PERIODIC REVIEW OF THE
REGULATIONS FOR ALTERNATIVE ONSITE SEWAGE SYSTEMS
12VAC5-613-10 et seq.
Meeting Minutes May 14, 2018

The Virginia Department of Health (VDH) held a listening session (public meeting) on May 14, 2018, in Board Room 4 of the Perimeter Center at 9960 Mayland Drive in Richmond, Virginia 23233. The purpose of the meeting was to gather comment and feedback on the Regulations for Alternative Onsite Sewage Systems (AOSS Regulations), 12VAC5-613.

VDH staff Karri Atwood, Marcia Degen, and Patrick Bolling facilitated the meeting and/or recorded minutes. The meeting was opened at 1:30 PM.

The following agenda was used for the meeting. A copy of the PowerPoint is attached to the minutes.

I. Welcome and Overview of Alternative Onsite Sewage Systems (AOSS)
Dr. Marcia Degen, Office of Environmental Health Services (OEHS) Technical Services

II. The AOSS Regulations, 12 VAC 5-613-10, et.seq.
Dr. Marcia Degen
Karri Atwood, OEHS, Legal Affairs

III. The Periodic Review Process
Karri Atwood

IV. Review of Working Draft Regulation
Dr. Marcia Degen and Karri Atwood

V. Open for Public Comment on Working Draft of the AOSS Regulations.

Karri Atwood opened the floor for comment after the introductory remarks.

- Spud Myer asked if a locality could enact an ordinance that would eliminate options. Karri Atwood offered to talk with him later regarding the topic.

No additional comments were offered so VDH reviewed key points in the working draft regulation and asked for input.

- Changing 'average' to 'peak' in relation to design flow throughout the regulation.
  - VDH noted that all small AOSS designs are based on peak flow and that Table 1 also is based on a maximum loading to the drainfield and that changing the regulation to peak flow instead of average daily flow will be more in line with how designs are actually accomplished. VDH also believes it will help in consistently applying the O&M requirements for large systems as well.
  - No objections. No comments.

- Adding a definition for 'soil-like'.
  - 12VAC5-613-80.14 allows soil, sand, or soil-like material be used to increase vertical separation. Soil-like has no definition and as a result has be problematic from an implementation standpoint.
  - Comment: Most everyone uses sand, what other types of fill are people using? Are they using tire chips, peanuts, etc? VDH responded that for the most part designers use sand but the regulation was written for maximum flexibility.
  - Comment: Are you looking for granular, less than 10 mm? Would also want something that doesn't degrade either so not organic.
  - Comment: Can you overcover for septic? VDH corrected an answer and relayed that no, fill material cannot be used to increase vertical separation when septic tank effluent is dispersed.
  - Comment: Are there any specifications for soil now? It's hard to find good dirt to cover let alone for increasing separation.
  - Comment: Luck Stone can produce soil types based no engineered specifications, but it's costly.
- Removal of 12VAC5-613-40.G.
  - VDH noted that the AOSS Regulations are supplemental to the Sewage Handling and Disposal Regulations and that all procedures related to filing an application are to follow the Sewage Handling and Disposal Regulations as stated in 12VAC50613-40.B. Section 40.G. sets a different standard for submittals under 32.1-163.6 that has been problematic with regard to adequate number of soil borings, depth of soil borings, and sanitary surveys. VDH sees no need to set a different submittal standard for engineered systems.
  - Comment: Concerned that some may not know/recognize that the AOSS Regulations are supplemental to the 610 regulations and may not understand that they have to meet the 610 requirements.
- Table 1 modifications to add in soil descriptors; remove Ksat; add in other dispersal methods, and split texture group III into 2 categories.
  - Comment: Commenter likes having more options but wants to be able to use the site conditions to amend the rate.
  - Comment: Would like to see the rates as a guide and keep Ksats.
  - Comment: Clarification in Table 1 would reduce questions for VDH staff.
- Table 2 modifications to change 0-12 to 6-12 for depth to limiting features other than water table and changes for clarity.
  - Comment: One endorsed the change.
  - Comment: Revised table is clearer.
  - Comment: Is there a specification for the actual trench construction? VDH answered those are found in the 610 Regulations and asked if additional specs such as trenches and pads should be added?
- Modifications to section 90 to add detail on groundwater monitoring (90B), modify TN requirements (90D), and remove additional nutrient removal requirements for direct dispersal systems in the Chesapeake Bay.
  - Comment: How are dilution areas recorded and where are the wells placed in relation to the dilution area? VDH noted that dilution area recordation is described in section 60 of the AOSS Regs. There are 2 recordation requirements. One is for large systems

only that rely on a dilution area and there is a second recordation for any AOSS serving a residential system.

- Sampling and Enforcement changes to section 100.
  - VDH explained that the changes would modify the '1+' enforcement strategy currently in place. Sample results 3x the limit would result in immediate enforcement. For larger system, out of compliance has been defined. It also defines where the sample will be collected (after the treatment unit) for small systems.
  - Comments: Why not sample before the treatment unit? Wouldn't you need that information if there was a problem? Concerned about who is pulling the sample and from where. VDH said yes, but the regulation is focused on compliance and cannot mandate requirements outside of checking for compliance. Once a system is in enforcement, then that checking the influent would be a normal check.
- Clarification of operator duties in section 120
  - Comment: Clarify what reports need to be submitted to VDH. Some operators believe that only 'reportable incidents' have to be submitted and routine inspections do not.
- Deletion of section 210 - Waivers
  - VDH explained that the variance process would provide the same relief that section 210 does. Section 210 has also not been used much.
  - No comments.

VDH asked if there were any other comments from the audience.

Comment: Will setbacks to abandoned wells be added to this regulation? VDH stated that those are being built into the rewrite of the Private Well Regulations.

Comment: Will these regs allow for innovation, for example if a designer wants to use a treatment unit from another state could they? VDH responded that yes, the regs already allow for that.

Comment: Are direct dispersal systems still going to be allowed? VDH stated that yes, direct dispersal is in the working draft.

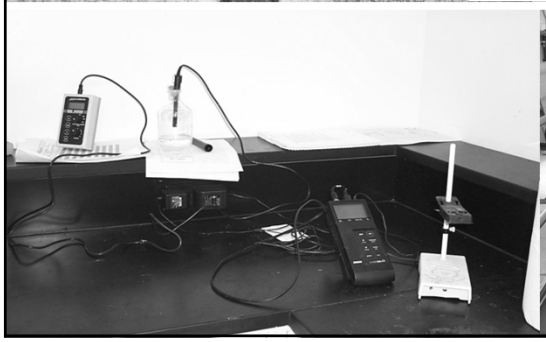
Comment: Could we add in a test method for gravelless materials? VDH stated that is already covered by the 610 Regulations

The meeting was closed at 3:30 PM.

Regulations for Alternative Onsite Sewage Systems

12VAC5-613

Karri Atwood, J.D. and
Marcia Degen, Ph.D., P.E.



Today's Agenda

I. Welcome and Overview of Alternative Onsite Sewage Systems (AOSS)
II. The AOSS Regulations
III. The Periodic Review Process
IV. Review of Working Draft Regulation
V. Public Comment

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Onsite Wastewater Treatment Systems

Septic systems are used to treat and dispose of relatively small volumes of wastewater, usually from houses and businesses that are located relatively close together. Septic systems are also called **onsite wastewater treatment systems (OWTS),** decentralized wastewater treatment systems, on-lot systems, individual sewage disposal systems, cluster systems, package plants, and private sewage systems.

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How Many Onsite Sewage Systems?

- Approximately 1,015,000 total in VA
- 665,750 installed prior to 1990
- About 30,000 alternative systems in VA
- About 10% of new systems are alternative systems

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Two Basic Categories of OWTS

- Conventional
- Alternative

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Conventional Onsite Systems

Two main characteristics (must have both):

- Septic tank(s) for treatment
- Gravity distribution within a trench type drainfield

May use a pump when the drainfield is at a higher elevation

Relies on 'good' soils for majority of treatment

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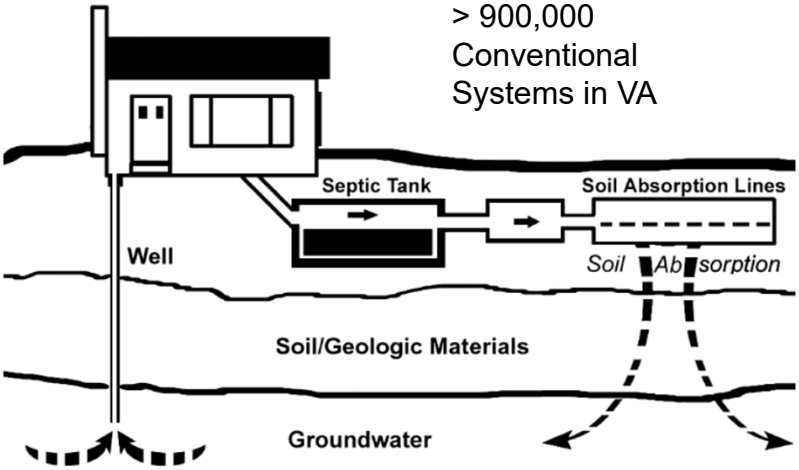
Conventional System: Drainfield

> 900,000 Conventional Systems in VA



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Conventional Onsite System

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Alternative Onsite Sewage System

"Alternative onsite sewage system" or "alternative onsite system" means a treatment works that is not a conventional onsite sewage system and does not result in a point source discharge.

Code of Virginia § 32.1-163

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Alternative Onsite Sewage System

Main characteristics:

- Treatment other than a septic tank, and/or
- Uses a method of distribution other than gravity, typically pressurized
- Does not result in a point source discharge

Designed to improve treatment of septic effluent in the soil, **or**

Provides additional treatment in a "box"

About 10% of all new systems are alternative

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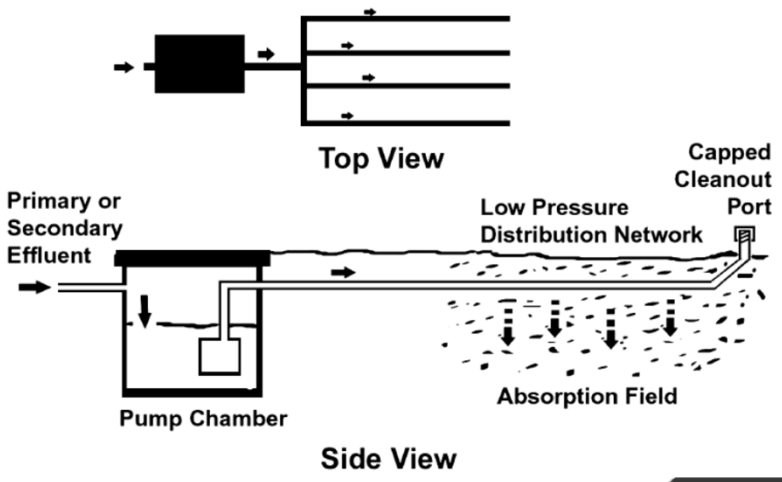
Alternative Onsite System: LPD



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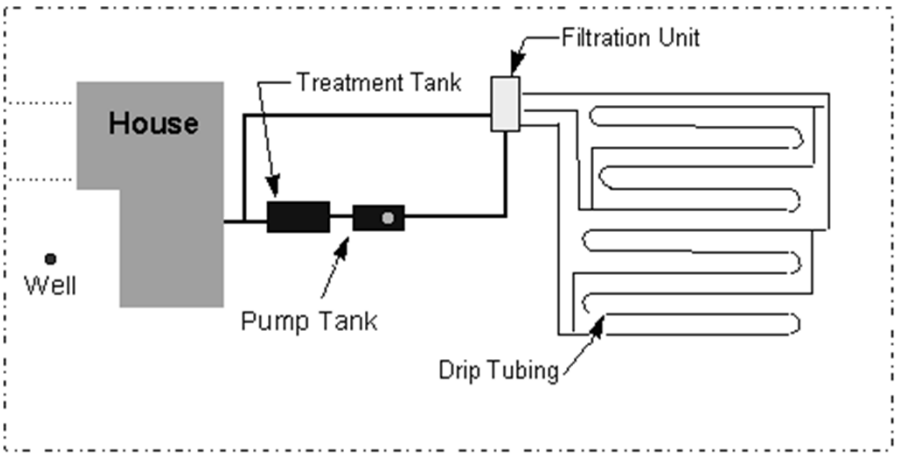

Concept drawing of a drip system for an individual home onsite sewage system
Ref: www.americanonsite.com

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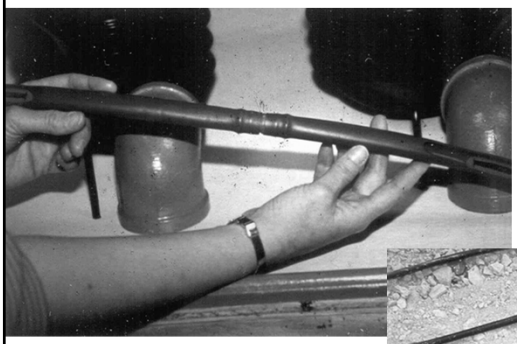

Picture of a drip tubing and drip emitter Picture of a drip system before covering

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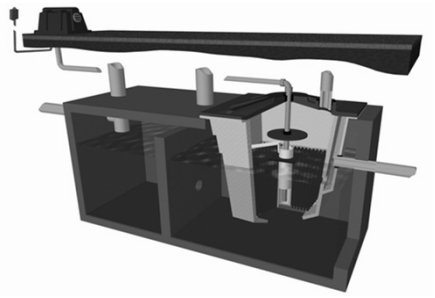
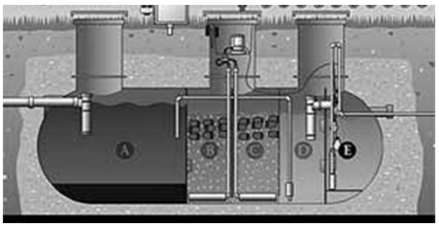
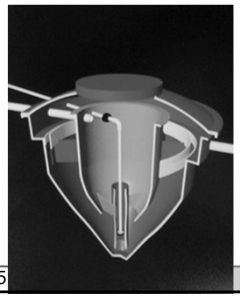
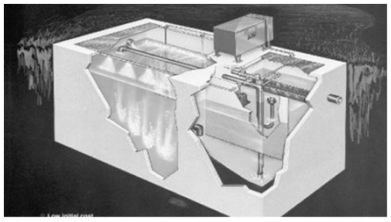
Suspended Growth Systems – *"ATUs"*









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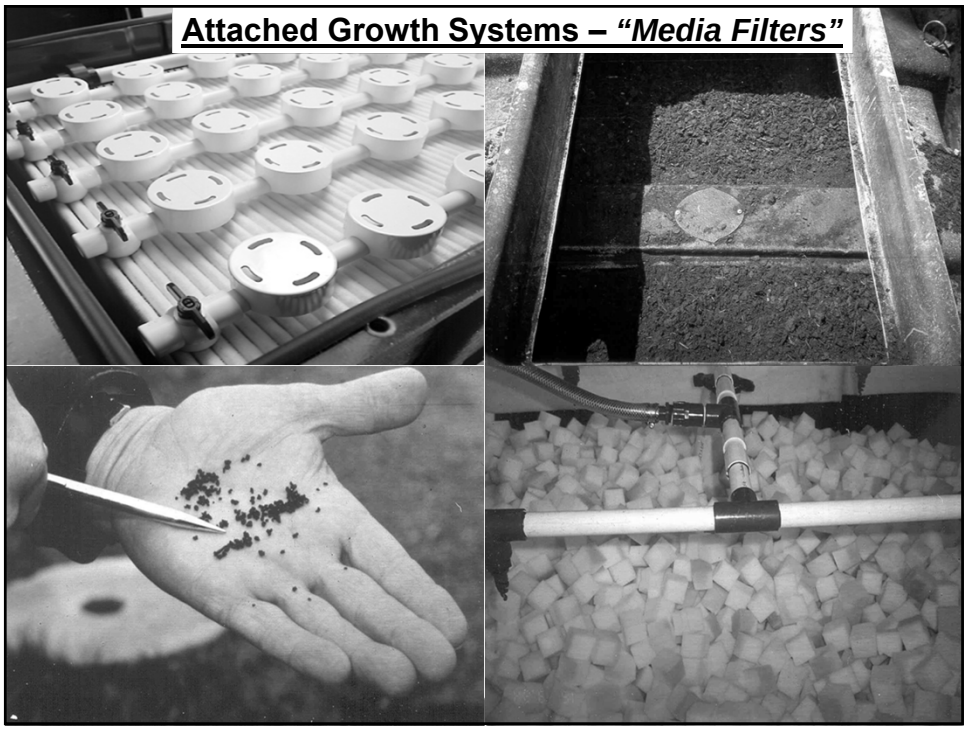
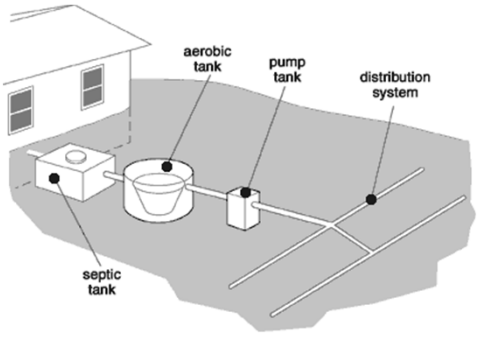
Attached Growth Systems – *"Media Filters"*



Layout

Positioned after primary tank (septic tank)

- minimizes the solids that enter an ATU
- provides some flow equalization



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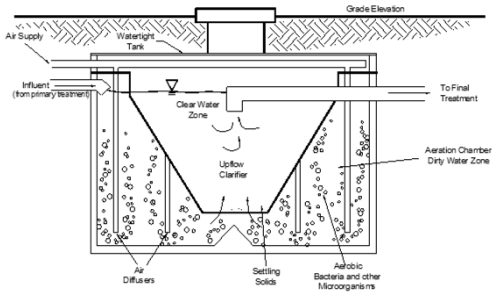
ATUs are Biological Reactors

Miniature Wastewater Treatment Plants

- the biological processes are well-understood
- the overall design objective is effective mixing of microbes, wastewater, and dissolved oxygen



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Parameter	Septic Tank	TL-2	TL-3
BOD_5, mg/l	200	30	10
TSS, mg/l	150	30	10
Nitrogen, mg/l	60	48	48
With N reduction	NA	30	30

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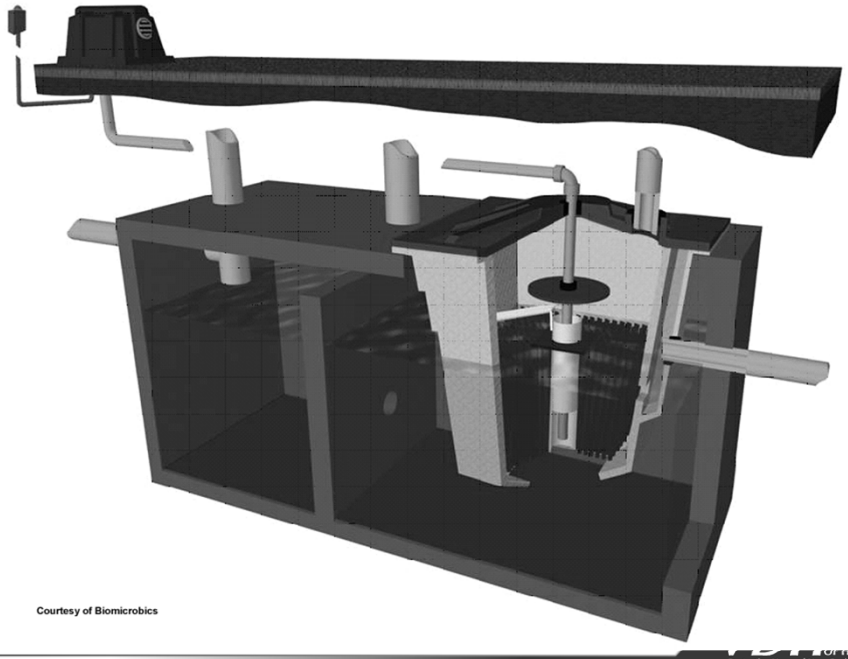

Courtesy of Biomicrobics

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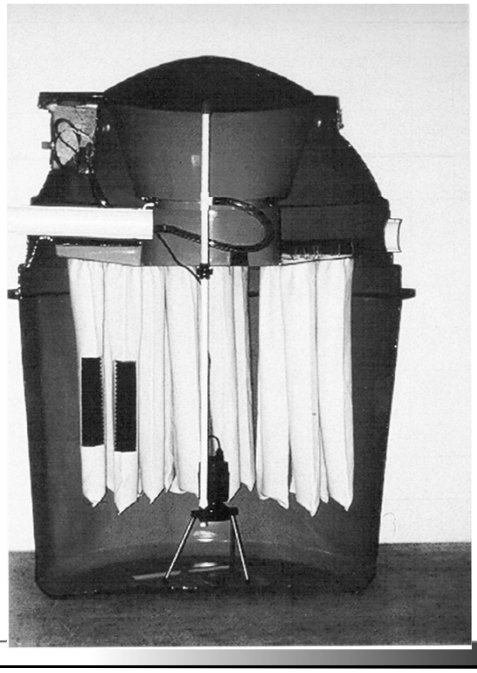

Multi flo

Uses filter 'socks' to enhance solids control

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Peat Fiber Filter Module

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AdvanTex^{tm} Textile Based Filter

Network of Small Textile Filter Units at a School

Alternative Onsite Sewage Systems

Difficult sites

- Slowly permeable soils
- Shallow depth to a restriction
- Limited areas

Repairs/Housing improvements to renovate a failed drainfield

Upgrade existing system for better treatment/longer life

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Regulations for alternative onsite sewage systems

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Regulatory Background

- Originally onsite systems only regulated through the Sewage Handling and Disposal Regulations
  12 VAC 5-610

- Administrative practices
- Soil and site evaluation techniques
- Conventional designs
- Designs for a few alternatives (LPD and mounds)
- Focus on small systems

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Sewage Handling and Disposal Regulations 12 VAC 5-610

- Prescriptive site and soil conditions
- Prescriptive designs
- Prescriptive loading rates
- No area reduction for higher effluent quality
- No operation and maintenance
- No follow up

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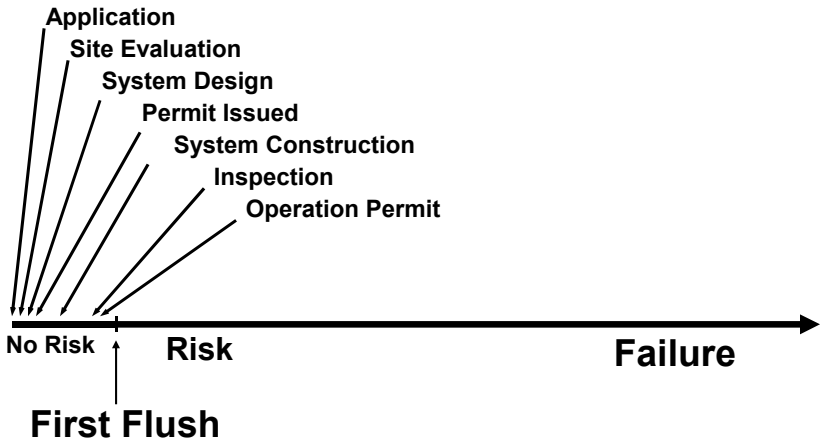

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Goals for a new regulation

- Recognize higher levels of wastewater treatment
- Reduce vertical separation to limiting features by increasing the quality of the wastewater applied
- Provide increased loading rates to soil dispersal systems for treated wastewater
- Require operation and maintenance for AOSS
- Formally require control of nitrogen
- Add in special conditions for designs by professional engineers

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Regulations for Alternative Onsite Sewage Systems (AOSS Regs)

- 12 VAC 5-613
- Effective December 7, 2011
- Chesapeake Bay Total Nitrogen (TN) limits effective December 7, 2013

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Regulations for Alternative Onsite Sewage Systems

Part I: General (and Administrative) (10-70)
Part II: Performance Requirements (80-110)
Part III: Operation and Maintenance (120-190)
Part IV: Horizontal Setback Requirements (200)
Part V: Waivers from Certain Performance Requirements (210)

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Part I – General & Administrative

Key parts

- Upholds 12VAC5-610 where not superceeded here
- Violations and Enforcement
- Requirements for operations permits
  - Recordation of O&M
  - N dilution area
  - Renewable permit for large systems

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PART I - DEFINITIONS

- **AOSS**
- **BOD**
- **Conventional Onsite Sewage System**
- **Disinfection**
- **Dissolved Oxygen**
- **Effluent**
- **Large AOSS**
- **Limiting Feature**
- **MGD**
- **Maintenance**
- **Operate**
- **Operation**
- **Operator**
- **Owner**
- **Organic loading rate**
- **pH**
- **Project Area**
- **Reportable Incident**
- **Saturated Hydraulic Conductivity**
- **Settable Solids**
- **Small AOSS**
- **Soil Treatment Area**
- **Subsurface Drainfield**
- **Total Nitrogen**
- **Total Residual Chlorine**
- **Total Suspended Solids (TSS)**
- **Treatment Level 2 Effluent or "TL-2 Effluent"**
- **Treatment Level 3 Effluent or "TL-3 Effluent"**
- **Treatment Unit**
- **Turbidity**
- **Vertical Separation**

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Part I - Definitions of Note

- AOSS vs Conventional
- TL2 and TL3
- Small vs large AOSS
- Limiting Feature
- Vertical Separation

Part I - Definitions of Note

- AOSS vs Conventional
- TL2 and TL3
- Small vs large AOSS
- Limiting Feature
- Vertical Separation

Part I - Definitions of Note

AOSS vs Conventional

Conventional consists of “one or more septic tanks with gravity, pumped or siphoned conveyance to a gravity distributed drainfield”

If it doesn’t fit this definition and its not a point source discharge, it’s an AOSS

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Part I - Definitions of Note

- AOSS vs Conventional
- TL2 and TL3
- Small vs large AOSS
- Limiting Feature
- Vertical Separation

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Part I - Definitions of Note

TL2 and TL3 (Treatment Level)

- TL 2: 30 mg/l BOD5 and 30 mg/l TSS
- TL 3: 10 mg/l BOD5 and 10 mg/l TSS

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Part I - Definitions of Note

- AOSS vs Conventional
- TL2 and TL3
- Small vs large AOSS
- Limiting Feature
- Vertical Separation

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Part I - Definitions of Note

Small vs **Large** AOSS

- **Small** AOSS : less than or equal to 1000 gpd
- **Large** AOSS: greater than 1000 gpd

- NOTE: AOSS's with flows over 10,000 gpd require an operator with BOTH and AOSS license and a wastewater works operator license

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Part I - Definitions of Note

- AOSS vs Conventional
- TL2 and TL3
- Small vs large AOSS
- Limiting Feature
- Vertical Separation

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Part I - Definitions of Note

Limiting Feature

- A feature of the soil that limits or intercepts the vertical movement of water, including seasonal, perched or permanent water table, pans, soil restrictions, and pervious or impervious bedrock.

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High Shrink swell Clay

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Part I - Definitions of Note

- AOSS vs Conventional
- TL2 and TL3
- Small vs large AOSS
- Limiting Feature
- Vertical Separation

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Part I - Definitions of Note

Vertical Separation

- The vertical distance between the point of effluent application to the soil or the bottom of a trench or other excavation and a limiting feature of the soil treatment area such as seasonal high ground water, bedrock, or other restriction.

General Approval Testing and Evaluation: section 70

Gives authority to develop policy to verify performance of treatment units for TL2 and TL3

TL3 protocol to include:

- 20 units installed at single family homes
- Test BOD and TSS quarterly for one year
- Allows for O&M
- Oversight by 3rd party

Part II – Performance Requirements

- 80-90 Design Requirements
- 100 -110 Sampling Requirements

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Part II – Design Requirements

- Loading Rates
- Effluent Quality based on vertical separation to a limiting feature
- Total Nitrogen (TN) requirements

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Table 1

Maximum Pressure-Dosed Trench Bottom Hydraulic Rates

Percolation Rate (MPI)	Saturated hydraulic conductivity (cm/day)	TL-2 Effluent (gpd/sf)	TL-3 Effluent (gpd/sf)
≤15	> 17	1.8	3.0
15 to 25	15 to 17	1.4	2.0
>25 to 45	10 to < 15	1.2	1.5
>45 to 90	4 to < 10	0.8	1.0
>90	< 4	0.4	0.5

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Things to Remember About Table 1 from 80.10

- Table 1 is for pressure dosed, trench bottom loading rates only.

- The designer is responsible for reducing loading rates according to the features and properties of the soils in the soil treatment area as well as for reducing loading rates for other types of dispersal.

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Table 2
Minimum Effluent Requirements for Vertical Separation to Limiting Features

Vertical Separation To A Limiting Feature	**Minimum Effluent Quality**
≥18" (requires naturally occurring, undisturbed soils)	Septic
<18" to 12" (requires minimum 6" of naturally occurring, undisturbed soils)	TL-2
0-12 inches	TL-3 and standard disinfection
<6 inches to groundwater	Direct dispersal – 5/5/5 +

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Nitrogen

- Large AOSS must control N leaching to groundwater for drinking water protection
- All AOSS in the Chesapeake Bay watershed have to control N

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Part II - Sampling

- Field testing to check system
  - pH, flow, TRC, DO, odor, turbidity (visual), settleable solids
- Laboratory sampling for compliance
  - Defined intervals
  - BOD5 and disinfection for small AOSS (1/5 yr)
  - BOD5, TSS, TN, pH, and disinfection for large AOSS

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Laboratory Samples vs Field Measurements, Sampling, Observations

Laboratory samples are potential compliance samples – for small AOSS 1/5 yr BOD5

Field tests are process control, or operational tests

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Compliance Monitoring

Parameter	Plant Size	
	>10,000 gpd to 40,000 gpd	>1,000 gpd to 10,000 gpd
Flow	Measured	Measured or Estimated
BOD5, TSS	Grab Quarterly	Grab 1/yr
TN	Grab Quarterly	Grab 1/yr
TRC, end of contact tank	Grab Weekly	Grab 1/yr
Fecal Coliform	Grab Quarterly	Grab 1/yr

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Part III – Operation and Maintenance

Items of Importance

- Licensed operator
- O&M Manual
- O&M Visits (frequency, requirements)
- Reporting

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O&M Involves

- Visit the system at least at the minimum frequency required by the regulations
- Perform operational adjustments, testing, and maintenance as needed to maintain system and in accordance with the O&M Manual
- Maintain log
- Provide reports to owner and VDH by 15th of month following activity

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OPERATOR VISITS ≤ 0.04 MGD

Avg. Daily Flow	Initial Visit	Regular visits following initial visit
≤ 1,000 gpd	Within 180 calendar days of the issuance of the operation permit	Every 12 Months
>1,000 gpd to 10,000 gpd	First week of actual operation	Quarterly
>10,000 gpd to 40,000 gpd	First week of actual operation	Monthly

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Horizontal Setbacks: Section 200

For designs by professional engineers only

- Upholds setbacks to drinking water sources/supplies, shellfish waters, sinkholes in 12VAC5-610
- Adds separation to wetlands
- Reduces separation to ditches with in 6 inches of groundwater for treated effluent and treated effluent with disinfection

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Waivers from Certain Performance Requirements: 12VAC5-613-210

Allows a professional engineer to deviate from the soil loading rates (Table 1); the vertical separations (Table 2); and the vertical separation and soil cover requirements for septic tank effluent.

Requires justification

Requires sampling/monitoring to verify

Sets in soil standard of ≤5 mg/l BOD5 and fecal coliforms ≤2.2 col/100 ml

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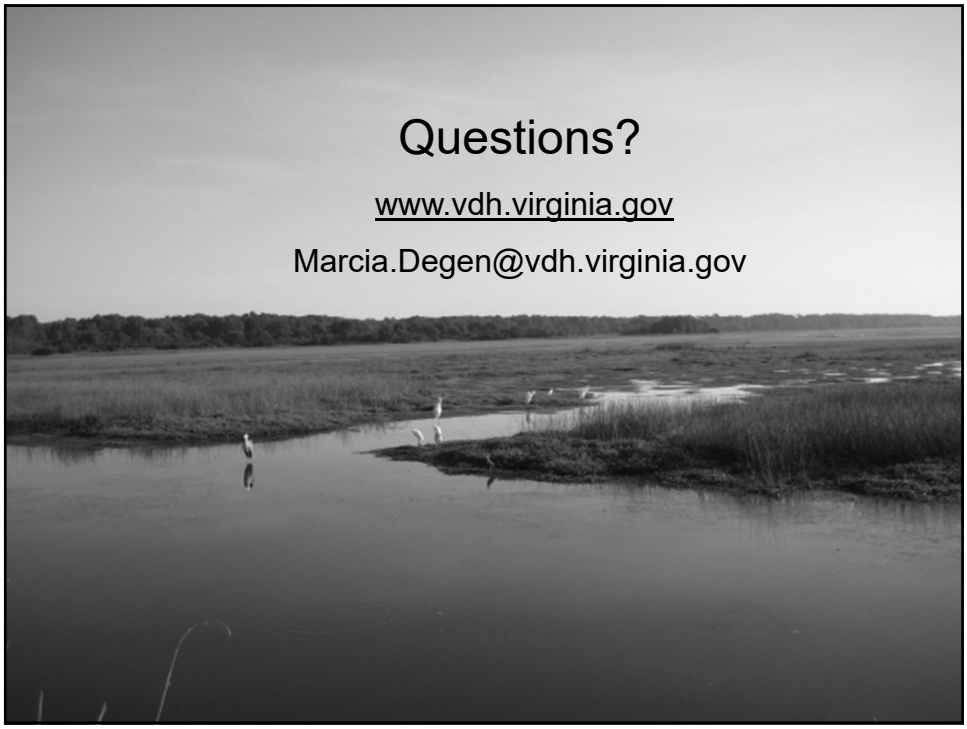

So What's A Periodic Review?

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What is a Periodic Review?

§ 2.2-4017. Periodic review of regulations. Requires agencies periodically review their regulations. Exact time period determined by Executive Order.

Executive Order 17 (2014). Every existing state regulation shall be reviewed at least once every four years by the promulgating agency.

A periodic review shall include notice to the public, public comment period (minimum of 21 days), and a result announced (no later than 60 days)

Each periodic review shall include an examination by the OAG

The comment period for this Periodic Review began on January 25, 2016, and ended on February 25, 2016. 34 comments were received

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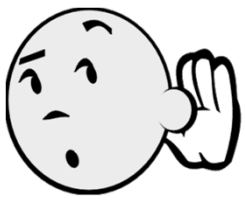
Public Comments Received



34 comments received. Three main provisions most comments focused on:

- 12 VAC5 613-70, General Approval Process, TL3 Standard
- 12 VAC5-613-80 & 90, Loading Rate Charts, Groundwater protection
- 12 VAC5-613-100, Sampling frequency, access to sampling data
- General comments focusing on lack of clarity and enforcement of O&M

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Workgroups Formed

Primarily from SHADAC and others who expressed interest

- Formed 3 workgroups initially to brainstorm ideas based on 12 VAC5-613-70; 12 VAC5-613-80 & 90; and 12 VAC5-613-100 amendments
- Each group tasked with coming up with ideas for amendment for respective provision

Workgroup Meetings

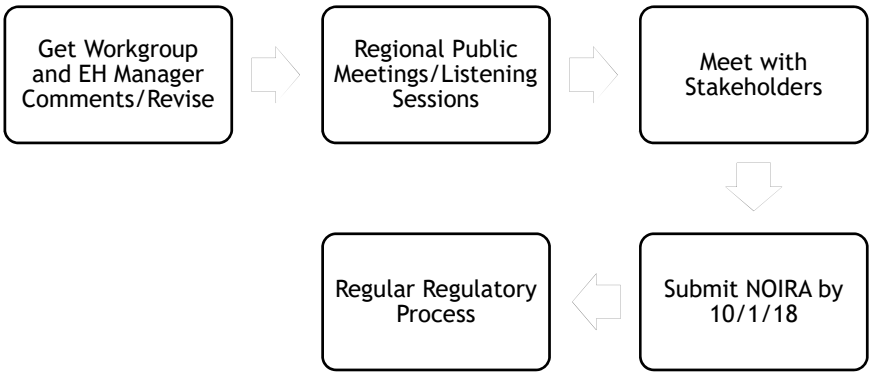
-So far, we have held meetings on 5/17/17, 5/24/17, 9/20/17, and 11/1/17.

-Minutes Posted on Townhall.

-After each round of meetings, VDH staff worked on drafting proposed amendments based on brainstorming ideas in workgroups.

-The latest working draft is posted online.

Plan for AOSS Periodic Review



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Areas of Amendment in Working Draft

Definitions (10)- residential wastewater, soil-like, permeability limiting feature

Applicability & Scope (30)-(K)Small spray irrigation systems are permitted by VDH through an agreement with DEQ. Should we incorporate the spray requirements into this regulation? (L)-(M) no longer needed

Relationship to Other Regulations (40)- (F) DPOR Licensure number

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Amendments Continued

General Approval & Testing (70) & (75)- Goal of these amendments was to allow acceptance of out of state data in similar climate; allow CBOD5 data; create a de-listing protocol.

Performance Requirements (80)- A lot of clarity amendments and also amendments to the Tables

Performance Requirements (90)-Groundwater Monitoring Procedure added. (D) Clarifying the Nitrogen requirements and eliminating sections that VDH has found through experience is impossible to document

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Amendments Continued

Sampling (100)-clarify purpose of sampling for small systems and sample point; add in enforcement triggers; modify sampling frequency for large AOSS

Operator Responsibilities (120)-Clarify that the requirement is that the operator is 'operating' the system and that at each visit, all operational tests, modifications, etc. are done.

Reports (190)- Requests the Operator's contact info so that VDH can follow-up.

Waivers (210)- Does VDH need this section where it has never been utilized and a variance accomplishes the same thing?

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Comments, Concerns, Feedback

If you would like to speak, please come up to the podium, provide your name, city or county or residence, and the section of the Regulation you are addressing.

If you would rather submit written comments, you may do so either here on provided index cards or send via email to Marcia.Degen@vdh.Virginia.gov or Karri.Atwood@vdh.Virginia.gov.

A link to the working draft of the AOSS Regulations can be found on VDH's website, http://www.vdh.virginia.gov/environmental-health/onsite-sewage-water-services-updated/news-of-interest/

Thank you for your participation!

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

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