Variances permitted by the interim policy

A. A sustainable sewage system has an adequate hydraulic loading and organic loading, and has perpetual operation and maintenance. This section specifies the maximum hydraulic loading rate to grant the variances permitted through this interim policy. Designers are expected to follow the manufacturer's guidelines when they are available unless it exceeds the loading rates herein. Loading rates should reflect landscape position, soil structure, texture and permeability, and the experience of the site evaluator or designer.

Table 1:
Hydraulic Loading Rates

Percolation Rate (Minutes/Inch)	Gallons Per Day Per Square Foot of Horizontal Surface			
	Pads	Trenches		
		1.5	2.0	3.0
20 or less	1.66	2.78	2.5	2.22
25	1.33	2.22	2.00	1.78
30	1.11	1.85	1.66	1.48
35	0.95	1.59	1.43	1.27
40	0.83	1.39	1.25	1.11
45	0.74	1.23	1.11	0.99
50	0.67	1.11	1.00	0.89
55	0.61	1.01	0.91	0.81
60	0.55	0.93	0.83	0.74
65	0.51	0.85	0.77	0.68
70	0.48	0.80	0.72	0.64
75	0.44	0.74	0.67	0.59
80	0.42	0.69	0.63	0.56
85	0.39	0.65	0.59	0.52
90	0.37	0.62	0.56	0.49
95	0.35	0.58	0.53	0.47
100	0.33	0.56	0.50	0.44
105	0.32	0.53	0.48	0.42
110	0.30	0.51	0.45	0.40
115	0.29	0.48	0.43	0.39
120	0.28	0.46	0.42	0.37

Table 2 lists the variances that apply to designs and evaluation of dispersal systems. Additional explanations to some of the variances are also provided. All designs must comply with the *Regulations* unless waived in Tables 1 and 2. Where variances apply, then the designs must follow the requirements and recommendations of the designer and manufacturer.

Table 2: Applicable Variances	
Regulation	**Discussion**
12 VAC 5-610-930.E.1	Limits slope of trenches. See additional explanations in Paragraph C of this section.
12 VAC 5-610-950 E.2	Limits absorption trenches to widths between 18 to 36 inches. See additional explanations in Paragraph B of this section.
12 VAC 5-610-596 C.1	Limits the installation of trenches shallower than 12 inches to Texture Group I and II soils. Variance allows pads and trenches at grade with conditions. See additional explanations in Paragraph D of this section.
Table 5.4 and 12 VAC 5-610-950 D	Establishes the required loading rates for onsite sewage systems. See additional explanations in Paragraph E of this section.
12 VAC 5-610-880, including sections A.1, B.1, B.6, and B.7	Establishes pump station, pump frequencies, doses, etc. See additional explanations in Paragraph F of this section.
Table 4.3 of the *Regulations*	The separation between the infiltrative surface to various limiting features is waived in accordance with Table 3 and Paragraph J.
12 VAC 5-610-250 C 12 VAC 5-640-370	These sections are waived. Compliance with the *Code of Virginia*, Title 54.1-400 et. seq. of the *Code of Virginia* is expected, which establishes the practice of engineering and its exemptions. See Paragraph G of this section.
12 VAC 5-610-441, 442, 443, and 444	These sections and its subsections are waived unless specifically required by the interim policy or the manufacturer's agreement. This section has historically considered treatment and dispersal together. Since this interim policy and variance(s) separates treatment and dispersal, no specific label can be applied. The treatment unit is generally approved to produce secondary or better effluent. The dispersal mechanisms allowed by variance do not receive a label.
12 VAC 5-640-350	This section, which describes three labels for treatment units (experimental, preliminary, and general), is waived. Treatment units listed under this interim policy can be considered generally approved to produce secondary or better effluent.
Table 3.4 of the *Alternative Discharging Regulations*	Requires monthly and quarterly testing for experimental systems, semi-annual and quarterly testing for systems with preliminary approval, and annual and semi-annual testing for systems with general approval. This table does not apply and is waived. Treatment units listed under this interim policy will be evaluated as described herein.
12 VAC 5-640-450 3	Specifies 10-10 BOD_5, TSS treatment for certain dry ditch discharges. Under the *Alternative Discharging Regulations*, this interim policy recognizes that the unit is designed to produce 10-10 effluent. See GMP #27. http://www.vdh.virginia.gov/EnvironmentalHealth/Onsite/GMP/GMPdocs/Gmp027.pdf

B. Trench width. 12 VAC 5-610-950 E.2, limits absorption trenches to widths between 18 inches and 36 inches. This section is waived to allow the use of absorption pads. A pad is an absorption area wider than three feet but not longer than 100 feet. Absorption pads may be used under the following conditions:

1. A system may contain one or more pads.

2. The combined area of all pads in a system may not exceed 1,200 square feet.

3. Pads and trenches may not be used together in a single system.

4. Pads shall be limited to sites with slopes of 10 percent or less.

5. The pad design must incorporate a means to approximate uniform dispersal.

C. Minimum Cross Section Dimensions 12 VAC 5-610-950.E.1 is waived. This section establishes how sidewall depth is measured and requires increases in the installation depth of trenches as the slope of the site increases. By waiving Section 950.E.1 absorption systems designed under this policy may be installed at grade even on steeper slopes. No distinction is made between pads and trenches. Section 12 VAC 5-610-950.F, which increases the lateral separation distance between trenches as the slope of the site increases, is not waived.

Designers are encouraged to use a conservative approach when designing shallow placed systems on sloping sites to prevent effluent from breaking out at the contact between the original soil surface and the fill interface. Drip Dispersal may be appropriate technology for difficult sites.

D. Minimum Installation Depth. 12 VAC 5-610-596 C.1, which limits the installation of trenches shallower than 12 inches to Texture Group I and II soils, is waived for slopes up to 15 percent. For slopes up to 15 percent, there are not any soil texture group limitations for shallow placed systems. The infiltrative surface (i.e., the bottom of the pad or trench) shall be installed at grade or deeper on naturally occurring undisturbed soil. No fill material shall occur beneath the infiltrative surface. On sloping sites the installation depth shall be measured on the downhill side of the trench or pad.

E. Loading Rates. Table 5.4 of the *Regulations* and 12 VAC 5-610-950 D, which establish loading rates for subsurface soil absorption systems, are waived. Systems designed pursuant to this policy shall use Table 2 contained herein to determine the maximum acceptable loading rates. Designers are authorized and encouraged to use more conservative loading rates.

F. Pump System Designs.

1. Pumps Integral to Treatment Systems. Pumps integral to the treatment system are pumps that move sewage or effluent from the house or pretreatment system to the treatment system and/or pumps that move effluent within the treatment system. The *Regulations* do not

specifically address pumps used for purposes other than conveying effluent to a dispersal system. Section 880 is waived in its entirety for pumps, pump chambers, and appurtenances integral to treatment systems.

2. Conveyance Pumps. The pump requirements contained in 12 VAC 5-610-880 subsections A.1, B.1, B.6, and B.7 are waived. Pump systems designed in accordance with these sections of the *Regulations* are not appropriate for systems dispersing treated effluent to a reduced size absorption area. Therefore, the use of the pump design criteria in subsections B.1, B.6 and B.7 in the *Regulations* is expressly prohibited except when the sizing criteria in Table 5.4 of the *Regulations* are used. The requirement in subsection A.1 for a velocity of two feet per second to achieve scouring, while not necessarily needed for treated wastewater, may be used at the discretion of the designer.

G. Plans and Specifications. Formal plans and specifications required in Section 250.C is waived for designs that are exempt from the practice of engineering.

H. The depth of gravel in Section 930.E is not waived. All trenches and pads, which use aggregate, shall be designed using six inches of gravel (or other approved aggregate) under gravity percolation lines and two inches over the line. For LPD (low pressure distribution) systems 8.5 inches of aggregate is required under the pipe and two inches over the pipe.

I. Separation Distance to Impervious Strata for Shallow Placed Systems. An impervious stratum is a soil feature that has a measured or estimated percolation rate in excess of 120 minutes per inch and may include bedrock, pans, restrictions, or shrink-swell soil. The separation distance to these features for shallow placed systems is shown in Table 4.3 of the *Regulations*, with the exception of the separation distance to watertable. The separation distance to an impervious strata may be reduced from 18 inches to a distance not less than 12 inches below the trench bottom when a professional engineer certifies in writing that he has evaluated the hydraulic capacity of the site to disperse wastewater and in his professional opinion, water mounding will not encroach on the separation distance required in Table 3.

J. Separation Distance to Watertable. The separation distance between the infiltrative surface of a soil absorption system and a watertable as shown in Table 4.3 of the *Regulations* is waived. Use Table 3 of this policy.

Table 3
Separation Distance between Infiltrative Surface of Soil Absorption System and Watertable

Percolation Rate	Separation Distance
1-25	6 inches
26-37	8 inches
38-49	10 inches
50-120	12 inches

K. The Minimum Standoff Distance to Watertable, or Other Limiting Factor, is Achieved Under the Entire Absorption Area. The absorption area may consist of any dispersal method approved by the department or authorized by the variance. The absorption area determined may be achieved by either an absorption pad or absorption trenches, provided:

- The absorption area, (either pads or trenches) is installed on contour. When a pad system is designed, the longest dimension of the pad shall be along the contour. Contour means that the longitudinal axis of the pad follows the contour of the site within 4 inches (+/-2 inches). Every effort *should* be made to minimize the linear loading rate, particularly when using a pad design.

- When a pad is utilized, the bottom pad area shall be installed level while maintaining at least the minimum required separation distances to all soil limiting factors.

- No portion of the pad bottom area may be installed in fill material.

- The system shall be designed to provide equal flow, within 10 percent, throughout all portions of the absorption area. Distribution of effluent by gravity or pressure dosing (before or after the treatment system) is acceptable.

- When designing a drip dispersal system, the designer may use the loading rate shown for either the two or the three foot wide trenches shown in Table 1. To determine the area needed, divide the daily peak wastewater flow in gallons by the loading rate (GPD/ft^2) selected from Table 1. Multiply this result by three to determine minimum footprint area in square feet. The drip dispersal design guidance in GMP #107 applies to the design of the drip field. Where slopes and/or restrictive horizons are a consideration, the Absorption Area Increase Table in GMP #107 must be followed.

- When a pad is proposed for use within 20 feet up slope or down slope from another proposed or actual absorption system, the designer must certify that the upslope system will not adversely impact the down slope system and produce the calculations used to make the certification.

- The absorption area cannot be smaller than the maximum loading rates established in Table 1. A larger area may be specified by the designer. The minimum absorption area shall be 320 square feet and no additional area reduction shall be permitted for the use of water saving fixtures.

- All absorption trenches shall use parallel distribution (i.e., either a distribution box or pressure distribution). Distribution to the absorption area may be accomplished by gravity flow to an underlying pad or a distribution box, or under positive pressure to a manifold. In any case, effluent shall be applied proportionally to the absorption area herein.

- The infiltrative surface that comprises the absorption area may be installed at grade. On sloping sites, this shall be measured on the downhill side of the installation (i.e., no fill material may be placed below the absorption system).

- Cover material shall be provided from the top edge of the absorption system horizontally in all directions to existing grade and shall cover the top and side of the absorption area, which may be exposed during construction. The designer shall include sufficient cover in the system design to prevent freezing. In no case shall the depth of cover be less than four inches (note: in some areas of the state this may be insufficient to provide frost protection). The finished slope of the cover material shall not exceed 1:4 (rise:run) and a slope of 1:6 or shallower is preferred. Soil cover material shall be conducive to successful vegetative growth.