

Virginia's Onsite Sewage Program: Moving Toward Privatization and Performance

THE GOOD, THE BAD, AND THE UGLY

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2020 SOUTHWEST ONSITE WASTEWATER CONFERENCE



Agenda

VDH Structure & Virginia

The Move to Performance Standards

Transition of Services: The Move to Privatization

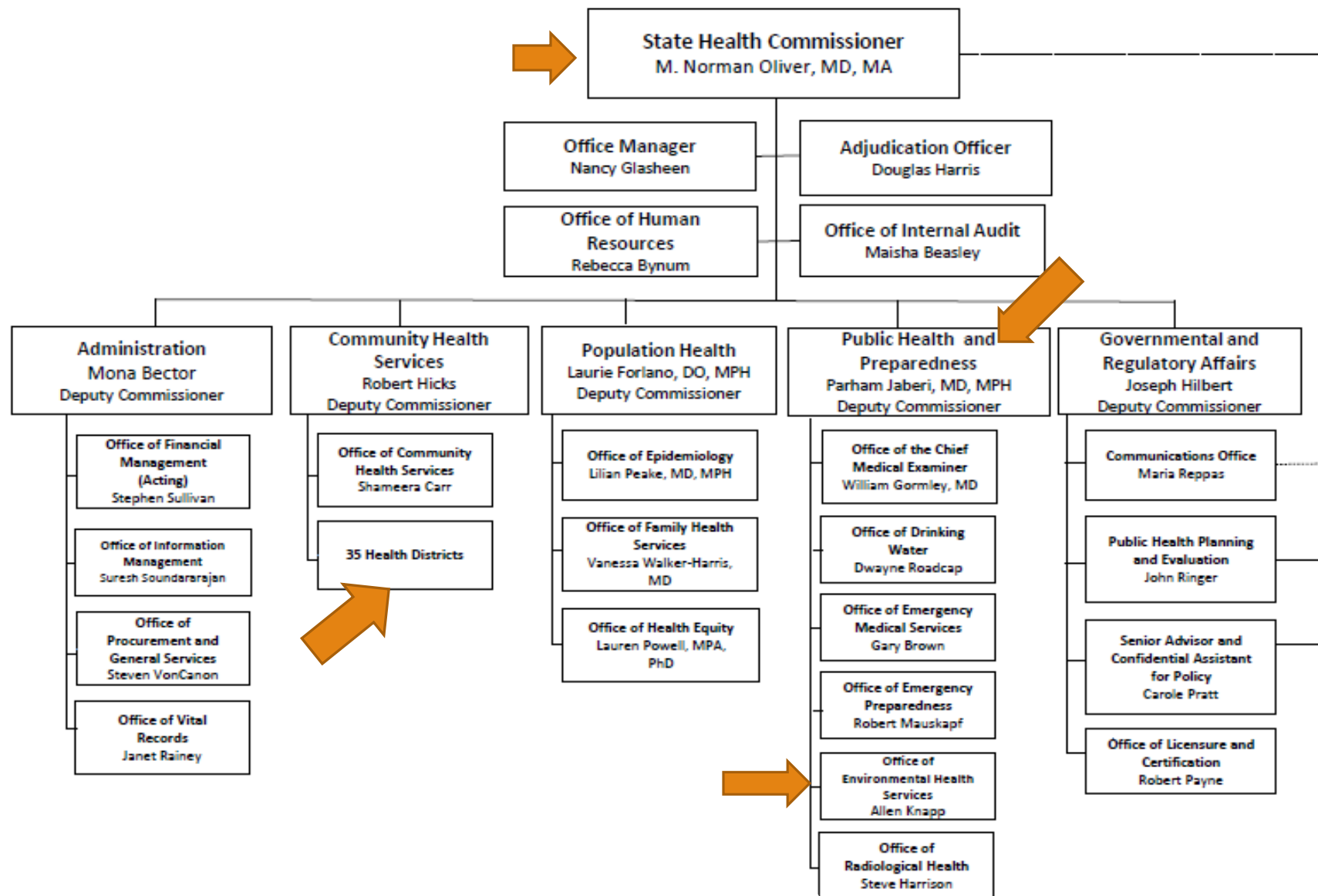
Today's Program: The Good, The Bad, and The Ugly

The Future

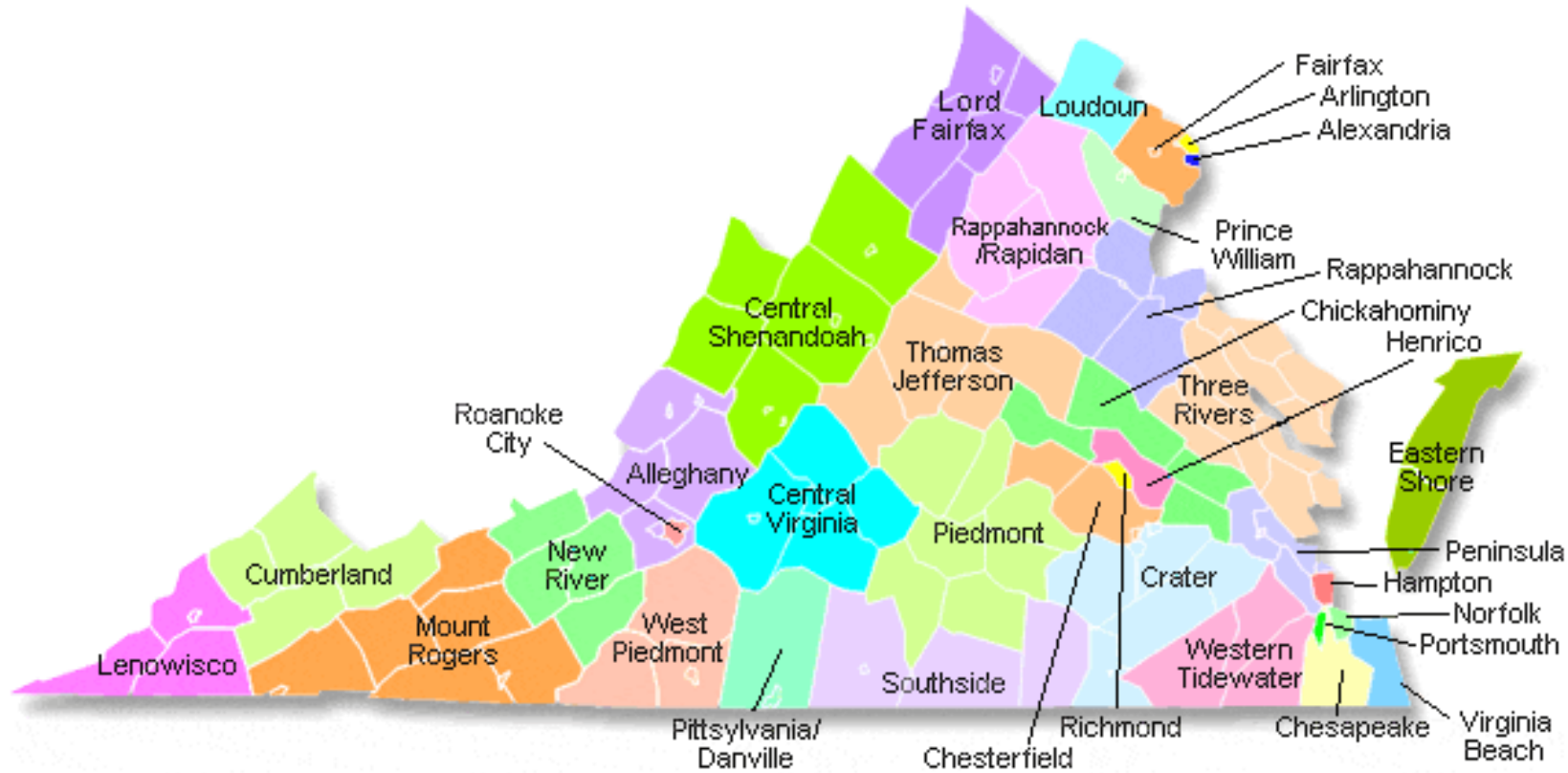
VIRGINIA DEPARTMENT OF HEALTH

Office of the Commissioner

November 2019



VDH Onsite Program Administration – Health Districts



Division of Labor

Local Health Districts:

- Issue permits and maintain records
- Enforce local ordinances and state regulations
- Track compliance and initiate enforcement
- Respond to complaints

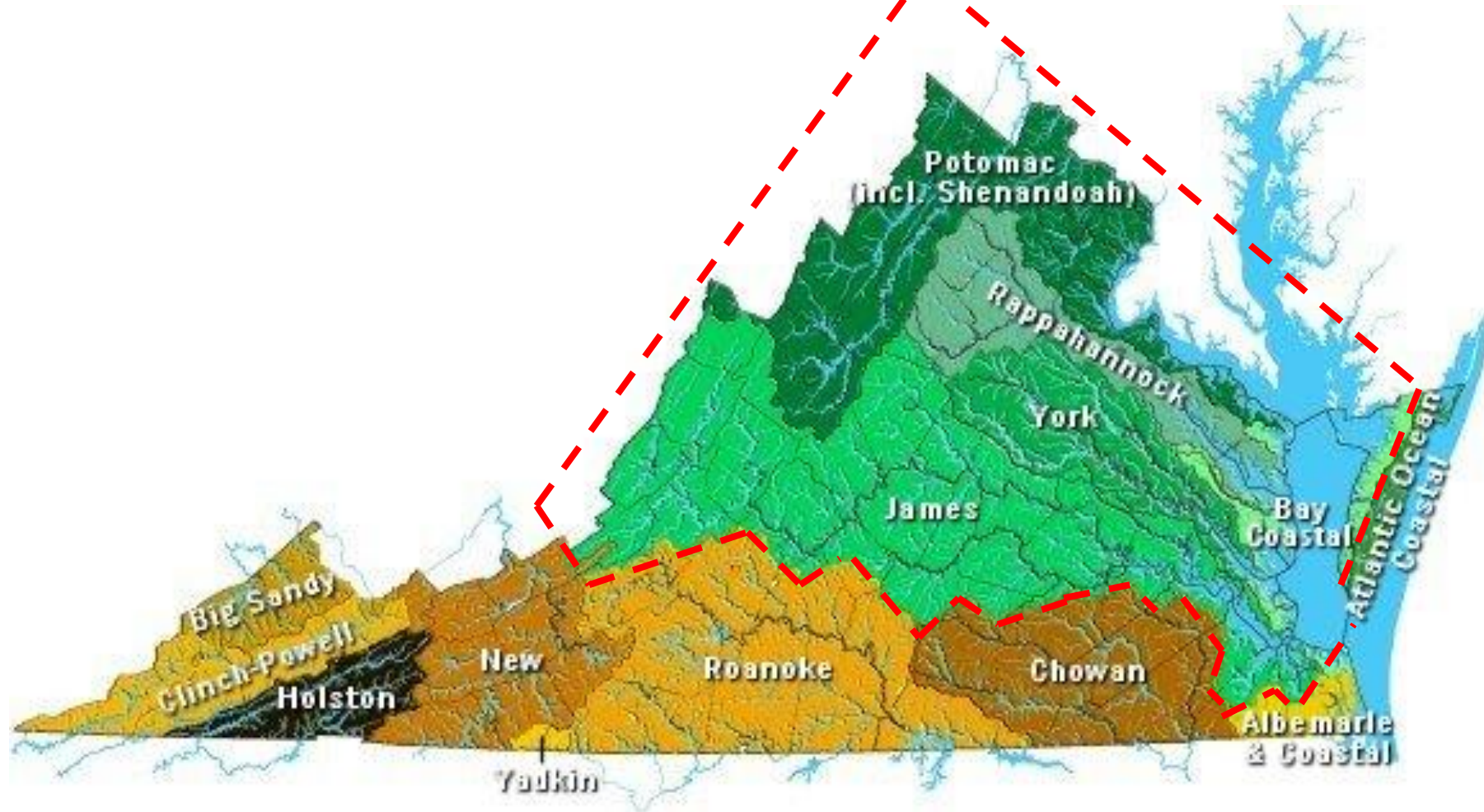
State Office:

- Regulation Development
- Policy Development
- Programmatic Oversight
- Training & Technical Assistance

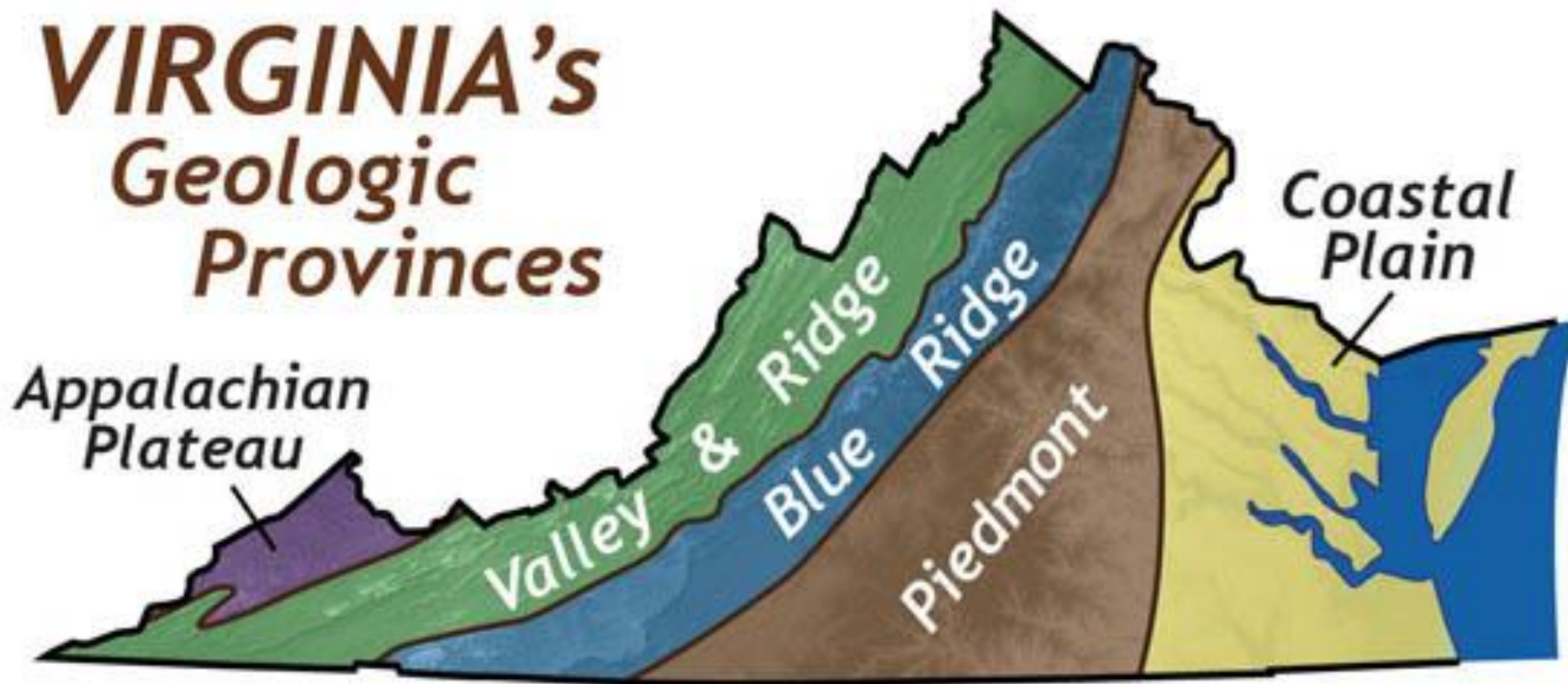
The East Coast



Chesapeake Bay Watershed



VIRGINIA's Geologic Provinces



Coastal Plain Province



Coastal Plain

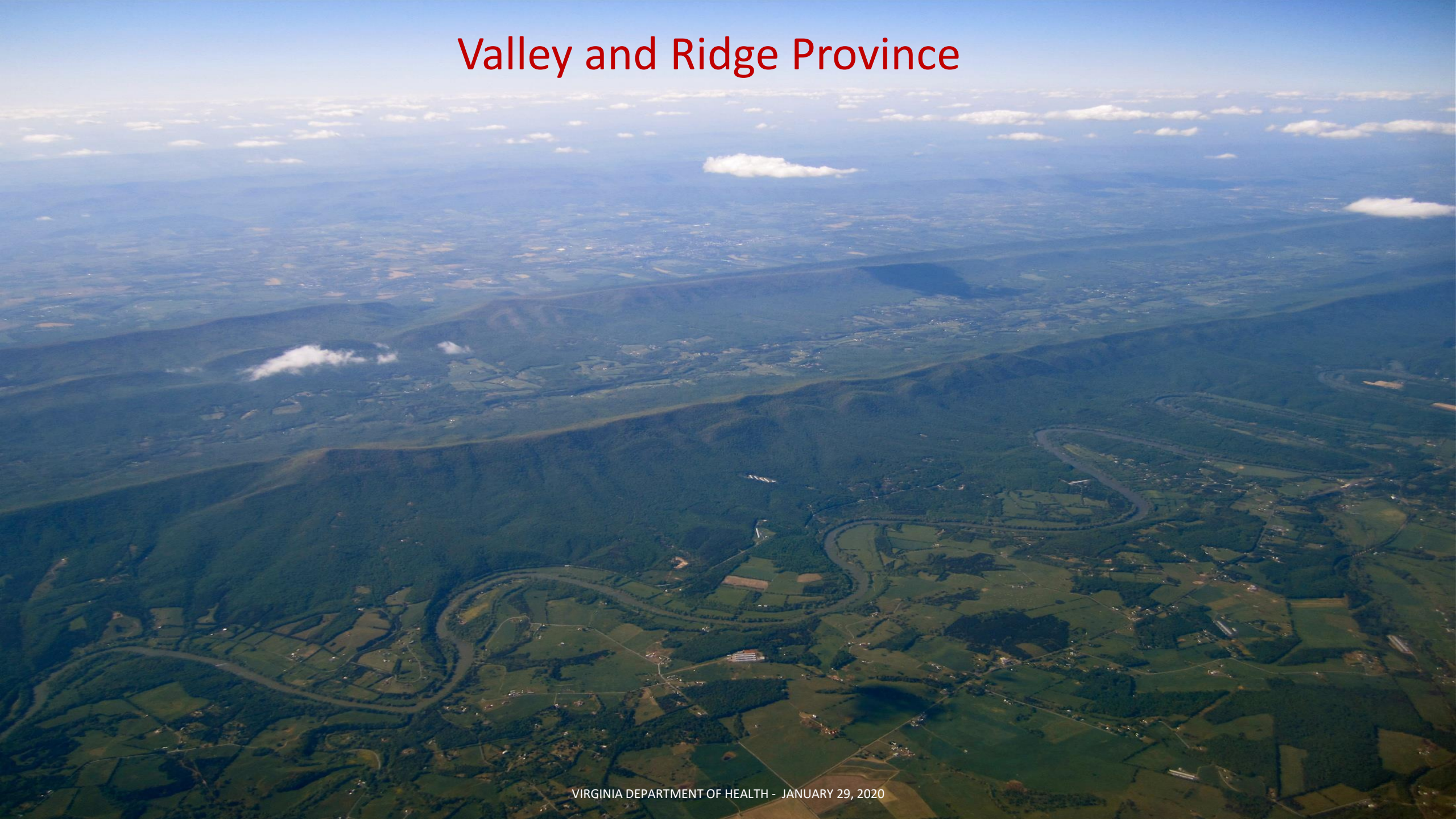


Piedmont Province



Blue Ridge Province

Valley and Ridge Province



Typical Limestone Valley



Allegheny Plateau



Term Check

Two Basic Categories of Onsite Wastewater Treatment Systems (OWTS)

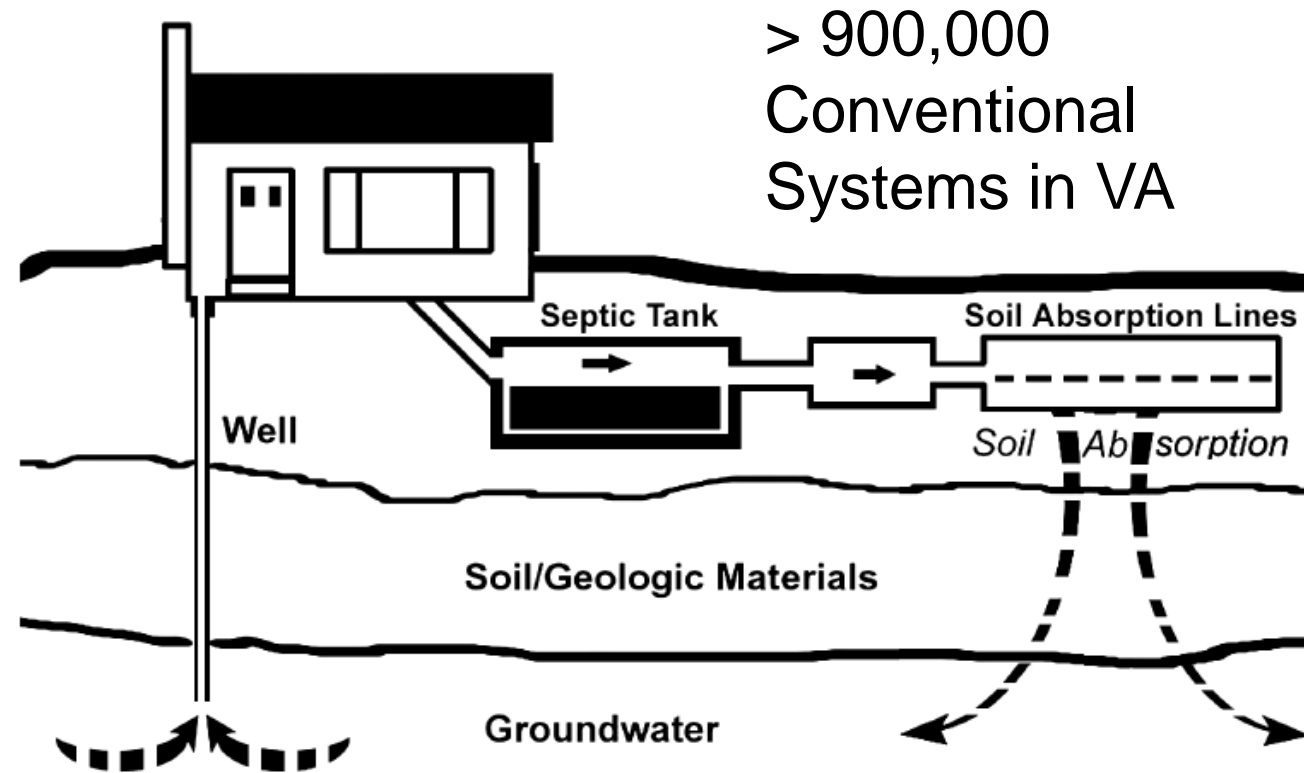
- **Conventional**
- **Alternative**

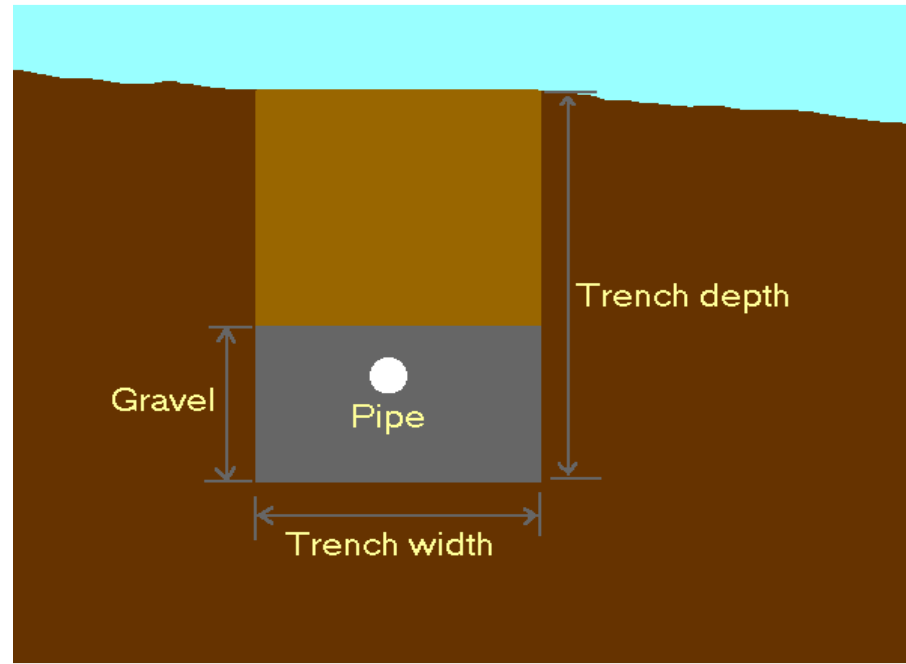
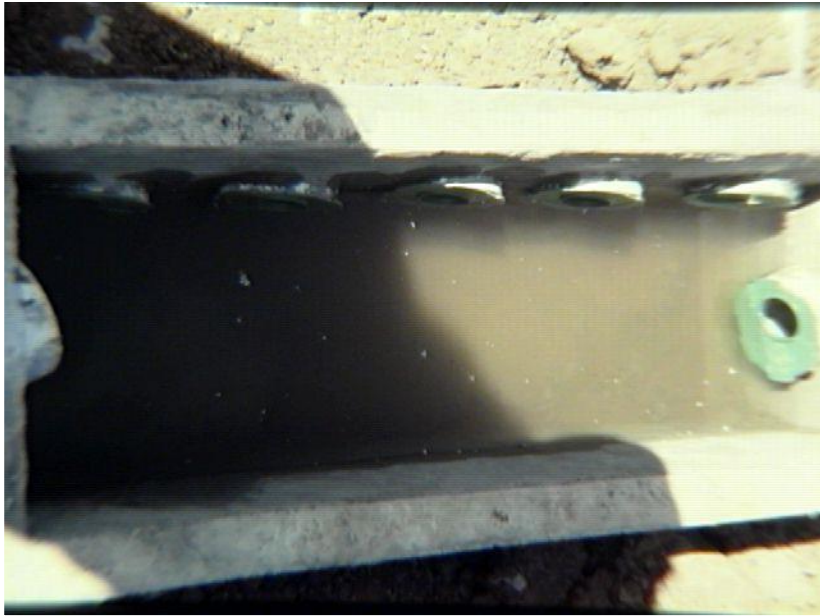
Conventional Onsite Systems

"Conventional onsite sewage system" means a treatment works consisting of one or more septic tanks with gravity, pumped, or siphoned conveyance to a gravity distributed subsurface drainfield.

Code of Virginia § 32.1-163

Conventional System: Drainfield





Alternative Onsite Sewage System (AOSS)

"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.

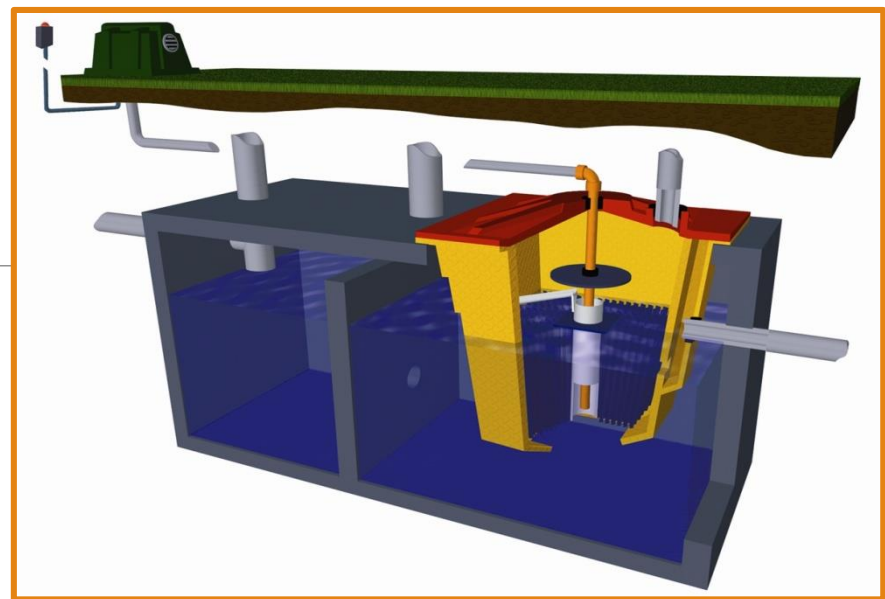
Code of Virginia § 32.1-163

Alternative Onsite Sewage System

Main characteristics:

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

AOSS



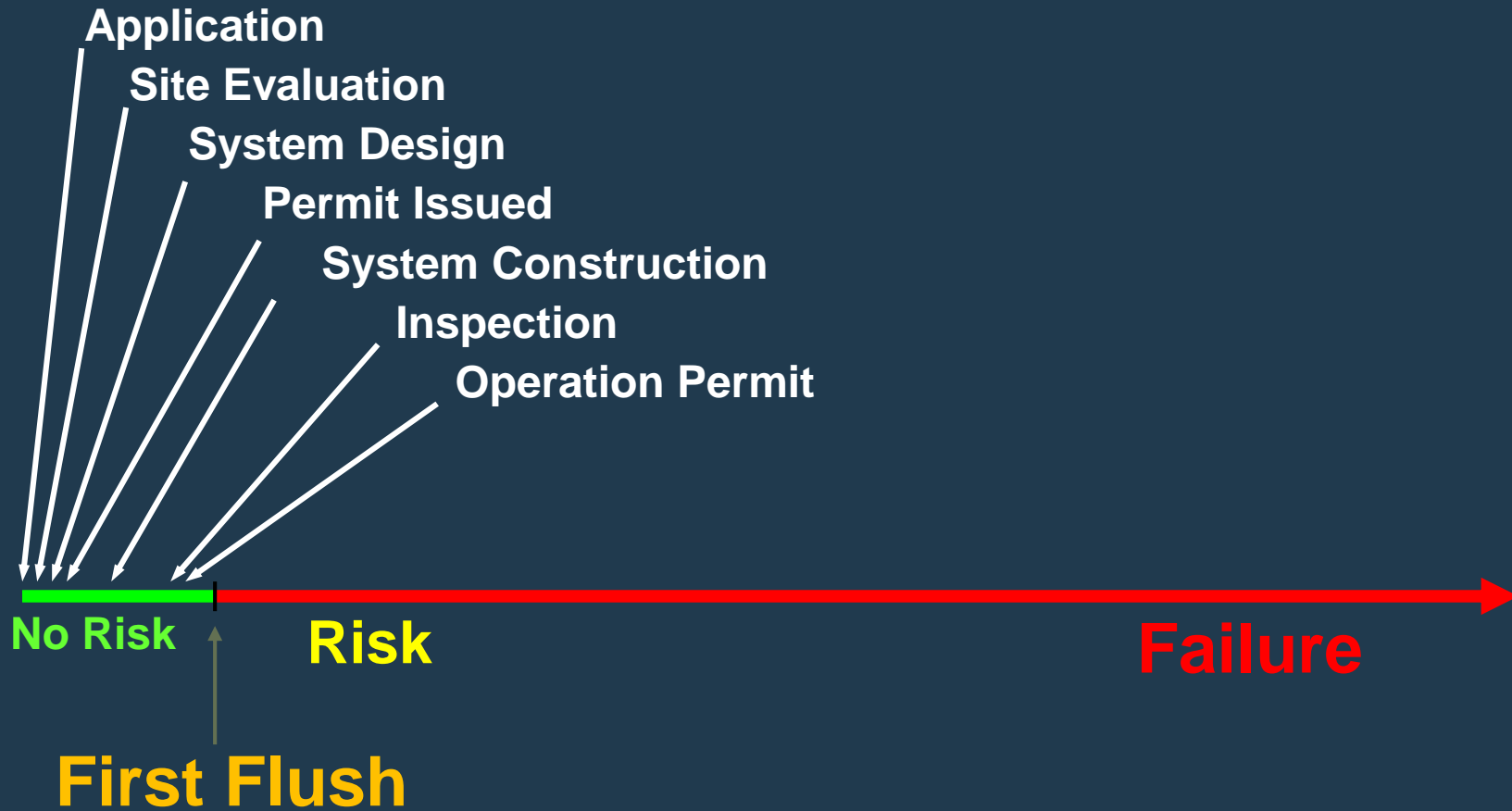
The Move to Performance Standards

Regulatory Background

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



System Failure



Sewage Handling and Disposal Regulations

12 VAC 5-610

- Prescriptive site and soil conditions
- Prescriptive designs
- Prescriptive loading rates

- No area or vertical reduction for higher effluent quality
- No operation and maintenance
- No follow up

Virginia Code Changes

July 1, 2008 - licensed engineers allowed to submit designs that don't comply with 12VAC5-610

- Standard engineering practice and care
- Meet performance requirements
- Appropriate for site
- Be at least as good as system designed under reg

2009 modifications required VDH

- to write Regulations to set **PERFORMANCE REQUIREMENTS**
- to implement O&M for Alternative Onsite Sewage Systems

PRESCRIPTION

Design Standards

Technology Based

Method specifies compliance

PERFORMANCE

Outcomes

Performance-Based Regulation

A regulatory approach that focuses on desired, measurable outcomes, rather than prescriptive processes, techniques, or procedures. Performance-based regulation leads to defined results without specific direction regarding how those results are to be obtained.

From US Nuclear Regulatory Commission

Goals for a New Regulation

- Recognize higher levels of wastewater treatment
 - Reduce vertical separation to limiting features
 - Increase loading rates to soil dispersal systems
- Add operation and maintenance for AOSS
- Control Nitrogen
- Define performance standards for AOSS

Regulations for Alternative Onsite Sewage Systems (AOSS Regs) 12 VAC 5-613

- Final Effective December 7, 2011

12VAC5-613-40. Relationship to Other Regulations.

This chapter is **supplemental** to 12VAC5-610 (Sewage Handling and Disposal Regulations).

All **procedures** pertaining to applications, permitting, processing, and enforcement contained in the Sewage Handling and Disposal Regulations shall **apply to** the permitting of **AOSSs** under this chapter.

C. In any case where there is a **conflict** between this chapter and the Sewage Handling and Disposal Regulations, this chapter shall control.

Performance Standards

- *The presence of raw or partially treated sewage on the ground's surface/waterways is prohibited*
- *Exposure of raw or partially treated sewage to insects, animals, humans is prohibited*
- *Backup of sewage into buildings is prohibited*
- Designed for peak conditions
- Structurally sound, no leakage
- No nuisance odor or sound

Performance Standards

Effluent standards (TL-2, TL-3, TN, & disinfection)

- Vertical separation to limiting feature
- Location
- Design Flow

Loading Rates based on soil and effluent quality

Vertical Separation

Effluent Quality

≥18 inches

Septic

<18 to 12 inches

TL-2 (≤30 mg/l BOD5 &
≤30 mg/l TSS)

0 to <12 inches

TL-3 (≤10 mg/l BOD5 &
≤10 mg/l TSS)
≤200 col/100 ml Fecal Coliform

≤6 inches to groundwater

≤5 mg/l BOD5
≤5 mg/l TSS
≤5 mg/l TN
≤2.2 col/100 ml FC as Geo Mean

Table 1

Maximum Trench Bottom Hydraulic Loading Rates Pressure Dosed

Percolation Rate (MPI)	TL-2 Effluent (gpd/sf)	TL-3 Effluent (gpd/sf)
≤15	1.8	3.0
15-25	1.4	2.0
>25-45	1.2	1.5
>45-90	0.8	1.0
>90	0.4	0.5

Table 5.4.
Area Requirements for Absorption Trenches.

Percolation Rate (Minutes/Inch)	Area Required (Ft ² /100 Gals)			Area Required (Ft ² /Bedroom)		
	Gravity	Gravity Gravelless	Low Pressure Distribution	Gravity	Gravity Gravelless	Low Pressure Distribution
5	110	83	110	165	124	165
10	120	90	120	180	135	180
15	132	99	132	198	149	198
20	146	110	146	218	164	218
25	158	119	158	237	178	237
30	174	131	164	260	195	255
35	191	143	170	286	215	260
40	209	157	176	314	236	264
120	912	775	456	1368	1163	684

Verification of Performance

O&M – requires ALL AOSS to conduct O&M and report to VDH

Sampling – all NEW AOSS to collect samples and report results to VDH

Table 4

Minimum Operator Visit Frequency for AOSSs up to 40,000 GPD

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







Sampling $\leq 1,000$ gpd

Generally Approved: 1 sample for BOD₅ at startup, then 1/5 year

Non-Generally Approved: 5 samples over 2 years; revert to 1/5 year if average compliant

For TL-2 = NSF 40 systems plus

For TL-3 = field testing 20 systems sampled quarterly for 1 year

Sampling > 1,000 gpd

No General Approval

Sampling frequency varies from 1/year to daily

- Flow
- BOD₅
- TSS
- TN
- Disinfection (Fecal Coliform or Total Residual Chlorine)

PLANT SIZE	>2.0 MGD	>1.0-2.0 MGD	>0.10-1.0 MGD	>0.04-0.1 MGD	0.010-0.04 MGD	>0.001-0.010 MGD
Flow	TIR	TIR	TIR	TIR	Measured	Estimate
BOD₅, TSS	24-HC 1/Day	24-HC 5 Days/Wk	8-HC 3 Days/Wk	4-HC 1 Day/Wk	Grab quarterly	Grab 1/yr
Total Nitrogen	24-HC weekly	24-HC weekly	8-HC monthly	4-HC quarterly	Grab quarterly	Grab 1/yr
TRC, Contact Tank**	Grab daily	Grab daily	Grab weekly	Grab weekly	Grab weekly	Grab 1/yr
Fecal Coliform** *	Grab weekly	Grab weekly	Grab monthly	Grab monthly	Grab quarterly	Grab 1/yr

Is it a Performance Regulation?

Set effluent quality based on receiving environment

Set loading rate based on effluent quality and receiving environment

Require sampling to document performance

Require O&M to document performance

Is it a Performance Regulation?

For systems > 1,000 gpd

YES

Set effluent
limits

Frequent
Sampling

Active O&M

For systems \leq 1,000 gpd

Hybrid

Set effluent
limits

Sampling
too
infrequent

Generally
approved
systems

Biggest Issue

Need strong, consistent compliance and enforcement to ensure performance standards are met



Summary

Reviews are streamlined – focus on key points

25% compliance with O&M reporting prior to 8000 reminder letters

Lack of operators an issue in rural areas

Limited checks and balances

Very marginal sites – assessment techniques lacking

Hard to know when to say ‘No’

Reg updates proposed

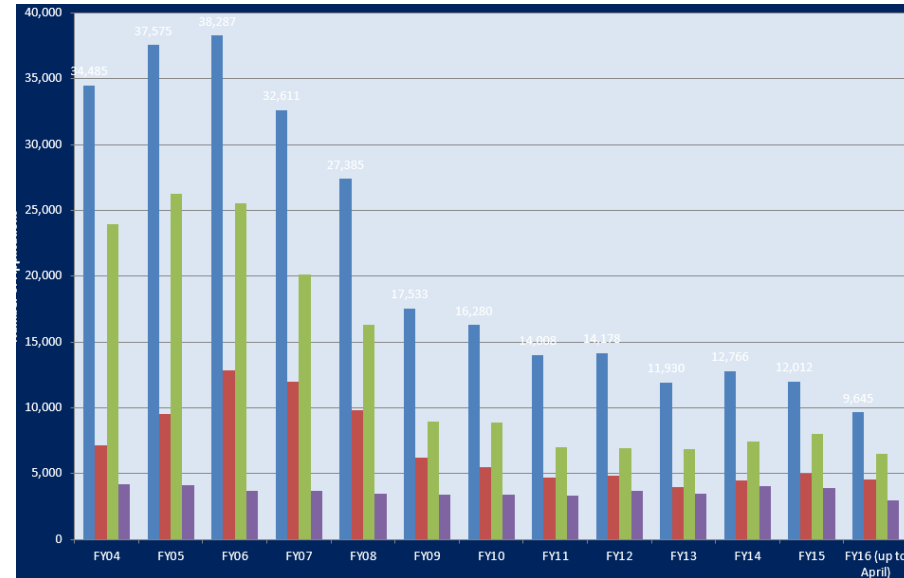
Transition of Services

Why Privatize?

Complexity of design increasing

Competition with private sector

Frees up staff to work on public health



1994 First Privatization Steps

Backlogs became excessive

1994 legislation created designer **licensing** program run by VDH – VDH accepts private sector work

1999 – Legislation requiring VDH to **accept** evaluations and designs from private AOSEs and PEs

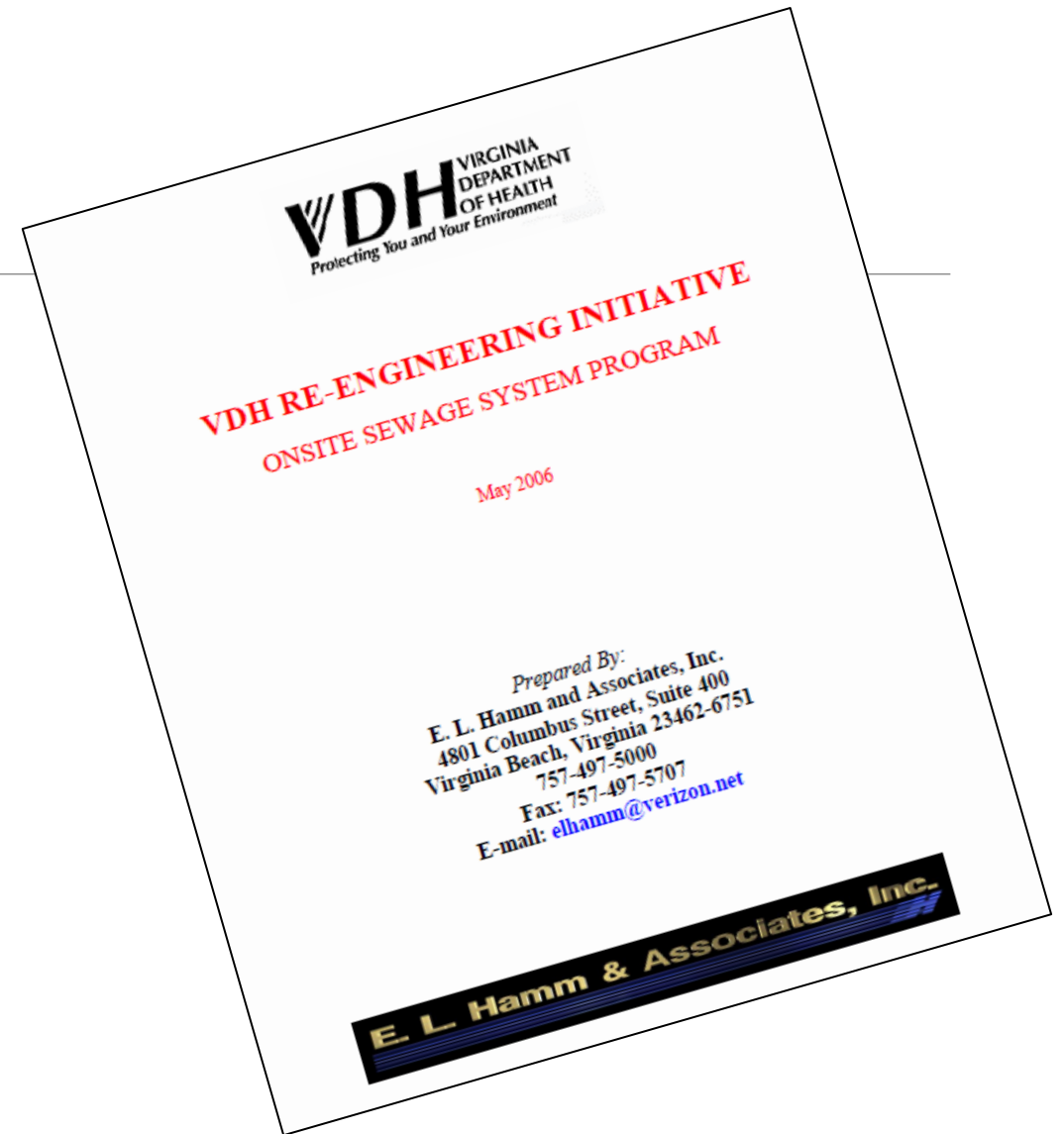
By mid 2000's

- 25% of all permits by private sector
- VDH does only conventional system designs

Third Party Reviews



The screenshot shows the homepage of the University of Virginia Institute for Environmental Negotiation (IEN). At the top left is the University of Virginia logo. The main header reads "Institute for Environmental Negotiation" with the tagline "Empowering communities to create shared solutions". A navigation menu includes "About", "Team", "Our Projects", "Training", "Client Testimonials", "Publications", "Support IEN", and "Internships". Below the menu is a photograph of four people in a meeting room, with one person pointing at a whiteboard. To the right of the photo is a "Welcome!" section with a paragraph of text and a list of links: "learn about our services", "explore our current projects", "meet our team", "apply for an internship", and "read about IEN in the news".



The image shows the cover of a report titled "VDH RE-ENGINEERING INITIATIVE" for the "ONSITE SEWAGE SYSTEM PROGRAM". The report is dated "May 2006". It is prepared by "E. L. Hamm and Associates, Inc.", located at "4801 Columbus Street, Suite 400, Virginia Beach, Virginia 23462-6751". Contact information includes "757-497-5000", "Fax: 757-497-5707", and "E-mail: elhamm@verizon.net". The logo for "VDH VIRGINIA DEPARTMENT OF HEALTH OF ENVIRONMENT" is at the top, with the tagline "Protecting You and Your Environment". The company name "E. L. Hamm & Associates, Inc." is displayed in a stylized banner at the bottom.

Barriers to Privatization

Need a trusted private sector

Lack of adequate checks and balances

Sufficient number of private sector base

Permit Fee structure

Access to services for low income owners

Perception by localities (funding partners) of VDH worth to maintain staff

CREATE A LICENSURE PROGRAM

Added three new professions:

- Onsite Soil Evaluator
- Installer of Onsite Sewage Systems
- Operator of Onsite Sewage Systems



These changes became effective on July 1, 2007

Licensing Requirements for the three new professions became effective on July 1, 2009

Status 2011

PRE 2011 (PRESCRIPTIVE)

Very prescriptive designs

No O&M

Limited soil and sites

Licensed designer only

Burden on VDH to get it right

VDH designs conventional only

POST 2011 (PERFORMANCE)

Performance standards

Required O&M

Most soil and sites OK

Licensed designers, installers, and operators

Burden on professional designers to get it right

VDH designs conventional only

33% private sector designs

Fiscal Year	Total Number of Applications	AOSE/PE Certified	New System Construction	System Repair/Vol. Upgrade/Replacement	Percent Repairs	Percent AOSE/PE	Percent New Construction
FY04	34,485	7,170	23,980	4,158	12.10%	20.80%	69.50%
FY05	37,575	9,561	26,264	4,140	11.00%	25.40%	69.90%
FY06	38,287	12,838	25,538	3,691	9.60%	33.50%	66.70%
FY07	32,611	11,972	20,151	3,703	11.40%	36.70%	61.80%
FY08	27,385	9,781	16,308	3,446	12.60%	35.70%	59.60%
FY09	17,533	6,185	8,926	3,359	19.20%	35.30%	50.90%
FY10	16,280	5,457	8,856	3,424	21.00%	33.50%	54.40%
FY11	14,008	4,659	6,968	3,297	23.50%	33.30%	49.70%
FY12	14,178	4,822	6,953	3,716	26.20%	34.00%	49.00%
FY13	11,930	3,981	6,870	3,468	29.10%	33.40%	57.60%
FY14	12,766	4,478	7,413	4,015	31.50%	35.10%	58.10%
FY15	12,012	4,961	7,994	3,873	48.45%	41.30%	66.55%
FY16 (up to April)	9,645	4,513	6,520	2,950	45.25%	46.79%	67.60%

2016 House Bill 558

Requires the State Health Commissioner to develop a plan that provides for an orderly reduction and elimination of evaluation and design service, while maintaining protection of public health and the environment.

Final plan or interim report due November 15, 2016.

Strategic Vision – The Plan

20 specific recommendations

Gradual transition

- Policy changes
- Legislative changes

Level staffing with changing focus for EH staff

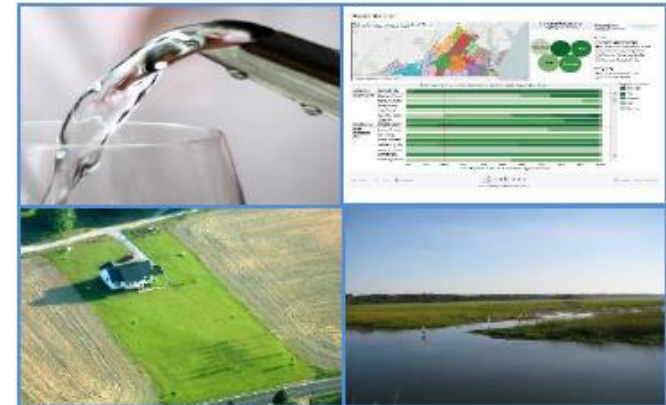
Adjust fees

Adds in VDH inspections

Envisions repair fund

Gradual phase out of direct service except for hardship (VDH provider of last resort)

Report to the General Assembly in Response to House Bill 558: A Plan for the Orderly Reduction and Elimination of Evaluation and Design Services by the Virginia Department of Health for Onsite Sewage Systems and Private Wells



November 28, 2016
Division of Onsite Sewage and Water Services,
Environmental Engineering and Marina Programs
Virginia Department of Health

VDH VIRGINIA DEPARTMENT OF HEALTH
To promote and protect the health of all Virginians

2017 (HB 2477) – Directs VDH to start eliminating site evaluation and design services – implement voluntary items in report

2018 (HB 888) – Directs VDH to implement rest of plan

1st Phase Transition of Services

July 1, 2018

VDH **only** does conventional designs for:

- applications for a principal place of residence

Dropped

- voluntary upgrades
- certification letters
- subdivision evaluations

71%

2nd Phase Transition of Services

July 1, 2019

Gradual transition 5 year period

VDH remains provider of last resort for repairs and construction for principal place of residence

- Income eligibility or hardship

VDH maintains regulatory oversight

- Permitting
- Review of private sector work
- Inspect installation
- Complaint investigation
- Compliance & Enforcement

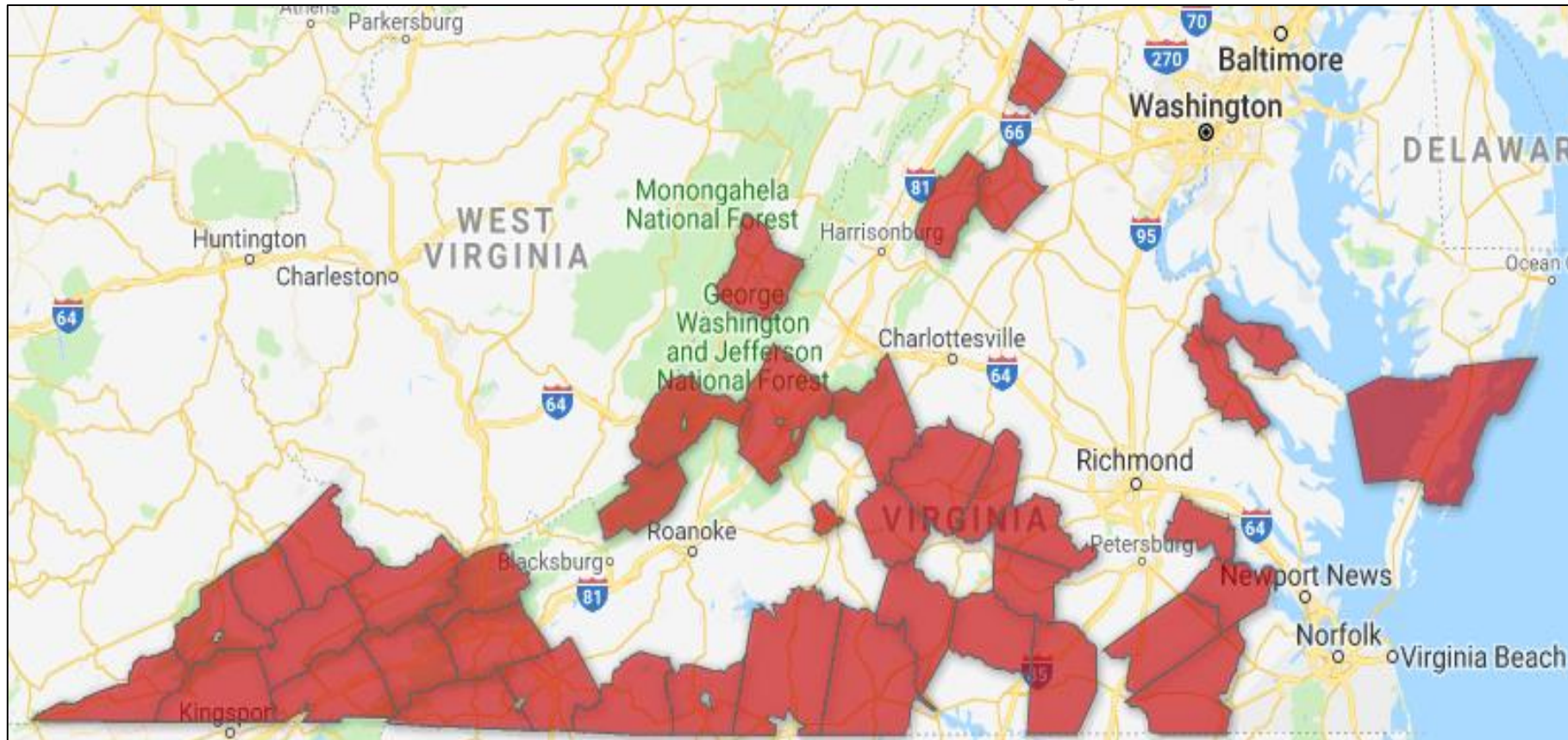
Two Ways to Petition VDH Services

Income Eligibility

- Starts at 400% FPG and reduces to zero by 2023
- Hardship (such as)
 - Private sector availability
 - Those already eligible for fee waivers
 - Case by Case

Draft Hardship Guidelines – Insufficient Number of Private Sector Service Providers

Onsite Evaluations and Designs



Today's Onsite Program

Today 84% Private Sector

VDH has started construction inspections – 10% with deficiencies

Compliance – first round of enforcement letters

VDH continues to do primary residence designs when petitioned

Benefits

- Frees up VDH staff to focus on regulatory oversight, inspections, data and record keeping, etc.
- Reduces arguments over design
- Streamlined review process
- Allows for innovation



Barriers

- Using marginal sites
- Need better assessment tools
- Hard to assess the feasibility of designs
- Relies on VDH compliance and enforcement
- Loss of VDH field expertise



The Good, the Bad and the Ugly (1966 Italy) aka Il Buono, il brutto, il cattivo
Directed by Sergio Leone
Shown from left, Eli Wallach
Credit: MGM/PhotoFest © MGM
Rentals grant one-time, EDITORIAL use only, unless otherwise negotiated. Please inform us about usage or non-usage as soon as possible. Research fees may apply if no images are used.



Needs Improvement

- Failures on marginal sites – working in uncharted territory.
- Responsibility on private sector, but VDH often blamed
- Owners pay the price of failure
- Unlicensed still working
- Without enforcement some owners will never comply



Future

- Work with licensing board to eliminate unlicensed work
- ↑ Compliance and enforcement activities
- Use data gathered to affect policy and reg, including funding of low income households
- Work to provide equal access to proper sanitation for low income households (esp. O&M)
- Impacts of sea level rise & subsidence
- Rainwater harvesting and grey water reuse



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