did not see a cost benefit of creating a new advisory panel.
One person asked who will enforce the regulation and stated there would be little or no enforcement; or that there would be inconsistent enforcement. The commenter recommended owners to ignore the regulations.	The comment did not offer any specific change to the regulation.
One person recommended that people boil their water because sewage could be placed directly into the watertable. The commenter believed VDH would not be able to adequately enforce the regulations.	The commenter did not specify any regulatory change needed to address these concerns. VDH could not identify why the regulations would not allow adequate enforcement.
One person commented that the rules change daily and that operators should have no penalty escape clauses based on recent bills in the General Assembly.	The commenter did not offer any specific change to the regulation. VDH could not identify any change needed to the regulation based on this comment.
One person commented that a literature review found that BOD and TSS effluent water quality standard should be 30 mg/l. This person thought that system designs in accordance with § 32.1-163.6 could easily be quantified using available research. This person felt it was incumbent upon VDH to have a defensible rationale that related to systems otherwise permitted by the regulations.	The commenter did not provide any suggested change to the regulation.
One person commented about the differences between prescriptive and performance regulations. The commenter provided an analogy about HVAC systems. This person commented that VDH already had a prescriptive regulation and that the NOIRA for this regulation authorized a performance regulation.	VDH has consulted with the Office of Attorney General and the Attorney General's Office determined that the Board has authority to promulgate the content of this regulation.
One person commented about the difference between a tidal and non-tidal wetland. The person suggested that a literature review found constructed wetlands to be beneficial. The commenter discussed that engineering drainage was an important engineering strategy. An example of drainage strategy was placing a shallow gravel filled ditch near an elevated sand mound. Another example was a vertical sand drain. A third example was placing a trench parallel to a stream. Once treatment reaches the equivalent of a septic tank system (secondary effluent and disinfection), the commenter believed the Virginia Department of Health did not have regulatory authority. The commenter believed that VDH	The commenter did not provide any suggested change to the regulation. Drainage is not prohibited. Constructed wetlands are not prohibited. Discharge to a natural wetland is prohibited.

had not shown why the engineering drainage strategies could not be used. The commenter felt VDH was using opinion and speculation. The commenter wrote that VDH was egregiously permitting the dispersal of septic tank effluent into the groundwater and the commenter cited statistics of repair permits issued in certain counties. The person opined what VDH allowed for septic tank effluent systems versus engineered systems. A second person supported the above comments about drainage strategy.	
One person described a story about a house being built and included actions from the engineer, soil person, installer, and realtor. The person stated that the health department was notifying the owner of his or her responsibilities. This person wondered how many foreclosures would be caused by the promulgation of the regulation.	The commenter did not provide any suggested change to the regulation.
One person commented that standard engineering practice could be discerned from a case heard at the Supreme Court in 1993. The person offered that any disputes of standard engineering practice could be resolved by the Engineering Design Review Panel. The person offered two reasons for having the EDRP. The commenter stated that the prescriptive nature of the regulations short circuited the EDRP and was counter to statutory language.	VDH has consulted with the Attorney General's Office and the Attorney General's Office determined that the Board has authority to promulgate the content of this regulation.
One person stated there was not any statutory language in 32.1-163.6 authorizing vertical separation distances within the proposed regulations. This person opined that VDH should establish effluent and water quality standards consistent with the statutory language and allow engineers to develop vertical separations necessary to meet those standards. This person stated that VDH could not establish compliance points before the end of the treatment works and engineers had discretion in determining compliance locations.	VDH has consulted with the Attorney General's Office and the Attorney General's Office determined that the Board has authority to promulgate the content of this regulation.. Part V, Section 210 was added to provide more engineering flexibility when desired.
One person commented about the health department's letters on implementing the regulations. The commenter stated that owners were asking for the commenter's license number but were not signing maintenance contracts for services. The commenter thought there were insufficient lab locations to submit sampling cost effectively. The commenter asked about the possibility of field testing.	The commenter did not offer any change to the regulation. The requirements for operation and maintenance have been vetted through two stakeholder groups.
One person expressed support for VOWRA's comments. The commenter suggested an increase in fees to support voluntary upgrades. The person stated that conventional systems needed to be addressed with respect to nitrogen reduction.	The Board of Health does not have the authority to address fees or conventional systems in this regulation.
One commenter described his belief of the following statutory issues and conflicts between the proposed regulations and Code of Virginia §32.1-163.6: • The proposed regulations impose prescriptive requirements, including treatment levels that are dependent on site conditions and vertical separation distances, above and beyond the performance	The commenter did not provide regulatory language to address several of the concerns offered. The regulations have been amended to allow for in situ compliance points. DEQ sets the definition of wetlands that fall under the Clean Water Act. The regulatory definition of wetlands

requirements mandated by §32.1-163.6; • The regulations set different standards for designs submitted by P.E.s in accordance with §32.1-163.6 and those submitted by others under an exemption from the licensing requirements of Title 54.1 of the Code of Virginia, requiring the former to meet the proposed regulations and the latter to meet the Sewage Disposal and Handling Regulations (and associated policies; • The regulations disregarded the statutory definition of Treatment Works and set compliance points inconsistent with that definition; • The regulations exceeded the statutory definition of wetlands provided in §62.1-44.3 of the State Water Control Law, thereby opening up vast areas of the Coastal Plain to designation as wetlands; • The regulations imposed treatment standards that are unobtainable by small-flow systems and significantly exceed the standards imposed on systems otherwise permitted pursuant to the regulations; and • The regulations inappropriately included a definition for "Standard Engineering Practice," since regulatory authority over Professional Engineers rests with DPOR.	coincides with the definition used by DEQ. For new systems proposing direct dispersal to groundwater, the groundwater regulations 9 VAC 25-280 have an anti-degradation clause that requires facilities proposing this activity to meet the standards prior to entering the groundwater. High level disinfection is only required for direct dispersal systems. The 50,000 µW-sec/cm^2 dosage comes from the Sewage Collection and Treatment Regulations (9 VAC 25-790) and has been in effect for over 10 years. High level disinfection is an achievable standard. Renewable operating permits are proposed for all large AOSS and only for small AOSS that propose direct dispersal into groundwater. The risk involved with these types of systems to human health and the environment warrant a higher level of oversight. Title 32.1-163.6 uses the term "standard engineering practice." Because staff must review and determine whether designs comply with standard engineering practice, a definition was deemed necessary.
To resolve the above issues, the commenter suggested the following revisions to the proposed regulations: 12VAC5-613-10. • Delete the following definitions: High-Level Disinfection since it requires a level of treatment exceeding that imposed on systems otherwise permitted pursuant to the regulations. Renewable Operating Permit since it adds a tremendous level of risk to owners who may be required to upgrade systems to meet an unknown standard in the future. Systems operating within their permit limits should be allowed to continue. VDH's authority to revoke permits, combined with operation and maintenance requirements, is sufficient to ensure compliance. Standard Engineering Practice since only DPOR has the authority to regulate engineering. Treatment Level 3 Effluent since the standard is unnecessary and contrived, and there are no manufactured treatment units that can consistently achieve a BOD of 10mg/l. • Add the following definitions: Point of Compliance to mean "a point within the treatment works, at the terminus of the treatment works or within	Numerous professional engineers have certified several treatment devices that can meet TL-3 as defined and evaluated. Manufacturers have submitted data to support TL-3. Definitions were examined. Staff discussed some of the terms with DEQ. Where appropriate, definitions were changed. Subsurface drainfield is a term defined in Title 32.1-163 of the Code of Virginia. The term 'secondary effluent' was not used because that federally defined term includes an 85% reduction requirement which is not applicable or necessary for the regulatory framework and program management of alternative systems in Virginia. Several states, including North Carolina and Florida are using TL-2 and TL-2 treatment levels in their regulatory programs for alternative onsite sewage systems. The commenter's proposed terms for treatment unit and treatment system would be confusing as the program presently works. The regulation describes treatment prior to the soil treatment area. The definition is consistent with how vertical separation is currently assessed within the SHDR. VDH conferred with DEQ and modified the definition for

the project area where compliance with a specified standard is measured." • Revise the following definitions: Direct Dispersal of Effluent to Ground Water to mean "direct introduction of treated wastewater from a treatment unit into groundwater." General Approval to mean "a treatment unit that has been approved by the Health Department for use." Subsurface Drainfields by changing "treatment works" to "treatment unit," since a subsurface drainfield is part of a treatment works. Treatment Level 2 Effluent by replacing it with Secondary Effluent to mean "effluent that has been treated to produce BOD5 and TSS concentrations equal to or less than 30 mg/L each." Treatment Unit to mean "a method, technique, equipment, or process other than a septic tank or septic tanks used to treat sewage to produce effluent of a specified quality prior to the point of compliance." Vertical separation by removing the phrase "or the bottom of a trench or other excavation" to make the definition consistent with 12VAC5-610 and with requirements imposed on systems otherwise permitted pursuant to the regulations. Wetlands by removing the phrase "and as otherwise identified by the Army Corps of Engineers," thus reconciling it with the statutory definition provided in §62.1-44.3 of the State Water Control Law. 12VAC5-613-30. • Revise B to read "Part II of this chapter, Performance Requirements, applies only to AOSS designed pursuant to § 32.1-163.6 with applications filed on or after the effective date of this chapter. AOSS designs submitted by professional engineers or others pursuant to § 32.1-163.5 are excluded from Part II requirements of this chapter." • Delete F per the above comments on renewable operating permits. • Delete I as redundant. • Revise J to read "Permitting of a soil treatment area within a wetland, permitting of spray irrigation systems, and permitting the direct dispersal of effluent to groundwater are subject to the Virginia Department of Environmental Quality pursuant to the requirements of Title 62.1 of the Code of Virginia and are specifically excluded from this	wetlands to coincide with DEQ's definition, which fall under the purview of the Clean Water Act. Direct dispersal to groundwater was defined with DEQ assistance. VDH has authority to issue permits for direct dispersal to ground water. VDH reviewed Section 40 and revised it. The Code of Virginia allows AOSEs to operate under an exemption to the practice of engineering. VDH cannot prohibit designs submitted pursuant to that exemption. VDH believes that direct dispersal to groundwater and systems within the Chesapeake Bay have greater potential for impacting human health and the environment. As such, greater oversight through renewable operating permits was deemed necessary. The statistical procedures currently used by VDH are appropriate for evaluating population data and aggregate performance. The statistical measures used for listing treatment devices do not reflect how an individual treatment device will perform. The regulations identify TL-2 and TL-3 and the agency believes that mechanisms must be in place to evaluate treatment units for these treatment standards. The agency consulted with the Office of Attorney General and has authority to promulgate testing methodologies for TL-2 and TL-3. Direct dispersal to groundwater may occur at sites other than wetlands. Section 90.C covers those cases. Section 90.C was changed and a future implementation date was set for July 1, 2013. As the commenter notes, DEQ has jurisdiction over systems in wetlands. This was revised to say 'receiving wastewater characteristics and flow'. Section 80 was revised. Section 80.7 was deleted. Part V was added. VDH modified Section 80.5. Section 80.4 does not address systems that discharge to wetlands as those systems must be authorized by DEQ through a VPDES permit. Section 80.4 addresses systems with direct dispersal of effluent to groundwater only. The ability of a soil to degrade organics will vary with the soil texture, structure, and moisture regime. The organic loading rate was deleted. Research by Professor Ray Reneau at Virginia Tech reported no fecal coliforms at 18-24 inches below the soil column with septic effluent, depending on the soil texture and structure. Impact to groundwater with pathogenic organisms was fully considered in development of the

chapter." • Delete L. VDH will receive routine testing data sufficient to determine if a manufacturer's treatment unit is not conforming to requirements and on which an approval revocation may be based. • Delete M. There is no statutory authority for any manufacturer approval or product testing authorized by Statute or NOIRA. 12VAC5-613-40. • Delete D. The performance requirements of the proposed regulations apply specifically to P.E. designs pursuant to §32.1-163.6 (see E, below); therefore, any exclusion of 12VAC5-610, Table 5.4, is irrelevant. • Revise E to read "All plans and specifications for AOSS submitted pursuant to this chapter shall be properly sealed by a professional engineer licensed in the Commonwealth pursuant to Title 54.1 of the Code of Virginia and, shall have a statement on the title page of the plans clearly identifying the plans as a § 32.1-163.6 submittal. Where this statement is not included on the title page, the Department will review the plans pursuant to the Sewage Handling and Disposal Regulations (12VAC5-610) and applicable policies." • Delete F. There are no AOSS designs authorized under this regulation by anyone other than a PE. • Revise G by removing "in accordance with standard engineering practice." 12VAC5-613-60. Delete D per the above comments on renewable operating permits. 12VAC5-613-70. Delete this section in its entirety. VDH has failed in every attempt to set up and administer a jurisdictional test program, as evidenced by the GMP-147 approvals of Puraflo, Advantex and Ecoflo, which had average BOD levels ranging from 6.9-8.3 mg/L, but 99% confidence limits ranging from 28.5-43.2 mg/L. Per Dr. David Edwards of VCU, the statistical model used in GMP-147 is fundamentally flawed. The use of standard error and confidence intervals for the mean are not appropriate when interest lies in where treatment unit performance will fall, and the tolerance intervals computed by VDH are too low as a large percentage of treatment units will fail the criterion.	regulation. The Board of Health only has the authority to apply these regulations to alternative onsite sewage systems. VDH modified Section 90, 100, and 110 to address these concerns as well as related concerns. Numerous commenters spoke against allowing direct dispersal of effluent to groundwater. In order to demonstrate that these systems are adequately protective of public health and the environment, VDH feels that a higher level of monitoring is required. Section 32.1-164 of the Code of Virginia allows nutrient standards. Placement of an onsite system into wetlands would violate the Clean Water Act without a proper permit. Any such discharges must be permitted through DEQ's VPDES permit program. Drainage trenches are ancillary but critical parts of some onsite designs. Drainage trenches also have the ability to transport contaminants greater distances because of their intended water carrying capacity. To adequately protect groundwater, horizontal separations are necessary.

12VAC5-613-80. This section includes both performance and prescriptive requirements, but designs submitted pursuant to §32.1-163.6 are subject to performance requirements only. • Delete 4, which refers to the performance and prescriptive requirements of 90.C. DEQ is responsible for permitting facilities that discharge to wetlands. • Revise 5 to read "All AOSSs shall be designed for the anticipated receiving wastewater strength and flow." • Rewrite 7 in terms of ultimate performance, rather than as a prescriptive prohibition. • Revise 11, which is prescriptive, to read "The soil treatment area shall be adequately sized to accommodate the hydraulic capacity of the underlying soil." • Delete prescriptive 12. • Delete the prescriptive vertical separation requirements in 13 for which there is no statutory authority. Revise to read "For any small AOSS where the vertical separation to a limiting feature is less than 18 inches below the soil treatment area and for any large AOSS, regardless of site constraints, the designer shall provide calculations to demonstrate that water mounding will not adversely affect the functioning of the soil treatment area, that hydraulic failure will not occur, and that adequate vertical separation will be maintained to ensure the performance requirements of this chapter are met." • Add a new item reading "For any system in which artificial drainage is proposed, the designer shall provide calculations and other documentation sufficient to demonstrate the effectiveness of the proposed drainage, except where an outlet daylights downgradient from the drainage area." • 14 provides prescriptive requirements. • Revise 15 to read "The organic loading rate shall not exceed 0.0005 lb/day/sf BOD5 on a trench-bottom or aerial basis, as appropriate." Prescriptive organic loading rates for septic tank effluent range much higher than the proposed rate of 0.00021 lb BOD5/day/sf. 12VAC5-613-90. This section includes both performance and prescriptive requirements and imposes standards exceeding those imposed on systems otherwise permitted pursuant to the regulations. • Although A is a performance standard, the stated fecal coliform limit is incorrect. The statutory groundwater	VDH has consulted with the Attorney General's Office. The Board has authority to promulgate the content of this regulation. VDH attempted to address many of the concerns of this commenter by adding Part V to the final regulation. VDH has consulted with the Attorney General's Office and the Attorney General's Office determined that the Board has authority to promulgate the content of this regulation.

standard for systems otherwise permitted pursuant to the regulations is 200 cfu/100 mL. • B is a performance standard, but VDH must demonstrate that a TN limit of 5 mg/L is routinely met by systems otherwise permitted pursuant to the regulations. • C.1 is a performance standard, but it is unclear if it will require routine or periodic sampling for all groundwater constituents listed in 9VAC25-280, many of which are not normally associated with domestic wastewater or are meaningless to aerobic treatment systems. • C.2 is redundant and refers to 100.G., which will quadruple residential system O&M by imposing quarterly sampling. • C.3 is performance based, but exceeds the requirements imposed on systems otherwise permitted pursuant to the regulations. • C.4 is prohibitive, therefore, prescriptive. • C.5 is prescriptive. • C.6 should be moved to the administrative section. Also see the above comments regarding renewable operating permits. • D is prescriptive. Additionally, VDH has no statutory authority within the operative NOIRA to set a Nitrogen limit or standard that is more restrictive than that imposed on systems otherwise permitted pursuant to the regulations. • E is prohibitive and, therefore, prescriptive. There is no valid basis for such a prohibition, as there is little evidence to suggest that a shallow-placed engineered onsite sewage system is likely to constitute pollution as defined in §62.1-44.3 of the State Water Control Law. Further, if such discharge does impact a well, that impact can be easily and inexpensively resolved. Designating vast areas as wetlands (through expansion of the "wetlands" definition) and prohibiting sewage system construction on those newly-designated wetlands areas will have enormous social and economic consequences, rendering affected properties unbuildable, prohibiting sewage system improvements for existing dwellings, and stifling home construction. VDH must, therefore, demonstrate the science or empirical data that validates this proposed prohibition. Additionally, it must be clarified that "wetlands" refers to non-tidal wetlands, since sufficient prohibitions currently exist to protect tidal wetlands. The section in its entirety should be replaced with the following: 12VAC5-613-90. Ground Water Protection. A. The AOSS shall not pose a greater risk of ground water pollution than systems otherwise permitted pursuant to 12VAC5-610. The concentration of fecal coliform	VDH modified the regulation to address this concern.

organisms must not exceed 200 cfu/100 mL at the terminus of the treatment works. B. Each large AOSS shall comply with TN limit of 5 mg/L at the project area boundary. Prior to the issuance of a construction permit, the designer shall demonstrate compliance with this requirement through modeling or other calculations. Such demonstration may incorporate multiple nitrogen removal methods such as pretreatment, vegetative uptake (only for AOSS with shallow soil treatment areas), denitrification, and other viable nitrogen management methods. Ground water and other monitoring may be required at the department's discretion. C. All small AOSS in the Chesapeake Bay Watershed shall provide a 50% reduction of TN as compared to a conventional gravity drainfield system. D. The engineer shall identify the point of compliance for effluent sampling and corresponding effluent quality standard. When required, the sampling point for chlorine disinfection shall be at the end of the chlorine contact tank if TRC is to be used to measure compliance.	VDH evaluated the concerns of this commenter and vetted these concerns with the Technical Advisory Committee. VDH determined that some parts of the regulations should be modified based on these comments, while other parts remain unchanged based on public health, legal, economic and technical considerations. VDH made substantive modifications to Sections 10, 80, 90 and 100 to address some of the concerns of this commenter. In addition, VDH attempted to address many of these concerns with the addition of Part V.
12VAC5-613-100. This section should be moved to Part III and revised as follows: • Revise G to read “Systems with direct dispersal to groundwater shall comply with the following:” • It is unclear if G.1.a. requires telemetry to notify the local health department and AOSS operator of anything beyond basic alarm conditions. Revise to read “Shall include telemetry and automatically notify the operator and local health department if an alarm condition occurs related to the disinfection unit, aerator malfunction or a high water condition within a pump or treatment tank.” • G.1.b. is excessive, will quadruple maintenance costs, and should be deleted. • G.1.c. is excessively restrictive and should be deleted. • Revise G.2. to read “Large AOSS must be continuously monitored for the proper operation of all treatment units. If the wastewater treatment works is not manned 24 hours a day, telemetry shall be provided that monitors all critical systems, including turbidity into the disinfection unit and the functionality of the disinfection unit, and notifies the operator of alarm conditions.”	VDH revised this section in an effort to address these concerns.
12VAC5-613-110. This section should be moved to Part III.	
12VAC5-613-200. 4 is excessively prohibitive as noted in the previous comments regarding wetlands. VDH should demonstrate	

the science or empirical data that justifies this requirement. 12VAC5-613-200. VDH should demonstrate the science or empirical data that justifies 5.b. and 5.c. requirements. Per statutory requirements, treatment compliance is achieved at the point where the effluent from the Treatment Works equals the effluent quality of systems otherwise permitted pursuant to the regulations. Typically drainage trenches or excavations are not part of the treatment works as defined in §32.1-163, but are ancillary improvements to promote site drainage.	
One commenter, a member of the Virginia Society of Professional Engineers (VSPE), stated that he and the VSPE had identified and discussed the following issues with regard to the proposed regulations: • They exceed the scope and mandate of Code of Virginia §32.1-163.6, as amended and reenacted by HB-2551, by: - Imposing prescriptive requirements, in addition to Code-mandated performance requirements; - Imposing vertical separation requirements, in addition to the Code-mandated horizontal setback requirements; - Imposing treatment standards, including TN standards, that are unobtainable by small-flow systems and significantly exceed the standards imposed on "systems otherwise permitted;" and - Addressing the issue of wetlands. • They conflict with the statutory definition of Treatment Works, which includes "land, that [is] or will be (i) an integral part of the treatment process or (ii) used for ultimate disposal of residues or effluent resulting from such treatment," by imposing effluent standards and requiring compliance monitoring at a point prior to dispersal to the soil. • They inappropriately include a definition for "Standard Engineering Practice," since regulatory authority over Professional Engineers rests with DPOR. • They prohibit the dispersal of septic tank effluent for large AOSS without sufficient justification. To resolve the above issues, the commenter suggested the following revisions to the proposed regulations: 12VAC5-613-10 • Delete the following definitions: Best Management Practices General Approval High Level Disinfection MPI Renewable Operating Permit Standard Engineering Practice Treatment Level 2 (TL-2) Effluent	Staff has been working with VSPE. Several regulatory changes were made in Sections 10, 80, 90, and 210 to address these comments. VDH has consulted with the Attorney General's Office. The Board has authority to promulgate the content of this regulation. VDH evaluated the concerns of this commenter and vetted these concerns with the Technical Advisory Committee. VDH determined that some parts of the regulations should be modified based on these comments, while other parts remain unchanged based on public health, legal, economic and technical considerations. VDH made substantive modifications to Sections 10, 80, 90 and 100 to address some of the concerns of this commenter. In addition, VDH added Part V to address many of the

Treatment Level 3 (TL-3) Effluent. • Add the following new definitions: Odor (definition requested). Point of Compliance to mean a point within the treatment works, at the terminus of the treatment works or within the project area where compliance with a specified standard is measured. Secondary Effluent to mean effluent that has been treated to produce BOD5 and TSS concentrations equal to or less than 30 mg/l each. • Revise the following definitions: Direct Dispersal of Effluent to Ground Water to mean the direct introduction of treated wastewater into groundwater. Subsurface Drainfield as a system accommodating treated sewage from a treatment unit. Treatment Unit/System as something producing effluent of a specified quality prior to the point of compliance. Wetlands to clarify the regulatory agency as the U.S. Army Corps of Engineers. 12VAC5-613-20 • Revise A.7 to replace "onsite soil evaluators, system designers" with "professional engineers." 12VAC5-613-30 • Revise B to state that Part II Performance Requirements apply only to §32.1-163.6 AOSS applications submitted on or after the effective date of the regulations, and that §32.1-163.5 AOSS applications are exempt from Part II requirements. • Revise C to state that AOSS with applications filed prior to the effective date of these regulations be subject to all requirements of the regulations that were in effect when the system was permitted. • Delete F, G, H, I, K, L and M. • Revise J to state that "permitting of a soil treatment area within a wetland, spray irrigation systems, and direct disposal of effluent to groundwater" are subject to permitting by DEQ pursuant to Code of VA Title 62.1 and are excluded from this chapter. 12VAC5-613-40 • Delete D and F. • Revise E to remove the term "standard engineering practice" and the allowance for designs submitted under the Code of VA Title 54.1 exemption from licensing requirements. • Revise G to delete the term "standard engineering practice." 12VAC5-613-50	concerns of this commenter. The agency consulted with the Office of Attorney General and has authority to promulgate testing methodologies for TL-2 and TL-3. The agency believes a listing and evaluation procedure is necessary for the design community. Professional engineers may use different treatment methods in accordance with Section 210.

• Revise E to remove the enforcement reference to 12VAC5-610. 12VAC5-613-60 • Delete D. 12VAC5-613-70 • Delete this section in its entirety. 12VAC5-613-80 • Re-title the section as “Design Performance Requirements.” • Delete D, G, K, Table 1, L, M.a-c, N and Table 2. • Revise E to replace “treatment units and treatment systems” with “AOSSs” and state that they shall be designed for the anticipated wastewater strength and peak flow they will receive. • Add the following new sections: J. The Soil treatment area shall be adequately sized to accommodate the hydraulic capacity of the underlying soil. K. For any small AOSS where the vertical separation to a limiting feature is less than 18 inches below the soil treatment area and for large AOSS, regardless of site constraints, the professional engineer shall provide calculations to demonstrate that water mounding will not adversely affect the functioning of the soil treatment area, that hydraulic failure will not occur, and that adequate vertical separation will be maintained to ensure the performance requirement of this chapter are met. • Retain M.d and renumber as L. • Revise O to increase the organic loading rate to 0.0005 lb BOD_5/sf/day and state that it applies on a trench-bottom or aerial basis, as appropriate. • Revise P to delete “methods” from what must be specified by the designer. 12VAC5-613-90 • Re-title the section as “Ground Water Protection.” • Increase the fecal coliform limit in A to 200 cfu/100 mL and state that it applies at the terminus of the treatment works. • Delete C, D.1.a-b, D.2-3, Table 3 and E. • Combine D.1 into D and renumber as C. • Add a new section D stating that the engineer shall identify the point of compliance for effluent sampling and that, if chlorine disinfection is proposed, it shall be sampled at the end of the CCT. 12VAC5-613-100 • Relocate this section to Part III and renumber/re-title as	

"12VAC5-613-130. Laboratory Sampling and Monitoring." • Add new A stating that sampling requirements apply only to AOSSs with applications filed on or after the effective date of the regulations. • Add new B stating that AOSS with applications filed prior to the regulation's effective date are subject to the laboratory sampling requirements contained in the regulations in effect at the time the systems were permitted or the sampling requirements contained in the operation permits. • Renumber existing A as D. • Renumber existing B as E and revise to state that, except for TRC, all effluent samples shall be collected at the point of compliance, rather than prior to discharge to the soil treatment area. • Reconfigure D and E into F and G with few substantive changes, except that the parameters for which samples are to be analyzed (BOD_5 and fecal coliform, as required) are no longer specified. • Renumber existing F and Table 4 as H and Table 2. • Delete existing G. 12VAC5-613-110 • Relocate this section to Part III and renumber/re-title as "12VAC5-613-140. Field Measurements, Sampling, and Observations." • Renumber Table 5 as Table 3. 12VAC5-613-150 and 12VAC5-613-160 • Combine the above two sections into one and re-title as "12VAC5-613-110. Operator minimum frequency of visits." • Renumber Table 6 as Table 1 and revise it as follows: - Require the initial visit for ≤1,000 gpd AOSS within 180 days of system start-up; - Include ≥40,000 gpd AOSS in the table; and - Refer to the Operation Permit for the frequency of initial and regular visits at ≥40,000 gpd AOSS. 12VAC5-613-200180 • Delete D and E in their entirety.	
One commenter, President of the Virginia Society of Professional Engineers (VSPE) expressed support for the above comments provided by another VSPE member. The commenter said the regulations must reflect the requirement that a license professional engineer must be used when the practice of engineering is involved. The commenter also noted that the VSPE was willing to provide support to ensure that the most appropriate regulations are implemented.	Staff has been working with the Virginia Society of Professional Engineers (VSPE). Some of the regulatory changes in Sections 80, 90, and 210 were made as a result of these discussions.
Gloucester county commented the regulations do not recognize that wetlands are initially evaluated by the Corps of	Staff discussed this issue with DEQ representatives. DEQ has authority to regulate activity within wetlands and

Engineers and may warrant permitting by both the Corps of Engineers and DEQ. Language should be incorporated that no component of the AOSS should be situated in the 100 ft resource protection area or within the 70 foot setback to shellfish waters. The regulations do not differentiate between wetlands and the CBPO buffer. Placing any component within the 100-foot buffer negates the purpose of the buffer.	recognized that treatment components, other than the soil treatment area, may be constructed in a wetland when the owner gets the appropriate permit(s).
Loudoun County requested that a new horizontal setback be added: "No AOSS dispersal component shall be located within a source water protection area (250 ft of a public groundwater supply source, established by a public utility to protect such source).	Section 32.1-163.6. H. states the following: "This section shall not be construed to prohibit any locality from adopting or enforcing any ordinance duly enacted pursuant to Chapter 21 (§ 15.2-2100 et seq.) of Title 15.2."
Wetlands Watch commented that the proposed regulations met some of its objectives, but not all, in: 1) preventing AOSS from being installed in wetlands; 2) allowing localities to respond to the need for nutrient reduction in the Chesapeake Bay impaired tributaries by regulating AOSS permits; 3) requiring a 50 foot setback from the shoreline of an impaired watershed; 4) requiring a one-foot vertical separation between an AOSS treatment zone and the groundwater, and: 5) banning the direct discharge of effluent into groundwater. Wetlands Watch opined that one flooding event could cause problems for a sewage system so all systems should be installed above watertable and within unsaturated soil. The commenter and four other persons objected to discharging effluent directly into groundwater. The commenter noted that 48 percent of all groundwater feeds the Chesapeake Bay. Wetlands Watch supported the requirement to issue operation permits after owners hired an operator. Three people supported the statements of Wetlands Watch.	These regulations recognize that DEQ has authority to regulate activity within wetlands and recognize that treatment components, other than the soil treatment area, may be constructed in a wetland when the owner gets the appropriate permit(s). The flexibility afforded to designers under section 32.1-163.6 of the Code of Virginia prevents VDH from prohibiting direct dispersal of effluent into groundwater. There are certain performance standards designed to protect groundwater.
One individual stated that VDH should consider excluding "large AOSS" (AOSS with design flows exceeding 10,000 GPD – 1,200 GPD and 40,000 GPD thresholds were alternately suggested) from the regulations, thereby requiring those larger systems to be permitted by DEQ. Justification for the proposed exclusion included the following: 10,000 GPD is the current threshold for licensed AOSOs; Large systems will consume large areas of land, both in the primary and reserve dispersal areas; Large systems require additional waste characterization, performance data, risk assessment, operator safety and reliability testing; VDH lacks the resources to deal with large systems; and It is not clear that a Statement of Completion is required. The commenter also provided the following quotation, attributed to M.A. Gross: "Treating all wastewater as if it is residential wastewater can have disastrous results."	The Board of Health is mandated by statute to permit large AOSS. Estimating Ksats and/or percolation rate based on soil structure and texture is a long-standing practice in Virginia. The correlation between the physical structure and texture of the soil to the soil's ability to move water is well known and for small AOSS. VDH modified Sections 10, 80, 90 and 100 to address some of the concerns of this commenter as well as other stakeholders.

To address the above issue, the commenter suggested the following revisions to the regulations: 12VAC5-613-10 ~~"Small AOSS" means~~ "AOSS" or "Smallflow AOSS" shall also mean for the purpose of this chapter an AOSS that serves no more than three attached or detached single-family residences or a structure with an average daily sewage flow of less than or equal to ~~1,000~~ 1199 gpd. "Large Alternative Onsite Sewage System," "LAOSS," or "Largeflow AOSS" " ~~"Large AOSS"~~ means an AOSS that serves more than three attached or detached single-family residences or a structure with an average daily sewage flow in excess of ~~1,000~~ 1200 gpd. "Local health department" means the local health department having jurisdiction over the ~~AOSS~~AOSS or LAOSS. 12VAC5-613-30 D. ~~Small AOSSs~~ AOSSs designed, constructed, permitted, and operated… L. Treatment units for ~~small AOSSs~~ AOSS that are recognized by the department as generally approved… M. After the effective date of this chapter, new applications for general approval for TL-2 or TL-3 shall be subject to the requirements of this chapter. The department may continue to evaluate any treatment unit for general approval and any ~~small AOSSs~~ AOSS ~~that is~~ undergoing evaluation as of the effective date of this chapter using the protocol in place on the date of application. ~~for general approval.~~ 12VAC5-613-40 3. Ksat or percolation rate at the proposed installation depth and at depths below the soil treatment area to demonstrate compliance with this chapter. ~~Ksat or percolation rate may be estimated for small AOSSs.~~ The Ksat or percolation rate must be measured using an appropriate device for ~~large AOSSs~~ AOSS and LAOSS. 12VAC5-613-60 D. All ~~large AOSSs~~ LAOSS and any AOSS permitted pursuant to 12VAC5-613-90 C… 12VAC5-613-70 The division shall develop a protocol to verify the expected performance of treatment units of ~~small AOSSs~~ AOSS that meet TL-2 or TL-3 effluent quality… 12VAC5-613-80 7. The dispersal of septic tank effluent is prohibited unless pressure-dosed under “enhanced flow” and uniform	AOSS is defined in section 32.1-163 of the Code of Virginia and the Board of Health cannot deviate from that definition. VDH evaluated the technical amendments proposed by this commenter and made revisions where appropriate.

distribution for ~~large AOSSs~~ LAOSS;

13. Adequate vertical separation shall be maintained…as follows:
    a. For any ~~small AOSS~~ AOSS where the vertical separation...
    b. For any ~~large AOSS~~LAOSS regardless of site constraints…
    c. For ~~large AOSSs~~ LAOSS, the department may require the owner…

12VAC5-613-90

B. Each ~~large AOSS~~ LAOSS shall comply with TN limit of 5 mg/l at the project area boundary…

D. The following additional nutrient requirements apply to all AOSSs in the Chesapeake Bay Watershed:
    1. All ~~small AOSSs~~ AOSS shall provide a 50% reduction of TN…
    2. All ~~large AOSSs~~ LAOSSs shall demonstrate less than 3 mg/l TN…

    Table 3: Maximum TN Effluent Quality Requirements for ~~Large AOSSs~~ LAOSS

    3. Ground water and other monitoring may be required at the department's discretion for ~~large AOSSs~~ LAOSS.

12VAC5-613-100

A. Laboratory sampling is not required for any ~~small AOSS~~ AOSS with an installed soil treatment area…

D. ~~The owner of each small AOSS is required to submit~~ The owner of each AOSS is required to have his licensed operator submit an initial grab sample of the effluent...

E. For ~~small AOSSs~~ AOSS that utilize a treatment unit that has not received general approval...

F. Sampling and monitoring requirements for AOSS treatment systems with flows greater than ~~1,000~~ 1200 gpd are contained in Table 4:

Table 4: Sampling and Monitoring for ~~Large AOSSs~~ LAOSS

G. Systems with direct dispersal to ground water as described in 12VAC5-613-90 C shall comply with the following:
    1. ~~Small AOSS~~ AOSS treatment systems…
    2. ~~Large AOSSs~~ LAOSS must be continuously monitored for the proper operation…
    3. Ground water monitoring is required for all ~~large AOSSs~~LAOSS with direct dispersal of effluent…

All changes made in this regulatory action

Please list all changes that are being proposed and the consequences of the proposed changes. Describe new provisions and/or all changes to existing sections.

This section describes changes in the regulatory environment since April 5, 2010. On April 6, 2010, the Board of Health adopted *Emergency Regulations for AOSSs*, which were supplemental to 12VAC5-610 and contained numerous provisions with respect to the design and operation of AOSS. The Emergency Regulations already contain most of the new requirements discussed below.

The final regulation has the following new provisions:

1) New definitions, the most relevant being: standard engineering practice, best management practice, general approval, pollution, renewable operating permit, state waters, surface waters, point source discharge, treatment levels 2 and 3, Chesapeake Bay Watershed, groundwater, direct dispersal of effluent to groundwater, and wetlands. Some definitions were modified.

2) It is deemed a violation of these regulations if any AOSS fails to achieve one or more performance requirements, to accomplish any mandated visit by an operator, or any operation, maintenance, monitoring, sampling, reporting, repair or inspection requirement. Also, a violation of an Operation and Maintenance manual is a violation of the regulations if it results in a violation of one or more performance requirements.

3) Before the Department will issue an operation permit for an AOSS serving a residential structure, the property owner must record an instrument which complies with Va. Code § 15.2-2157.E in the land records of the appropriate circuit court.

4) These regulations contain a requirement that all plans and specifications for AOSS are either sealed by a professional engineer or they must contain a certification statement claiming an appropriate exemption from the practice of engineering.

5) These regulations contain a requirement that applications submitted under Va. Code § 32.1-163.6 include a site characterization report.

6) The regulation sets the framework for an evaluation and testing protocol for generally approved treatment units to be developed by the Division through a guidance document at a later date. In addition, these regulations contain a 5-year sunset provision for treatment units that have been conferred general approval on or before the effective date of this chapter. After the 5-year period has elapsed, these treatment units must follow the evaluation and testing protocol in effect at the time of re-application in order to obtain general approval.

7) The regulations establish a number of performance requirements for AOSS which include:

A. A prohibition against the presence of raw or partially treated sewage on the ground surface.

B. A prohibition against the backup of sewage into plumbing fixtures.

C. Maximum trench bottom hydraulic loading rates based on two different effluent qualities (TL-2, and TL-3).

D. A requirement that STE may only be discharged to a soil treatment area when the vertical separation to a limiting feature consists of at least 18 inches of naturally-occurring, in-situ soil.

E. A requirement that AOSSs designed to disperse STE have at least 12 inches of soil cover over the soil treatment area unless waived by Section 210.

F. A requirement that dosing of a treatment unit shall accommodate the design's peak flow.

G. Whenever a site has groundwater at less than 18 inches from the surface or there is less than 18 inches of vertical separation from the point of effluent application to the bottom of a trench or other excavation, then the designer must demonstrate that water mounding will not adversely affect the functioning of the soil treatment area. The designer must provide additional studies demonstrating that the site is not flooded during the wet season and that there is sufficient hydraulic gradient to move effluent off the site without ponding.

H. When standard disinfection is required, the fecal coliform effluent quality prior to dispersal to the soil treatment area must not exceed 200 cfu/100 ml.

I. These regulations contain the following performance requirements related to site conditions (vertical separation to limiting features) and effluent quality:

    a) Sites with less than 18 inches of vertical separation, but at least 12 inches of vertical separation and six inches of naturally occurring, undisturbed soils, require a minimum of TL-2 effluent.

    b) Sites with less than 12 inches vertical separation must apply a minimum of TL-3 effluent with disinfection. However, if the site has less than six inches of vertical separation from a perched or seasonal water table, then it must also comply with additional groundwater protection standards enumerated in section 90.

J. Organic loading rates cannot exceed 0.00021 BOD lb/day/sf on a trench bottom basis.

K. Large AOSS that are not situated in the Chesapeake Bay Watershed must comply with a total nitrogen limit of 5 mg/l at the project area boundary. As a precondition to the issuance of an operation permit, the designer is required to provide calculations and modeling to demonstrate that the proposed AOSS will meet this nitrogen requirement.

L. AOSS must be designed and constructed so as to be structurally sound, resist infiltration and inflow, minimize odor or other nuisances, and maintain forward flow.

M. When sand, soil, or soil-like material is used to increase the vertical separation, the designer shall specify methods and materials that will achieve the performance requirements of this chapter.

N. Septic tank effluent was prohibited for large AOSS and was changed to be allowed.

O. AOSS with soil dispersal systems installed with less than six inches of vertical separation to groundwater must meet the following requirements:

    1. If the concentration of any constituent in ground water is less than the limits set forth in 9VAC 25-280-10 et seq., then the natural quality for the constituent must be maintained; natural quality must also be maintained for all constituents not set forth in 9VAC 25-280-10 et seq. If the concentration of any constituent in ground

water exceeds the limit set forth in the regulatory standard for that constituent, then no addition of that constituent to the naturally occurring concentration can occur;

2. Groundwater monitoring to confirm compliance with groundwater quality standards must be undertaken for large AOSS;

3. Additional effluent monitoring is required for small AOSS;

4. A renewable operating permit must be obtained and maintained in accordance with this chapter;

5. The designer must provide analyses demonstrating that the system will function as designed for the life of the structure without degrading the soil treatment area; and,

6. The systems must comply with the enumerated effluent quality standards for BOD, TSS, total nitrogen, fecal coliform and total phosphorous. In addition, high level disinfection is required and the systems must incorporate filtration capable of demonstrating compliance with the enumerated turbidity standard.

P. AOSS in the Chesapeake Bay Watershed must provide a 50 percent reduction of Total Nitrogen (TN) as compared to conventional systems which must be demonstrated either through compliance with the Division's BMPs or through sufficient calculations. In addition, large AOSSs in the Bay must demonstrate less than 3 mg/L TN at the project boundary and the Division may require groundwater monitoring for large AOSS.

Q. Laboratory sampling is required for all AOSS except those that are designed to disperse septic tank effluent.

R. A small AOSS using a treatment unit with general approval is required to be sampled once during the first 180 days of operation and then once every 5 years thereafter.

S. A small AOSS using a treatment unit that does not have general approval is required to be sampled once during the first 180 days of operation, with four additional samples to follow within the first two years of operation, and an annual sample thereafter. However, if four or more consecutive samples demonstrate compliance with applicable performance requirements, then the owner may petition the Department to have the sampling frequency reduced to once every five years.

T. Samples for small AOSSs must be analyzed for BOD_5 and if disinfection is required, fecal coliform organisms. Small AOSSs using chlorine as a disinfectant may sample for total residual chlorine instead of fecal coliform organisms.

U. Small AOSS that disperse directly to groundwater require quarterly samples and continuous monitoring of critical treatment units. Large AOSS that disperse directly to groundwater require monthly samples and 24-hour staffing or telemetry in order to continuously monitor critical treatment units.

V. Sampling and monitoring requirements for large AOSS are enumerated.

W. Recommended Field Measurements, Sampling, and Observations for all AOSS up to 0.04 MGD are enumerated.

8) Operator responsibilities that include:

A) Filing a report with VDH for each required visit or when there is a reportable incident.

B) Accomplishing the various responsibilities and assessments required by the regulations using visual and other observations, laboratory and field tests deemed appropriate and as required by the regulations.

C) Keeping a log for each AOSS for which he is responsible.

9) These regulations include a requirement that any person who pumps or otherwise removes sludge or solids from any septic tank or treatment unit of an AOSS must file a report with VDH.

10) These regulations establish owner responsibilities that include:

A) Having the AOSS operated and maintained by an operator.

B) Having the AOSS visited by an operator at the frequencies and times required by these regulations.

C) Having an operator collect all required samples.

D) Keeping a copy of the log provided by the operator and the Operation and Maintenance Manual (O&M Manual) and making a reasonable effort to transfer both to a new property owner.

E) Complying with the onsite sewage system requirements contained in local ordinances adopted pursuant to the Chesapeake Bay Preservation Act (Va. Code §10.1-2100 et. seq.) and the Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20-10 et. seq.) when an AOSS is located within a Chesapeake Bay Preservation Area.

11) AOSS with flows less than or equal to 1,000 GPD require one operator visit within the first six months after the operation permit is issued, and an annual visit thereafter. AOSS with flows that exceed 1,000 GPD require more frequent operator visits and staffing.

12) Each AOSS must have an O&M manual prepared by the designer and submitted to the local health department for approval.

13) Minimum expectations for operator visits include:

A) Inspecting all components of the AOSS, conducting field measurements, sampling and other observations as required by the regulations or the O&M Manual, or as deemed necessary by the operator to assess the performance of the AOSS and its components.

B) Performing routine maintenance, making adjustments, and replacing worn or dysfunctional components with in-kind parts such that the system can reasonably be expected to return to normal operation.

C) If the AOSS is not functioning as designed or in accordance with the performance requirements of the regulations and, in the operator's professional judgment it cannot be reasonably expected to return to normal function through routine operation and maintenance, then the operator must immediately report to the owner the remediation efforts necessary to return the AOSS to normal operation.

14) The regulations establish the minimum reporting requirements whenever an operator is required to file a report, which include:

A) The name and license number of the operator, the date and time of the report, and the purpose of the visit.

B) A summary statement describing whether the AOSS is functioning as designed, whether the operator believes that routine maintenance performed will return the AOSS to normal operation, or whether additional actions are required to return the AOSS to normal operation.

C) A report of maintenance performed, field measurements, observations and sampling, and the name of the laboratory that will analyze samples.

D) A copy of the report provided to VDH and the owner.

15) These regulations contain horizontal setbacks for AOSS designs under § 32.1-163.6 of the Code of Virginia which are necessary to protect public health and the environment and which cannot be reduced by the engineer designing an AOSS under § 32.1-163.6 of the Code. The regulations include a new Part V, Section 210 that allows professional engineers to waive certain performance requirements in Section 80 of the regulations.

The following is a change from the existing regulations (SHDR):

Current section number	Proposed new section number, if applicable	Current requirement	Proposed change and rationale
12VAC5-610-Table 5.4	12VAC5-613-40	Table 5.4 contains prescriptive sizing criteria for soil absorption areas	This change applies only to AOSSs designed to disperse TL-2 or TL-3 effluent. These systems will be sized in accordance with performance requirements established in these regulations. Alternative systems that disperse septic tank effluent will continue to be sized in accordance with Table 5.4 of the SHDR unless waived by Section 210. Because of the reduced organic loading rates and other benefits, AOSSs that treat wastewater to a higher degree than septic tank effluent before dispersal to a soil treatment area can utilize higher hydraulic loading rates than systems utilizing septic tank effluent.

Regulatory flexibility analysis

Please describe the agency's analysis of alternative regulatory methods, consistent with health, safety, environmental, and economic welfare, that will accomplish the objectives of applicable law while minimizing the adverse impact on small business. Alternative regulatory methods include, at a minimum: 1) the establishment of less stringent compliance or reporting requirements; 2) the establishment of less stringent schedules or deadlines for compliance or reporting requirements; 3) the consolidation or simplification of compliance or reporting requirements; 4) the establishment of performance standards for small businesses to replace design or operational standards required in the proposed regulation; and 5)

the exemption of small businesses from all or any part of the requirements contained in the proposed regulation.

The agency believes the regulations represent the minimum requirements necessary to comply with its legislative mandates. The final regulations incorporate numerous changes based on the meetings that took place over the past two years and the comments received over that same time period. The regulations reflect comments from three different technical advisory groups, a report from the Weldon Cooper Center at the University of Virginia who interviewed over 300 owners of alternative and conventional sewage systems, meetings with elected officials, and hundreds of comments received during the public comment periods.

1. The agency believes the regulations establish the least stringent compliance and reporting requirements necessary to protect public health and the environment.
2. The agency believes the regulations establish the least stringent schedules or deadlines for compliance and reporting necessary to protect public health and the environment.
3. The agency believes the regulations establish the most simple and consolidated reporting requirements.
4. The agency believes the regulations have the most simple performance standards for small businesses to implement the operational standards that will protect public health and the environment.
5. The agency believes that additional exemptions to the regulations are not necessary given the extensive vetting process over the past two years.

Family impact

Please assess the impact of the proposed regulatory action on the institution of the family and family stability including to what extent the regulatory action will: 1) strengthen or erode the authority and rights of parents in the education, nurturing, and supervision of their children; 2) encourage or discourage economic self-sufficiency, self-pride, and the assumption of responsibility for oneself, one's spouse, and one's children and/or elderly parents; 3) strengthen or erode the marital commitment; and 4) increase or decrease disposable family income.

The regulation will not have any impact on the institution of the family and family stability. The agency received a number of comments during the comment period for the emergency regulations that the operator and sampling requirements for small AOSS would be burdensome on families and homeowners. Specifically, VDH received comments that owners should be able to operate their own AOSS if they choose to do so. The operator licensing requirements are contained in Title 54.1 of the Code and VDH does not have discretion to change them. See the economic impact section of the Town Hall Agency Background Document for the emergency regulations more information about the economic impact.