

**Virginia Department of Health
Sewage Handling and Disposal Advisory Committee (SHADAC)
December 16, 2020 Meeting Summary (Draft)**

Date: December 30, 2020
Time: 10 am to 11:30 am
Location: Webinar Using WebEx

Present

SHADAC Members:

Mike Lynn (Home Builders Association of Virginia), Lance Gregory (VDH), Alan Brewer (Virginia Association of Counties), Matt Tolley (Virginia Association of Professional Soil Scientist), Curtis Moore (Virginia Onsite Wastewater Recycling Association), Valarie Rourke (Department of Environmental Quality), Cody Vigil (Manufacturer), V'lent Lassiter (Chesapeake Bay Local Assistance Department), Larry Madison (Virginia Environmental Health Association), William Johnson (Consulting Engineers Council of Virginia), Colin Bishop (Manufacturer).

VDH Staff and General Public:

Jay Conta, Dave Tiller, Steve Elgin, Doug Canody, Steve Thomas, Dr. Marcia Degen, Sonal Iyer, Anthony Creech, Karri Atwood, Lynn Breedan, John Ewing, Scott Currie, Jim Slusser, Joel Pinnix, Kim Harper, Danna Revis, Jeff Walker, Trisha Henshaw, John Sawdy.

Administrative

1. Welcome and instruction on using Webex system.

Chairman Lynn welcomed the committee members, VDH staff and the public to the meeting. Mr. Gregory provided brief instructions on the WebEx system.

2. Approve agenda.

Mr. Vigil motioned to approve the agenda. Mr. Brewer seconded the motion. All members were in favor.

3. Review summary from June 5, 2020 meeting.

Mr. Vigil motioned to approve the meeting summary. Mr. Brewer seconded the motion. All members were in favor.

4. Review summary from June 30, 2020 meeting.

Chairman Lynn noted there was a typographical error in the summary. Mr. Tolley motioned to approve the meeting summary. Mr. Vigil seconded the motion. All members were in favor.

5. Scheduling meeting dates for 2021.

Mr. Gregory ask whether the committee would like to preschedule four meeting dates for the 2021 calendar year.

Ms. Rourke suggested using a doodle poll of members to set potential dates.

Mr. Gregory agreed to send a poll to members to set dates for the 2021 calendar year.

Public Comment Period

Mr. Pinnix commented that §32.1-165.C of the Code of Virginia regarding safe, adequate, and proper evaluations was an objective test. He noted three elements: 1) is the system legal, 2) is the system failing, and 3) is the system designed for the proposed strength and flow. He commented that VDH policy added a fourth expectation as to whether the system will function properly. He comment that the fourth element is subjective and causing problems, and commented that VDH needs to follow the statue.

Mr. Vigil motioned to close the public comment period. Mr. Brewer seconded the motion. All members were in favor.

Standing Agenda Items

1. Issues related to internal VDH policies and processes.
 - a. VDH verification of DPOR licensure; e.g. GMP 2010-01.

Mr. Gregory noted that VDH continues to receive questions regarding verification of licensure and asked whether revisions to GMP 2010-01 or the regulations are necessary. He note that he had recently heard concerns about conventional system operators conducting pump outs of alternative system without notifying the alternative system operator.

Mr. Pinnix commented that he was recently locked out of the online operation and maintenance reporting system. His log in was automatically terminated based on licensure information. He commented that if VDH went to online submissions, VDH could have the same licensure check for onsite sewage system and private well designs.

Chairman Lynn commented that many conventional system pumpers are doing alternative system pump outs. He noted that some counties ask to see the DPOR license of the truck operators before they will issue a permit, but others do not. He also added that some conventional license holders want to become alternative license holders, but cannot because everyone at their business holds only a conventional license.

Ms. Rourke suggested that a decision on the issue could be part of the revisions to the Sewage Handling and Disposal Regulations.

Mr. Moore commented that the alternative system operators should know what is happening based on the way DPOR's licensure program is set up.

Chairman Lynn commented that he does not want conventional license holders to walk away from failures.

Mr. Pinnix commented that VDH needs to send out letters. He said letter don't have to be based on violations, they could serve as public service announcements. He provide an example of a real estate transaction where a conventional operator pumped the tanks dry which damaged the alternative system components.

- b. Safe, adequate, and proper; system not expected to function properly.

Mr. Gregory noted that he had recently received questions about safe, adequate, and proper evaluations, particularly as it relates to whether the system is expected to function properly. Mr. Gregory commented that the primary component for VDH in 32.1-165 of the Code is to authorize the issuance of permits for building for human occupancy upon finding that safe, adequate, and proper sewage treatment is or will be made available to such building. If VDH has sufficient information to show that a system will not function properly, then we cannot say the system is safe, adequate, and proper. Mr. Gregory provided an example of a situation where a system is not failing - no sewage on the ground or backup into the home - because the system is not currently in use. However, information could be available that shows the system would not function properly if it were to be put into use. In that case, VDH cannot approve a system they believe would fail as soon as it is put into use.

Mr. Pinnix commented that there are some sections of the Code that provide ambiguous authority, and others where there is very specific authority. He believe the authority for safe, adequate, and proper is very specific. He asked where is the risk if VDH does not assess whether a system functions properly.

Mr. Gregory noted the risk would be a system that fails as soon as it is put into use.

Mr. Moore noted that systems may predate regulations or permits. He suggested VDH could provide some clarification about proving a system is legal.

- c. Minimum installation depth of shallow gravelless systems.

Mr. Gregory discussed a question that has arisen frequently, with regards to the minimum installation depth for gravelless system, particularly low profile gravelless system. He noted that onsite soil evaluators would be limited in the minimum installation depth by the requirements of the Sewage Handling Disposal Regulations, i.e. 18 inches for an in-ground system.

Mr. Slusser commented that he is concerned that owners are getting different outcomes across the state. He added that he believes OSEs have flexibility for repairs and voluntary upgrades.

Mr. Pinnix commented that part of a voluntary upgrade is subjective, that the design is for the purpose of protecting health. He said for voluntary upgrades you have to make something better.

Mr. Gregory noted that for repairs and voluntary upgrades the system must comply to the greatest extent possible, which could mean the addition of treatment. The owner has the option to take a waiver from treatment or pressure doing.

Old Business

1. Revising the Sewage Handling and Disposal Regulations.

Mr. Gregory commented that VDH would like to move forward with the process to review and revise the Sewage Handling and Disposal Regulations as a whole. At a previous meeting the committee suggested that VDH begin by working with district Environmental Health Managers to develop a 30,000 foot view for a proposed direction for the revisions. Mr. Gregory noted that he agrees that input from local health districts is vital to develop the overall strategy for the revision. However, given the current pandemic local health department staff resources are likely to be strained into 2021. He has for suggestions for initial steps that could be taken by VDH and the SHADAC to get the process moving forward.

Ms. Rourke suggested to start by looking at any overlaps with other regulations, such as DEQ and DPOR regulations.

Ms. Bishop commented that if VDH does not have resources from the pandemic that may point to a need for more privatization. He asked what would be an appropriate level of input from VDH.

Mr. Moore suggested that the first step is to decide at a 10,000 foot level where we want the regulations to be at in the future. He suggested that VDH may be able to look at other agencies for guidance on permitting programs.

Ms. Rourke commented that DEQ started looking at revising the Sewage Collection and Treatment Regulations. Some thought that instead of having all of the requirements in the regulations, they could instead include references to other available standards.

Chairman Lynn suggested a program similar to DEQs certificate to construct, allowing for instant permits.

Mr. Bishop noted that all states wrestle with this issue of program structure. He noted that product approvals are getting tougher, and that industry advancements may drastically change wastewater in the future pointing to the re-invent the toilet challenge from the Bill and Melinda Gates Foundation.

2. Environmental Health Database and Operation and Maintenance Portal.

Sonal Iyer, Director for the Division of Data Management and Process Improvement, provide a brief update on the status of the alternative system operation and maintenance portal. There were significant concerns raised about the initial portal design. VDH worked quickly with our vendor to make modifications to the portal that more closely mirrors the previous VENIS portal. VDH has also formed a focus group of alternative system operators to help us assess further

improvements to the portal. VDH will be meeting with the focus group in January to discuss additional needs beyond the just the operation and maintenance portal. VDH is currently work with Carmody and Online RME to ensure that data can transfer from those systems into the new operation and maintenance portal, similar to the process for the previous VENIS portal.

Mr. Moore commented that the Code requires pre-notification of owners for operation and maintenance. He said the concept was to try to keep owners from getting in a position of violating the regulations. He asked whether that pre-notification was still possible.

Mr. Gregory noted the new database does allow VDH to track which systems have provide operation and maintenance reports, and the ability to determine which system are due for maintenance. He noted Mr. Pinnix's earlier comment that VDH could simply send reminders to all owners in advance. Mr. Gregory commented the key issue at this time is ensuring that reports submitted via Carmody and Online RME are also populating into the VDH database so that complete and accurate information on operation and maintenance is available.

Chairman Lynn raised significant concern with the database development process, noting that the private sector also needs access to records beyond just for operation and maintenance. He asked why VDH did not or could not go to a new vendor to provide those services, noting that some localities already use other services. He also asked if VDH could provide a timeframe for when connection between the portal and third party providers would be completed.

Ms. Iyer noted that she could not provide a definitive timeframe, but that VDH was working to complete work with Carmody and Online RME as soon as possible.

Chairman Lynn commented that in his opinion Health Space is VDH's subcontractor, and VDH should be able to dictate a deadline for completion.

New Business

1. VA 811.

Chairman Lynn stated that he recently learned that with Virginia 811, they don't send someone out to mark all utilities. Marking is left to the utility providers, and onsite sewage system are not marked. He noted that Prince William and Fairfax Counties have the highest rates of utility damage in the entire United States. He suggested that VDH reach out to Virginia 811 to discuss putting something on tickets to at least direct people to go to VDH if there is no public water or sewer.

Mr. Gregory said he would be happy to reach out to Virginia 811.

Mr. Johnson noted that utilities are not required to report all issues that occur, and that public utilities are only required to mark up to the easement.

Mr. Moore suggested the issue was something to discuss for the regulatory revisions. He commented that septic is subservient to utilities, but that he felt septic should be considered a

utility. He noted that you could interpret the current standard that a septic system is in violation if located too close to a utility, even if the utility was installed after the septic system.

Ms. Rourke suggested reviewing utility regulations, as there may already be requirements to address the issue.

2. 2021 Legislative Proposals.

Mr. Gregory discussed two legislative proposals VDH hopes to be moving forward during the 2021 legislative session. He noted that VDH is currently seeking a sponsor for the bills.

One bill would amend §32.1-164.1.01 to authorize the VDH to use the funds collected and deposited into the Onsite Sewage Indemnification Fund for loans and grants to assist qualifying homeowners with repairing or improving onsite sewage systems. Mr. Gregory noted that the proposed language would ensure that eligible payments under the indemnification fund would come first. No expenses from the fund could be used to provide grants or loans in lieu of payment to an owner that qualifies for indemnification funds. He noted that often owners that receive grant funds must pay for the services up front, and then be reimbursed. However, many homeowners cannot afford the upfront cost for a repair, and this amendment would allow VDH to provide them loans to cover those upfront costs. Mr. Gregory acknowledged that the fund is limited and would not cover a large number of repairs, but it would be a step in the right direction.

The second proposal would amend § 32.1-164 of the Code of Virginia to authorize the VDH to include considerations for the impacts of climate change in the regulations for design and permitting of onsite sewage systems. Mr. Gregory noted that the proposal only gives VDH authority to develop regulations, and that if approved, the first step would be to work with the SHADAC to develop appropriate considerations. Mr. Gregory noted that Coastal Virginia has some of the highest relative sea level rise rates in the United States due to the combined effects of sea level rise and land subsidence. He provided a very illustrative example from a presentation available at https://www.vdh.virginia.gov/content/uploads/sites/4/2019/06/VDHClimateChangeSummit_WaterSeaLevelRiseBreakoutPresentation.pdf that shows a system that was permitted in 2002, that fully complied with the 70 foot setback to shellfish waters. By 2019, the system was completely submerged.

Mr. Brewer suggested that the indemnification fund proposal should be amended to include connection to public sewer where that is a viable repair solution for failing onsite systems.

3. Proposed Fast-Track Amendments to the Sewage Handling and Disposal Regulations.

Dr. Degen provided the attached presentation to the committee regarding a proposed fast-track amendment to the Sewage Handling and Disposal Regulations. The purpose of the fast-track proposal is to move design components of rescinded GMP 147 into the regulations. The issue was brought to the SHADAC in 2019, and there was general agreement that OSEs must follow regulations or approved manufacturer manuals in order to comply with the licensing exemption.

However, the design components from now rescinded GMP 147 are not found in the regulations. Dr. Degen walked through the presentation and had several specific questions for the committee.

Her first question was whether to allow for velocities less than 2 feet per second, or just allow for deviations under pump specification deviations.

Mr. Bishop asked how that would play into proprietary treatment systems.

Dr. Degen commented that it would not apply when integral to the treatment device.

Mr. Johnson raised concern that VDH would be allowing people that are untrained in pump design to make a judgement call on a pump.

Dr. Degen then asked whether the three different pump categories would be useful.

Mr. Madison commented that designers are being held to 2 feet per second.

Dr. Degen noted that is because GMP 147, which previously allowed less, was rescinded.

Mr. Johnson suggested having less categories and sticking to the 2 feet per second.

Mr. Madison agreed.

Dr. Degen then asked about adding a minimum working volume for flow equalization.

Mr. Madison asked whether there was a hybrid way to address the issue that has some level of time dosing with a demand dose override.

Mr. Johnson asked why it wouldn't be a full day storage.

Dr. Degen noted that the proposal mirrored the current $\frac{3}{4}$ day requirement for drip.

Mr. Madison noted the Advantex RT unit is a hybrid, and that he has made the justification for how it is time dosed.

Dr. Degen then asked whether the committee felt it was appropriate to allow for reducing the standoff for installing below a restriction for treatment level 2 and treatment level 3 with disinfection.

Mr. Moore asked about treatment level 3 without disinfection.

Dr. Degen noted it would have the same standoff as treatment level 2.

Mr. Moore commented that he doesn't believe that disinfection makes much of a difference regarding installation under a restriction.

Mr. Bishop suggested VDH could couple both treatment level 2 and 3 together, with and without disinfection. He noted that the NSF 345 workgroup will be proposing to allow 25 mg/l CBOD5 and 30 mg/l total suspended solids.

Dr. Degen asked where there should be a minimum absorption area. GMP 147 had a minimum of 340 square feet.

Chairman Lynn suggested it should just be based on the design.

Dr. Degen then asked about the appropriate level of cover to require. GMP 147 requires a minimum of 4 inches, and the proposal is for a minimum of 6 inches.

Chairman Lynn commented that the installation depth has an impact on the cover depth.

Dr. Degen stated that VDH would put information about the proposed amendments on the News of Interest page.

Adjourn

**Virginia Department of Health
Sewage Handling and Disposal Advisory Committee (SHADAC) Meeting
Agenda**

Date: December 16, 2020
Time: 10 am to 2 pm
Location: Webinar using Webex (use instructions below to join)

You can access the meeting on your computer, phone, or mobile device with the meeting link below.

<https://vdhoep.webex.com/vdhoep/j.php?MTID=m1194701d7aec31d79d02d1cca0f50ab9>

If accessing via a mobile device, you will need to download the Webex Meet app prior to joining the meeting.

When joining the meeting, please use the meeting number and password below:

Meeting number (access code): 132 813 7399
Meeting password: MtjextaV463

You can use your computer audio or join via telephone by calling 1-844-992-4726 United States Toll Free

Agenda

Administrative (25 minutes)

1. Welcome and instruction on using Webex system. (5 minutes)
2. Approve agenda. (5 minutes)
3. Review summary from June 5, 2020 meeting. (5 minutes)
4. Review summary from June 30, 2020 meeting. (5 minutes)
5. Scheduling meeting dates for 2021. (5 minutes)

Public Comment Period (15 minutes)

Standing Agenda Items (45 minutes)

1. Issues related to internal VDH policies and processes. (30 minutes)
 - d. VDH verification of DPOR licensure; e.g. GMP 2010-01. (15 minutes)
 - e. Safe, adequate, and proper; system not expected to function properly. (15 minutes)
 - f. Minimum installation depth of shallow gravelless systems. (15 minutes)

Break (5 minutes)

Old Business (35 minutes)

1. Revising the Sewage Handling and Disposal Regulations. (20 minutes)
2. Environmental Health Database and Operation and Maintenance Portal (15 minutes)

Break (5 minutes)

New Business Continued (45 minutes)

1. VA 811. (15 minutes)
2. 2021 Legislative Proposals. (30 minutes)

Break (5 minutes)

New Business Continued (60 minutes)

3. Proposed Fast-Track Amendments to the Sewage Handling and Disposal Regulations. (60 minutes)

Adjourn

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Moir, Anna

SENATE BILL NO. _____ HOUSE BILL NO. _____

A BILL to amend and reenact § 32.1-164.1:01 of the Code of Virginia, relating to Onsite Sewage Indemnification fund; grants and loans to repair or improve onsite sewage systems.

Be it enacted by the General Assembly of Virginia:

1. That § 32.1-164.1:01 of the Code of Virginia is amended and reenacted as follows:

§ 32.1-164.1:01. Onsite Sewage Indemnification fund.

A. There is hereby created the Onsite Sewage Indemnification fund whose purpose is to receive moneys generated by a portion of the fees collected by the Department of Health pursuant to subsections C and E of § 32.1-164 and appropriated by the Commonwealth for the purpose of assisting any Virginia real property owner holding a valid permit to operate an onsite sewage system when such system or components thereof fail within three years of construction and such failure results from the negligence of the Department of Health. The fund may also be used, in the discretion of the Board, to support the program for training and recognition of licensed onsite soil evaluators and to provide grants and loans to property owners with income at or below 200 percent of the federal poverty guidelines to repair failing onsite sewage systems or install onsite sewage systems on properties that lack adequate sewage disposal. No expenses shall be paid from the fund to support the program for training and recognition of onsite soil evaluators, or to provide grants or loans to repair failing

onsite sewage systems or install onsite sewage systems on properties that lack adequate sewage disposal in lieu of payment to any owner or owners qualified to receive payment from the fund pursuant to this chapter.

B. Ten dollars of each fee collected by the Department of Health pursuant to subsections C and E of § 32.1-164 shall be deposited by the Comptroller to this fund to be appropriated for the purposes of this section to the Department of Health by the General Assembly as it deems necessary.

C. The owner of an onsite sewage system that has been permitted by the Department of Health may cause, by filing a request for payment from the fund within one year from the date the system or components thereof failed, the Commissioner to review the circumstances of the onsite sewage system failure, if the onsite sewage system has failed within three years of construction. Upon the Commissioner's finding that the onsite sewage system was permitted by the Department and (i) the system or components thereof failed within three years of construction; (ii) that specific actions of the Department were negligent and that those actions caused the failure; and (iii) that the owner filed a request for payment from the fund within one year from the date the system or components thereof failed, the Commissioner shall, subject to the limitations stated herein, reimburse the owner for the reasonable cost of following the Board's regulations to repair or replace the failed onsite sewage system or components thereof.

D. Prior to receiving payment from the fund, the owner shall follow the requirements in the Board's regulations to repair or replace the failed onsite sewage system or components thereof.

E. The total amount an owner may receive in payment from the fund shall not exceed \$30,000. Only the costs of the system that failed or the costs of labor and equipment required to repair or replace the failed onsite sewage system or components

thereof are reimbursable by the fund.

F. If the Commissioner finds that the system was permitted by the Department and has failed within three years of construction and that the failure resulted from faulty construction or other private party error, the Commissioner may assist the owner of the failed system in seeking redress from the system's builder or other private party.

G. Every request for payment from the fund shall be forever barred unless the owner has filed a complete application as required by the Department. The request shall be filed with the Commissioner within one year from the date that the onsite sewage system or components thereof first failed. However, if the owner was under a disability at the time the cause of action accrued, the tolling provisions of § 8.01-229 shall apply. The owner shall mail the request for payment from the fund via the United States Postal Service by certified mail, return receipt requested, addressed to the Commissioner.

In any action contesting the filing of the request for payment from the fund, the burden of proof shall be on the owner to establish mailing and receipt of the notice in conformity with this section. The signed receipt indicating delivery to the Commissioner, when admitted into evidence, shall be prima facie evidence of filing of the request for payment from the fund under this section. The request for payment from the fund shall be deemed to be timely filed if it is sent by certified mail, return receipt requested, and if the official receipt shows that the mailing was within the prescribed time limits.

Notwithstanding any provision of this article, the liability for any payment from the fund shall be conditioned upon the execution by the owner of a release approved by the Attorney General of all claims against the Commonwealth, its political subdivisions, agencies, and instrumentalities and against any officer or employee of the Commonwealth in connection with or arising out of the occurrence complained of.

H. The Commissioner and the Attorney General shall cooperatively develop an actuarially sound program and policy for identifying, evaluating, and processing requests for payment from the fund.

I. If the Commissioner refuses the request for payment from the fund, the owner may appeal the refusal to the State Health Department Sewage Handling and Disposal Appeal Review Board.

The Board may promulgate regulations pursuant to the Administrative Process Act (§ 2.2-4000 et seq.) for the administration of the fund consistent with this chapter.

In the event the fund is insufficient to meet requests for payment from the fund, this section and the creation of the fund shall not be construed to provide liability on the part of the Department or any of its personnel where no such liability existed prior to July 1, 1994.

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21101555D

Moir, Anna

SENATE BILL NO. _____ **HOUSE BILL NO.** _____

A BILL to amend and reenact § 32.1-164 of the Code of Virginia, relating to State Board of Health; regulations; sewage systems; impacts of climate change.

Be it enacted by the General Assembly of Virginia:

1. That § 32.1-164 of the Code of Virginia is amended and reenacted as follows:

§ 32.1-164. Powers and duties of Board; regulations; fees; onsite soil evaluators; letters in lieu of permits; inspections; civil penalties.

A. The Board shall have supervision and control over the safe and sanitary collection, conveyance, transportation, treatment, and disposal of sewage by onsite sewage systems and alternative discharging sewage systems, and treatment works as they affect the public health and welfare. The Board shall also have supervision and control over the maintenance, inspection, and reuse of alternative onsite sewage systems as they affect the public health and welfare. In discharging the responsibility to supervise and control the safe and sanitary treatment and disposal of sewage as they affect the public health and welfare, the Board shall exercise due diligence to protect the quality of both surface water and ground water. Upon the final adoption of a general Virginia Pollutant Discharge Elimination permit by the State Water Control Board, the Board of Health shall assume the responsibility for permitting alternative discharging sewage systems as defined in § 32.1-163. All such permits shall comply with the applicable regulations of the State Water Control Board and be registered with the State Water Control Board.

In the exercise of its duty to supervise and control the treatment and disposal of sewage, the Board shall require and the Department shall conduct regular inspections of alternative discharging sewage systems. The Board shall also establish requirements for maintenance contracts for alternative discharging sewage systems. The Board may require, as a condition for issuing a permit to operate an alternative discharging sewage system, that the applicant present an executed maintenance contract. Such contract shall be maintained for the life of any general Virginia Pollutant Discharge Elimination System permit issued by the State Water Control Board.

B. The regulations of the Board shall govern the collection, conveyance, transportation, treatment and disposal of sewage by onsite sewage systems and alternative discharging sewage systems and the maintenance, inspection, and reuse of alternative onsite sewage systems. Such regulations shall be designed to protect the public health and promote the public welfare and may include, without limitation:

1. A requirement that the owner obtain a permit from the Commissioner prior to the construction, installation, modification or operation of a sewerage system or treatment works except in those instances where a permit is required pursuant to Chapter 3.1 (§ 62.1-44.2 et seq.) of Title 62.1.

2. Criteria for the granting or denial of such permits.

3. Standards for the design, construction, installation, modification and operation of sewerage systems and treatment works for permits issued by the Commissioner.

4. Standards governing disposal of sewage on or in soils.

5. Standards specifying the minimum distance between sewerage systems or treatment works and:

- ~~(a)~~ a. Public and private wells supplying water for human consumption;

- ~~(b)~~ b. Lakes and other impounded waters;

- ~~(e)~~ c. Streams and rivers;
- ~~(d)~~ d. Shellfish waters;
- ~~(e)~~ e. Ground waters;
- ~~(f)~~ f. Areas and places of human habitation;
- ~~(g)~~ g. Property lines.

6. Standards as to the adequacy of an approved water supply.

7. Standards governing the transportation of sewage.

8. A prohibition against the discharge of untreated sewage onto land or into waters of the Commonwealth.

9. A requirement that such residences, buildings, structures and other places designed for human occupancy as the Board may prescribe be provided with a sewerage system or treatment works.

10. Criteria for determining the demonstrated ability of alternative onsite systems, which are not permitted through the then current sewage handling and disposal regulations, to treat and dispose of sewage as effectively as approved methods.

11. Standards for inspections of and requirements for maintenance contracts for alternative discharging sewage systems.

12. Notwithstanding the provisions of subdivision 1~~above~~ and Chapter 3.1 of Title 62.1, a requirement that the owner obtain a permit from the Commissioner prior to the construction, installation, modification, or operation of an alternative discharging sewage system as defined in § 32.1-163.

13. Criteria for granting, denying, and revoking of permits for alternative discharging sewage systems.

14. Procedures for issuing letters recognizing onsite sewage sites in lieu of issuing onsite sewage system permits.

15. Performance requirements for nitrogen discharged from alternative onsite

sewage systems that protect public health and ground and surface water quality.

16. Consideration of the impacts of climate change on proposed treatment works based on research and analysis from the Center for Coastal Resources Management at the Virginia Institute of Marine Science at The College of William and Mary in Virginia.

C. A fee of \$75 shall be charged for filing an application for an onsite sewage system or an alternative discharging sewage system permit with the Department. Funds received in payment of such charges shall be transmitted to the Comptroller for deposit. The funds from the fees shall be credited to a special fund to be appropriated by the General Assembly, as it deems necessary, to the Department for the purpose of carrying out the provisions of this title. However, \$10 of each fee shall be credited to the Onsite Sewage Indemnification Fund established pursuant to § 32.1-164.1:01.

The Board, in its regulations, shall establish a procedure for the waiver of fees for persons whose incomes are below the federal poverty guidelines established by the United States Department of Health and Human Services or when the application is for a pit privy or the repair of a failing onsite sewage system. If the Department denies the permit for land on which the applicant seeks to construct his principal place of residence, then such fee shall be refunded to the applicant.

From such funds as are appropriated to the Department from the special fund, the Board shall apportion a share to local or district health departments to be allocated in the same ratios as provided for the operation of such health departments pursuant to § 32.1-31. Such funds shall be transmitted to the local or district health departments on a quarterly basis.

D. In addition to factors related to the Board's responsibilities for the safe and sanitary treatment and disposal of sewage as they affect the public health and welfare, the Board shall, in establishing standards, give due consideration to economic costs of

such standards in accordance with the applicable provisions of the Administrative Process Act (§ 2.2-4000 et seq.).

E. Further a fee of \$75 shall be charged for such installation and monitoring inspections of alternative discharging sewage systems as may be required by the Board. The funds received in payment of such fees shall be credited to a special fund to be appropriated by the General Assembly, as it deems necessary, to the Department for the purpose of carrying out the provisions of this section. However, \$10 of each fee shall be credited to the Onsite Sewage Indemnification Fund established pursuant to § 32.1-164.1:01.

The Board, in its regulations, shall establish a procedure for the waiver of fees for persons whose incomes are below the federal poverty guidelines established by the United States Department of Health and Human Services.

F. Any owner who violates any provision of this section or any regulation of the Board of Health or the State Water Control Board relating to alternative discharging sewage systems or who fails to comply with any order of the Board of Health or any special final order of the State Water Control Board shall be subject to the penalties provided in §§ 32.1-27 and 62.1-44.32.

In the event that a county, city, or town, or its agent, is the owner, the county, city, or town, or its agent may initiate a civil action against any user or users of an alternative discharging sewage system to recover that portion of any civil penalty imposed against the owner which directly resulted from violations by the user or users of any applicable federal, state, or local laws, regulations, or ordinances.

G. The Board shall establish and implement procedures for issuance of letters recognizing the appropriateness of onsite sewage site conditions in lieu of issuing onsite sewage system permits. The Board may require that a survey plat be included with an application for such letter. Such letters shall state, in language determined by

the Office of the Attorney General and approved by the Board, the appropriateness of the soil for an onsite sewage system; no system design shall be required for issuance of such letter. The letter may be recorded in the land records of the clerk of the circuit court in the jurisdiction where all or part of the site or proposed site of the onsite sewage system is to be located so as to be a binding notice to the public, including subsequent purchases of the land in question. Upon the sale or transfer of the land which is the subject of any letter, the letter shall be transferred with the title to the property. A permit shall be issued on the basis of such letter unless, from the date of the letter's issuance, there has been a substantial, intervening change in the soil or site conditions where the onsite sewage system is to be located. The Board, Commissioner, and the Department shall accept evaluations from licensed onsite soil evaluators for the issuance of such letters, if they are produced in accordance with the Board's established procedures for issuance of letters. The Department shall issue such letters within 20 working days of the application filing date when evaluations produced by licensed onsite soil evaluators are submitted as supporting documentation. The Department shall not be required to do a field check of the evaluation prior to issuing such a letter or a permit based on such letter; however, the Department may conduct such field analyses as deemed necessary to protect the integrity of the Commonwealth's environment. Applicants for such letters in lieu of onsite sewage system permits shall pay the fee established by the Board for the letters' issuance and, upon application for an onsite sewage system permit, shall pay the permit application fee.

H. The Board shall establish a program for the operation and maintenance of alternative onsite systems. The program shall require:

1. The owner of an alternative onsite sewage system, as defined in § 32.1-163, to have that system operated by a licensed operator, as defined in § 32.1-163, and visited by the operator as specified in the operation permit;

2. The licensed operator to provide a report on the results of the site visit utilizing the web-based system required by this subsection. A fee of \$1 shall be paid by the licensed operator at the time the report is filed. Such fees shall be credited to the Onsite Operation and Maintenance Fund established pursuant to § 32.1-164.8;

3. A statewide web-based reporting system to track the operation, monitoring, and maintenance requirements of each system, including its components. The system shall have the capability for pre-notification of operation, maintenance, or monitoring to the operator or owner. Licensed operators shall be required to enter their reports onto the system. The Department of Health shall utilize the system to provide for compliance monitoring of operation and maintenance requirements throughout the state. The Commissioner shall consider readily available commercial systems currently utilized within the Commonwealth; and

4. Any additional requirements deemed necessary by the Board.

I. The Board shall promulgate regulations governing the requirements for maintaining alternative onsite sewage systems.

J. The Board shall establish a uniform schedule of civil penalties for violations of regulations promulgated pursuant to subsection B that are not remedied within 30 days after service of notice from the Department. Civil penalties collected pursuant to this chapter shall be credited to the Environmental Health Education and Training Fund established pursuant to § 32.1-248.3.

This schedule of civil penalties shall be uniform for each type of specified violation, and the penalty for any one violation shall be not more than \$100 for the initial violation and not more than \$150 for each additional violation. Each day during which the violation is found to have existed shall constitute a separate offense. However, specified violations arising from the same operative set of facts shall not be charged more than once in any 10-day period, and a series of specified violations

arising from the same operative set of facts shall not result in civil penalties exceeding a total of \$3,000. Penalties shall not apply to unoccupied structures which do not contribute to the pollution of public or private water supplies or the contraction or spread of infectious, contagious, or dangerous diseases. The Department may pursue other remedies as provided by law; however, designation of a particular violation for a civil penalty pursuant to this section shall be in lieu of criminal penalties, except for any violation that contributes to or is likely to contribute to the pollution of public or private water supplies or the contraction or spread of infectious, contagious, or dangerous diseases.

The Department may issue a civil summons ticket as provided by law for a scheduled violation. Any person summoned or issued a ticket for a scheduled violation may make an appearance in person or in writing by mail to the Department prior to the date fixed for trial in court. Any person so appearing may enter a waiver of trial, admit liability, and pay the civil penalty established for the offense charged.

If a person charged with a scheduled violation does not elect to enter a waiver of trial and admit liability, the violation shall be tried in the general district court with jurisdiction in the same manner and with the same right of appeal as provided for by law. In any trial for a scheduled violation, the Department shall have the burden of proving by a preponderance of the evidence the liability of the alleged violator. An admission of liability or finding of liability under this section shall not be deemed an admission at a criminal proceeding.

This section shall not be interpreted to allow the imposition of civil penalties for activities related to land development.

K. The Department shall establish procedures for requiring a survey plat as part of an application for a permit or letter for any onsite sewage or alternative discharging sewage system, and for granting waivers for such requirements. In all cases, it shall be

the landowner's responsibility to ensure that the system is properly located as permitted.

2. That the State Board of Health (the Board) shall adopt regulations to implement the requirements of this act. If requested by the Board, technical assistance during the regulatory development process shall be provided by the Department of Conservation and Recreation and the Department of Environmental Quality.

#

Fast Track Proposal: Sewage Handling and Disposal Regulations

MOVING GMP 147 INTO REGULATION

DECEMBER 16, 2020

A solid blue horizontal bar spanning the width of the slide at the bottom.

Purpose

To move design components of rescinded GMP 147 into regulations

Why?

OSE Design Authority

- ❑ Issue brought to SHADAC in 2019
 - ❑ Concern that with GMP 147 rescinded that OSEs are designing outside the engineering exemption
 - ❑ SHADAC agreed that OSEs must follow regulation or an approved manufacturer manual in order to comply with “which utilize packaged equipment, such as equipment of catalogued standard design that has been coordinated and tested by the manufacturer, and complies with all applicable codes”
 - ❑ SHADAC directed VDH to investigate how to allow OSEs to continue to do pads and shallow designs

- ❑ VDH brought issue to OAG
 - ❑ Result of meeting: A policy is an interpretation of approved regulations. A policy cannot create new design standards that are not found in regulation.
 - ❑ Clearest path is for VDH to modify the SHDR to include the desired regulatory changes

The Plan

Step One:

- Prepare a FAST TRACK REGULATORY change to incorporate design elements from GMP 147 into the SHDR.

Step Two:

- Update GMP 2010-01 (Verifying Licensure of Department of Professional and Occupational Regulation (DPOR) regulations for work submitted to the Virginia Department of Health (VDH)

Step Three:

- Notify VDH staff and OSEs that until Reg is adopted, VDH will no longer recognize the variances allowed in GMP 147. RESETS the program.

Status

First Draft of FAST TRACK Reg out for internal review –
summer 2020

First Draft to SHADAC and VDH Districts – December 2020

Overview of Draft Changes to SHDR

- Adding definitions where new terms added such as TL2 and TL3
- Waiving of formal plans for OSE designs
- Allows for variations from 2 fps velocity in force mains for settled sewage and pumps integral to a treatment unit
- Incorporates new pump categories (internal, conveyance, and transfer)
- Addresses installing below a restriction with TL2 and TL3 effluent
- Adds loading rates for TL2, TL3

Overview continued

- Shallow trench construction with TL2, TL3
- Pad definition and construction
- Modifications to mounds to allow TL2 and TL3

Waiver to Formal Plans (147-G)

Modify 250C to add

“Formal plans and specifications are waived for designs that are exempt from the practice of engineering under 54.1-402A.11”

Also modify definition of Type III to eliminate >1000 gpd criteria

Pumping – GMP 147-F

- Pumps integral to Treatment Systems – 147 Waived All of section 880
 - Maintained in Proposed draft
- Conveyance Pumps – 147 Waived 880A1 (velocity), B1 (emergency storage), B6 (open face centrifugal, general station construction) and B7 (controls)
 - Proposed – maintain velocity waiver, maintain parts of B6, maintain part of B7
 - ¼ day emergency storage
 - Minimum working volume for EQ or timed dosing (3/4 day)
 - Maintain positive suction head
 - When multiple pumps, separate suction lines
 - Shutoff valves, check valves, antisiphon, piped to remove for service

Pumping – GMP 147-F

- Transfer Pumps (NEW) – EQ pumps, sludge transfer
- Proposed –
 - ¼ day emergency storage
 - Minimum working volume for EQ or timed dosing (3/4 day)
 - Maintain positive suction head
 - When multiple pumps, separate suction lines
 - Controls to automatically start and stop the pumps
 - Alternating pumps
 - Shutoff valves, check valves, antisiphon, piped to remove for service

Question: Velocity

Should A1 be modified to allow for velocity <2 fps or just allow for deviations under pump specific deviations?

A. Force mains.

1. Velocity. At pumping capacity, a minimum self-scouring velocity of two feet per second shall be maintained. **When pumping settled sewage, the minimum velocity shall be one foot per second.** A velocity of eight feet per second should not be exceeded.

Question: Pump Categories

Are the 3 categories useful? (Integral to treatment unit, transfer, conveyance)

Is adding a minimum working volume for EQ and timed dosing useful?

New – Installing under a Restriction

- for STE current regs says 36 inches of no limiting features under a restriction (12 inches of sidewall plus 24 inches below bottom of trench)
- Proposed
 - TL2: 12 inches of sidewall plus 18 inches below bottom of trench
 - TL3 with disinfection: 12 inches of sidewall with 12 inches below bottom of trench

Minimum absorption area

GMP 147 - K set absorption area minimum at 320 SF

Current SHDR sets minimum at 400 sf for single family residential dwellings with STE

Should the 320 sf minimum from GMP 147 be maintained for TL2 or TL3 effluent systems?

Should it be caveated to apply to only to single family residential systems?

Loading Rates

- Maintain Table 5.4 for STE but clarify that it is for STE
- Add table 5.5 for TL2 and TL3
 - Pressure trench
 - Gravity trench
 - Drip
 - Pad/mound

Trenches receiving TL2 or TL3 - Cover

- Minimum cover 4 inches in GMP 147
 - Ok or increase to 6 to agree with drip cover?
 - Increase to 12 inches over gravity systems and 6 for pressure?
- Do we need to specify sideslope on above grade cover? 1:4? 147 recommended 1:6 but required 1:4

Trenches receiving TL2 or TL3 - Sidewall

- GMP 147 allowed at grade installations
- OSEs are required to follow standard designs
- No standard design for at grade
- Proposed: Use minimum side wall for approved dispersal methods. 12 inches for gravel trenches and minimum sidewall for a given gravelless height (minimum 8 inches). Timed dosing when less than 12 inches
- Allows for approved deviations through approval design manuals

Trenches receiving TL2 or TL3 - Slope

- GMP 147 allowed
 - at grade installations and
 - Can be installed up to 15% slope with any texture group
 - No max slope is provided for trenches
- Should the max slope be 15%?

Pads vs Mounds

- PADS have level bottoms and only appear in GMP 147
- System 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)'
- Mound bottoms follow the natural contour of the soil surface
- Mounds are currently defined through reference to Wisconsin sand mounds
- Wisconsin design manual uses pressure distribution

Proposed changes to SHDR 960 - Mounds

- Clarifies that they differ from pads in that they follow the natural contour of the site
- Always have pressure distribution
- Sets standards for mounds receiving TL2 or better quality
 - Minimum sand depth 6 inches
 - References Table 5.5 (new loading rates)
 - Cover at 6 inches with minimum side slope of 1:4
 - Deviations allowed by approved manufacturer's manual

Pads – Add section 966

- GMP 147 limited to TL3. New allows TL2 as well.
- Loading rates set in Table 5.5
- GMP 147 limited max pad to 1200 sf – Should we keep? Could be trigger to go to pressure dosing?
- 147 did not allow trenches and pads to be in same system. Recommend deleting so it is allowed.
- 147 limited slopes to 10% - maintained
- New – over 1,000 gpd must be pressure dispersal
- <12 inches install requires timed dosing

Pads - Sidewall

- GMP 147 allowed at grade installations
- OSEs are required to follow standard designs
- No standard design for at grade
- Proposed: Use minimum side wall of 12 inches for gravel trenches and minimum sidewall for a given gravelless height (minimum 8 inches). Timed dosing when less than 12 inches
- Allows for approved deviations through approval design manuals

Pads cont

- Cover – proposed to increase from 4 inches to 6 inches.
- Maintain side slope max of 1:4
- Eliminate minimum size (320 sf) or limit to single family dwelling or maintain
- Added new – all pads must be dosed – effort to address issue with ‘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)’

12VAC5-610 New Definitions Proposed:

This definition is from the SCAT REgs.

"Settled sewage" is effluent from a basin in which sewage is held or remains in quiescent conditions for 12 hours or more and the residual sewage sludge is not reintroduced to the effluent following the holding period. Sewage flows not in conformance with these conditions providing settled sewage shall be defined as nonsettled sewage.

"Treatment level 2 effluent" or "TL-2 effluent" means secondary effluent as defined in 12VAC5-610-120 that has been treated to produce BOD5 and TSS concentrations equal to or less than 30 mg/l each.

"Treatment level 3 effluent" or "TL-3 effluent" means effluent that has been treated to produce BOD5 and TSS concentrations equal to or less than 10 mg/l each.

"Working volume" means the volume in a pump tank between the pump off level and the high water alarm level.

Commented [DM(1): New definition only if modification to 880A remain on velocity

12VAC5-610-250. Procedures for Obtaining a Construction Permit for a Sewage Disposal System.

Construction permits are issued by the commissioner but all requests for a sewage disposal construction permit shall be directed initially to the district or local health department.

A. Type I. A Type I sewage disposal system is an individual sewage disposal system incorporating a septic tank and subsurface soil absorption (septic tank-subsurface drainfield) serving a single residence. The submission of an application is all that is normally necessary to initiate procedure for obtaining a permit under this subsection. If after a site investigation, it is determined that pumping, enhanced flow distribution (see [12VAC5-610-930 A](#)) or low pressure distribution (see [12VAC5-610-940](#)) is necessary, the system shall be considered a Type II system.

B. Type II. A Type II sewage disposal system is a sewage disposal system incorporating a septic tank and subsurface soil absorption system which serves a commercial or other establishment, more than a single family dwelling unit, or where pumping, enhanced flow distribution (see [12VAC5-610-930 A](#)) or low pressure distribution (see [12VAC5-610-940](#)) is necessary. The procedure for obtaining a permit includes the following steps:

1. The submission of an application;
2. A preliminary conference as necessary; and
3. The submission of informal plans, specifications, design criteria, and other data, as may be required by the district or local health department. Depending on the size and complexity of the system, the submission of formal plans and specifications may be required.

C. Type III. A Type III sewage disposal system includes sewage disposal systems other than a septic tank subsurface soil absorption system, and subsurface soil absorption systems, regardless of design, with design flows greater than 1,000 gpd. Formal plans and specifications are waived for designs that are exempt from the practice of engineering under §§ 54.1-402A.11. The procedure for obtaining a permit under this subsection includes the following steps:

1. The submission of an application;
2. A preliminary conference; and
3. The submission of formal plans, specifications and design criteria. Other supporting data may be required on a case-by-case basis.

When high strength wastes are proposed for subsurface disposal, the treatment methodology shall comply with the requirements found in [12VAC5-580-10](#) et seq. of the Sewage Regulations.

250C modifications address section G, page 11 of GMP 147

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

12VAC5-610-880. Pumping.

A. Force mains.

GMP 147 had several references to not having to meet the minimum velocity of 2 fps, The modification under 1 below is intended to clarify when less than 2 fps is ok.

Based on EPA Manual for Alternative Wastewater Collection Systems EPA/625/1-21-024 Oct 1991. standard for gravity sewer in 9VAC25-790-320.B.1 for settled sewage 2.4.1.2 p.

Experience with STEP systems has shown that solids are not deposited even when velocities are less than 30 cm/s (1 fps). However, a self-cleaning velocity of 30 cm/s (1 fps) may be conservatively used.

However this would also allow septic tank effluent to be pumped at less than 2 fps, depending on the definition of settled sewage used.

From SCAT Regs (section 320) regarding sewers, not force mains, allows down to 1.3 fps

1. Sewers shall be installed at a sufficient depth to prevent ice formation due to cooling of the wastewater flows, resulting in blockage of the flow channel. Sewers carrying nonsettled sewage and sewers carrying settled sewage shall be designed and constructed to give mean velocities, when flowing full, of not less than two feet per second and 1.3 feet per second, respectively, based on Manning's formula using a pipe material roughness coefficient ("n") value of 0.014. Use of other "n" values and slopes less than those specified herein shall be justified on the basis of pipe material specifications, research, or field data, presented with the submission for approval.

C. Velocity. At pumping capacity, a minimum self-scouring velocity of two feet per second shall be maintained. When pumping settled sewage, the minimum velocity shall be one foot per second. A velocity of eight feet per second should not be exceeded.

FROM SCAT REGS "Settled sewage" is effluent from a basin in which sewage is held or remains in quiescent conditions for 12 hours or more and the residual sewage sludge is not reintroduced to the effluent following the holding period. Sewage flows not in conformance with these conditions providing settled sewage shall be defined as nonsettled sewage.

D. Air relief valve. Air relief valves shall be placed at high points in the force main, as necessary, to relieve air locking.

E. Bedding. All force mains shall be bedded to supply uniform support along their length.

F. Protection against freezing. Force mains shall be placed deep enough to prevent freezing.

G. Location. Force mains shall not pass closer than 50 feet to any drinking water source unless pressure tested in place at pump shut-off head. Under no circumstances shall a force main come within 10 feet of a nonpublic drinking water source.

H. Materials of construction. All pipe used for force mains shall be of the pressure type with pressure type joints.

Commented [DM(2)]: Review this or pull it.

Commented [DM(3R2)]: May be confusing and would require new definition for settled sewage

I. Anchors. Force mains shall be sufficiently anchored within the pump station and throughout the line length. The number of bends shall be as few as possible. Thrust blocks, restrained joints and/or tie rods shall be provided where restraint is needed.

J. Backfilling and tamping. Force main trenches shall be backfilled and tamped as soon as possible after the installation of the force main has been approved. Material for backfilling shall be free of large stones and debris.

B. Pumping station and pumps.

4. Sizing. Pumping station wet wells shall provide at least one quarter (1/4) day storage above the high level alarm set point. Actual volume between high and low level limits is determined on a case-by-case basis depending on the objective of pumping: (i) when low pressure dosing is utilized see [12VAC5-610-940](#) A for sizing requirements; (ii) when pumping to a gravity distribution box the wet well shall be sized to provide a working volume between 1/4 the daily flow and the daily flow; (iii) when pumping for the purpose of enhancing flow distribution (see [12VAC5-610-930](#) A) the working volume of the wet wall shall be 0.6 of the volume of the percolation piping.

5. Materials. Materials for construction of pumping stations are the same as for septic tanks (see [12VAC5-610-810](#)). All materials and equipment utilized in pumping stations shall be unaffected by the corrosive action of sewage.

6. Access. An access manhole terminating above the ground surface shall be provided. The manhole shall have a minimum width dimension of 24 inches and shall be provided with a shoe box type cover adequately secured.

7. Construction. Pumping stations constructed of precast or poured in place concrete shall conform with the construction requirements contained in 12VAC5-610-815 E. When precast concrete pipe is utilized for a pumping station, the pipe shall be placed on and bonded to a concrete pad at least six inches thick and having a width at least one foot greater than the diameter of the pipe. All pumping stations shall be watertight. All

conduits entering or leaving the pumping stations shall be provided with a water stop. The influent pipe shall enter the pumping station at an elevation at least one inch higher than the maximum water level in the wet well (total usable volume).

5. Installation. Placement of pumping stations shall conform to the requirements for placement of septic tanks contained in [12VAC5-610-815 F](#).

6. Pumps. All pumps utilized shall be of the open face centrifugal type designed to pump sewage. Pumps utilized for the sole purpose of pumping effluent to a higher elevation shall have a capacity approximately 2.5 times the average daily flow in gallons per minute but not less than five gallons per minute at the system head. Pumps utilized for the purpose of enhancing flow distribution (See [12VAC5-610-930 A](#)) shall have a minimum capacity of 36 gallons per minute at system head per 1200 linear feet of percolation piping. Pumps discharging to a low pressure distribution system shall be sized in accordance with [12VAC5-610-940 A](#). Dual alternating pumps are required on systems 1800 linear feet or greater in accordance with [12VAC5-610-930B](#). Pumps shall be so placed that under normal start conditions it shall be subjected to a positive suction head. When multiple pumps are used, each pump shall have its own separate suction line. Suitable shutoff valves shall be provided on the discharge line and suction line (if provided) for normal pump isolation. A check valve shall be placed in the discharge line between the pump and shutoff valve. When the pump discharge is at a lower elevation than the high liquid level in the pump station, an antisiphon device shall be provided on the pump discharge. Pumps shall be piped so that they can be removed for servicing without having to dewater the wet well.

7. Controls. Each pumping station shall be provided with controls for automatically starting and stopping the pumps based on water level. When float type controls are utilized, they shall be placed so as to be unaffected by the flow entering the wet well. Provisions shall be made for automatically alternating the pumps. The electrical motor control center and master disconnect switch shall be placed in a secure location above grade and remote from the pump station. Each motor control center shall be provided with a manual override switch.

8. Alarms. A high water alarm with remote sensing and electrical circuitry separate from the motor control center circuitry shall be provided. The alarm shall be audiovisual and shall alarm in an area where it may be easily monitored. When multiple pumps are utilized, an additional audiovisual alarm shall be provided to alarm when a pump motor fails to start on demand.

9. Ventilation. Positive ventilation shall be provided at pumping stations when personnel are required to enter the station for routine maintenance.

a. Wet wells. Ventilation may be either continuous or intermittent. Ventilation, if continuous, shall provide at least 12 complete air changes per hour; if intermittent, at least 30 complete air changes per hour. Such ventilation shall be accomplished by mechanical means.

b. Dry wells. Ventilation may be either continuous or intermittent. Ventilation, if continuous, shall provide at least six complete air changes per hour; if intermittent, at least 30 complete air changes per hour. Such ventilation shall be accomplished by mechanical means.

GMP 147 sections F1 and F2 discuss 'pumps integral to treatment systems' and 'conveyance pumps'. For integral pumps all of 880 was waived and for conveyance pumps, A1, B1, B6 and B7 were waived. This adds a 3rd category of transfer pumps – pumps that move wastewater between treatment units, not just within. Moving this into the regs, we've maintained the requirement for alarms, controls, and emergency storage for the conveyance and transfer pumps

C. Pumps Integral to Treatment Systems. Pumps integral to treatment system are pumps that move sewage or effluent from the house or pretreatment system to the treatment system and pumps that move effluent within the treatment system. 12VAC5-610-880.A and B do not apply to these integral pumps that are internal to a manufactured treatment system.

D. Transfer Pumps. Transfer pumps are pumps that move wastewater from the pretreatment system to the treatment system or from one treatment process to another treatment process. Transfer pumps are not subject to 12VAC5-880. B1, B6 and B7 except for:

1. Pumping station wetwells shall provide at least one quarter (1/4) day storage above the high level alarm set point. Pump stations used for equalization or timed dosing shall have a minimum ¾ day working volume.
2. Pumps shall be so placed that under normal start conditions it shall be subjected to a positive suction head. When multiple pumps are used, each pump shall have its own separate suction line. Suitable shutoff valves shall be provided on the discharge line and suction line (if provided) for normal pump isolation. A check valve shall be placed in the discharge line between the pump and shutoff valve. When the pump discharge is at a lower elevation than the high liquid level in the pump station, an antisiphon device shall be provided on the pump discharge. Pumps shall be piped so that they can be removed for servicing without having to dewater the wet well.
3. Controls. Each pumping station shall be provided with controls for automatically starting and stopping the pumps based on water level. When float type controls are utilized, they shall be placed so as to be unaffected by the flow entering the wet well. Provisions shall be made for automatically alternating the pumps. The electrical motor control center and master disconnect switch shall be placed in a secure location above grade and remote from the pump station. Each motor control center shall be provided with a manual override switch.

E. Conveyance Pumps. Conveyance pumps that move final effluent to a dispersal system are not subject to 12VAC5-880.A, B1, B6 and B7 except for:

1. Pumping station wetwells shall provide at least one quarter (1/4) day storage above the high level alarm set point. Pump stations used for equalization or timed dosing shall have a minimum ¾ day working volume.
2. Pumps shall be so placed that under normal start conditions it shall be subjected to a positive suction head. When multiple pumps are used, each pump shall have its own separate suction line. Suitable shutoff valves shall be provided on the discharge line and suction line (if provided) for normal pump isolation. A check valve shall be placed in the discharge line between the pump and shutoff valve. When the pump discharge is at a lower elevation than the high liquid level in the pump station, an antisiphon device shall be provided on the pump discharge. Pumps shall be piped so that they can be removed for servicing without having to dewater the wet well.

Commented [DM(4): Consider leaving in waiver to A1 and removing velocity minimum.

Do 2 options – one language like 147 and one more detailed

3. Controls. Each pumping station shall be provided with controls for automatically starting and stopping the pumps based on water level. When float type controls are utilized, they shall be placed so as to be unaffected by the flow entering the wet well. Provisions shall be made for automatically alternating the pumps. The electrical motor control center and master disconnect switch shall be placed in a secure location above grade and remote from the pump station. Each motor control center shall be provided with a manual override switch.

DRAFT 12 09 2020

12VAC5-610-950. Absorption Area Design.

K. The absorption area is the undisturbed soil medium utilized for absorption of the effluent. The absorption area includes the infiltrative surface in the absorption trench and the soil between and around the trenches when trenches are used.

L. Suitability of soil horizon. The absorption trench bottom shall be placed in the soil horizon or horizons with an average estimated or measured percolation rate less than 120 minutes per inch. Soil horizons are to be identified in accordance with [12VAC5-610-480](#). The soil horizon must meet the following minimum conditions:

8. It shall have an estimated or measured percolation rate equal to or less than 120 minutes per inch;

9. The soil horizon or horizons shall be of sufficient thickness so that at least 12 inches of absorption trench sidewall is exposed to act as an infiltrative surface; and

10. If no single horizon meets the conditions in subdivision 2 of this subsection, a combination of adjacent horizons may be utilized to provide the required 12-inch sidewall infiltrative surface. However, no horizon utilized shall have an estimated or measured percolation rate greater than 120 minutes/inch.

This section was NOT in GMP 147 but we have frequent requests for installing below a restriction. This follows a guideline of requiring 12 inches of sidewall + vertical separation based on effluent quality + 6 inches to allow for limited conditions to calculate the total depth of un limited soil below the restriction

C. Placement of absorption trenches below soil restrictions. Placement of the soil absorption trench bottom below soil restrictions as defined in [12VAC5-610-490 D](#), whether or not there is evidence of a perched water table as indicated by free standing water, ~~or~~ gray mottlings, or redoxymorphic coloration, requires a special design based on the following criteria:

7. The soil horizon into which the absorption trench bottom is placed shall be a Texture Group I, II or III soil or have an estimated or measured percolation rate of less than 91 minutes per inch.

8. The soil horizon shall be a minimum of three feet thick for septic tank effluent and shall exhibit no characteristics that indicate wetness or restriction of water movement. The absorption trench bottom shall be placed so that at least two feet of the soil horizon separates the trench bottom from the water table or rock. At least one foot of the absorption trench side wall shall penetrate the soil horizon.

Commented [DM(5): Was this just for disposal window? If so, the same volume of water still has to be moved. Is a reduction warranted for treated effluent?.

3. The soil horizon below the soil restriction shall be a minimum of 30 inches thick for TL2 or TL3 effluent without disinfection and shall exhibit no characteristics that indicate wetness or restriction of water movement. The absorption trench bottom shall be placed so that at least 18 inches of the soil horizon separates the trench bottom from the water table or rock. At least one foot of the absorption trench side wall shall penetrate the soil horizon.

4. The soil horizon below the soil restriction shall be a minimum of 24 inches thick for TL3 effluent with disinfection and shall exhibit no characteristics that indicate wetness or restriction of water movement. The absorption trench bottom shall be placed so that at 12 inches of the soil horizon separates the trench bottom from the water table or rock. At least one foot of the absorption trench side wall shall penetrate the soil horizon.

5 A lateral ground water movement interceptor (LGMI) shall be placed upslope of the absorption area. The LGMI shall be placed perpendicular to the general slope of the land. The invert of the LGMI shall extend into, but not through, the restriction and shall extend for a distance of 10 feet on either side of the absorption area (See [12VAC5-610-700 D 3](#)).

6. Pits shall be constructed to facilitate soil evaluations as necessary.

D. Sizing of absorption trench area [for septic tank effluent](#).

10. Required area. The total absorption trench bottom area required shall be based on the average estimated or measured percolation rate for the soil horizon or horizons into which the absorption trench is to be placed. If more than one soil horizon is utilized to meet the sidewall infiltrative surface required in subsection B of this section, the absorption trench bottom area shall be based on the average estimated or measured percolation rate of the "slowest" horizon. The trench bottom area required in square feet per 100 gallons (Ft²/100 Gals) of sewage applied for various soil percolation rates is tabulated in Table 5.4. The area requirements are based on the equation:

$$\log y = 2.00 + 0.008 (x)$$

where $y = \text{Ft}^2/100 \text{ Gals}$

$x = \text{Percolation rate in minutes/inch}$

Notwithstanding the above, the minimum absorption area for single family residential dwellings shall be 400 square feet [for absorption trenches receiving septic tank effluent](#).

11. Area reduction. See Table 5.4 for area reduction when gravelless material or low pressure distribution is utilized. A reduction in area shall not be permitted when flow diversion is utilized with low pressure distribution. When gravelless material is utilized, the design width of the trench shall be used to calculate minimum area requirements for absorption trenches.

E. Minimum cross section dimensions for absorption trenches.

1. Depth. The minimum trench sidewall depth as measured from the surface of the mineral soil shall be 12 inches when placed in a landscape with a slope less than 10%. The installation depth shall be measured on the downhill side of the absorption trench. When the installation depth is less than 18 inches, the depth shall be measured from the lowest elevation in the microtopography. All systems shall be provided with at least 12 inches of cover to prevent frost penetration and provide physical protection to the absorption trench; however, this requirement for additional cover shall not apply to systems installed on slopes of 30% or greater. Where additional soil cover must be provided to meet this minimum, it must be added prior to construction of the absorption field, and it must be crowned to provide positive drainage away from the absorption field. The minimum trench depth shall be increased by at least five inches for every 10% increase in slope. Sidewall depth is measured from the ground surface on the downhill side of the trench.

2. Width. All absorption trenches utilized with gravity distribution shall have a width of from 18 inches to 36 inches. All absorption trenches utilized with low pressure distribution shall have a width of eight inches to 24 inches.

Commented [DM(6): This only sets a minimum for STE, no minimum for treated effluent. Reference to STE added for clarity

F. Lateral separation of absorption trenches. The absorption trenches shall be separated by a center to center distance no less than three times the width of the trench for slopes up to 10%. However, where trench bottoms are two feet or more above rock, pans and impervious strata, the absorption trenches shall be separated by a center to center distance no less than three times the width of the trench for slopes up to 20%. The minimum horizontal separation distance shall be increased by one foot for every 10% increase in slope. In no case shall the center to center distance be less than 30 inches.

G. Slope of absorption trench bottoms.

1. Gravity distribution. The bottom of each absorption trench shall have a uniform slope not less than two inches or more than four inches per 100 feet.

2. Low pressure distribution. The bottom of each absorption trench shall be uniformly level to prevent ponding of effluent.

H. Placement of absorption trenches in the landscape.

1. The absorption trenches shall be placed on contour.

2. When the ground surface in the area over the absorption trenches is at a higher elevation than any plumbing fixture or fixtures, sewage from the plumbing fixture or fixtures shall be pumped.

I. Lateral ground water movement interceptors. Where subsurface, laterally moving water is expected to adversely affect an absorption system, a lateral ground water movement interceptor (LGMI) shall be placed upslope of the absorption area. The LGMI shall be placed perpendicular to the general slope of the land. The invert of the LGMI shall extend into, but not through, the restriction and shall extend for a distance of 10 feet on either side of the absorption area.

Table 5.4.
Area Requirements for Absorption Trenches Receiving Septic Tank Effluent.

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
45	229	172	185	344	258	279
50	251	188	193	376	282	293
55	275	206	206	412	309	309
60	302	227	217	452	339	325
65	331	248	228	496	372	342
70	363	272	240	544	408	359
75	398	299	251	596	447	375
80	437	328	262	656	492	394
85	479	359	273	718	539	409
90	525	394	284	786	590	424
95	575	489	288	862	733	431
100	631	536	316	946	804	473
105	692	588	346	1038	882	519
110	759	645	379	1138	967	569
115	832	707	416	1248	1061	624
120	912	775	456	1368	1163	684

Table 5.5 is an expansion of Table 1 from GMP 147. This is the table that we have been using for reference and was derived from GMP 147, ratios developed from gravity to pressure in SHDR, drip is 1/3 the gravity trench loading to comply with section 955

Table 5.5 Soil Absorption Area Loading Rates for Systems Receiving TL-2 or TL-3 Effluent

Percolation Rate (mpi)	TL-2 Effluent				TL-3 Effluent			
	Pressure Trench* Loading (gpd/sqft)	Gravity Trench* Loading (gpd/sqft)	Drip** Loading (gpd/sqft)	Pad/Mound Loading** (gpd/sqft)	Pressure Trench* Loading (gpd/sqft)	Gravity Trench* Loading (gpd/sqft)	Drip** Loading (gpd/sqft)	Pad/Mound Loading** (gpd/sqft)
5	1.8	1.80	0.60	1.20	3.0	3.00	1.00	1.66
10	1.67	1.67	0.56	1.11	2.67	2.67	0.89	1.66
15	1.53	1.53	0.51	1.02	2.33	2.33	0.78	1.66
20	1.4	1.40	0.47	0.93	2.0	2.00	0.67	1.66
25	1.30	1.30	0.43	0.86	1.75	1.75	0.58	1.33
30	1.2	1.13	0.40	0.80	1.5	1.41	0.50	1.11
35	1.10	0.98	0.37	0.73	1.38	1.22	0.46	0.95
40	1.00	0.84	0.33	0.66	1.25	1.05	0.42	0.83
45	0.90	0.73	0.30	0.60	1.13	0.91	0.38	0.74
50	0.8	0.62	0.27	0.53	1.0	0.77	0.33	0.67
55	0.76	0.57	0.25	0.50	0.94	0.71	0.31	0.61
60	0.71	0.51	0.24	0.47	0.89	0.64	0.30	0.55
65	0.67	0.46	0.22	0.44	0.83	0.57	0.28	0.51
70	0.62	0.41	0.21	0.41	0.78	0.51	0.26	0.48
75	0.58	0.36	0.19	0.38	0.72	0.46	0.24	0.44
80	0.53	0.32	0.18	0.35	0.67	0.40	0.22	0.42
85	0.49	0.28	0.16	0.33	0.61	0.35	0.20	0.39
90	0.44	0.24	0.15	0.30	0.56	0.30	0.19	0.37
95	0.4	0.20	0.13	0.27	0.5	0.25	0.17	0.35
100	0.37	0.19	0.12	0.25	0.46	0.23	0.15	0.33
105	0.34	0.17	0.11	0.23	0.43	0.21	0.14	0.32
110	0.31	0.16	0.10	0.21	0.39	0.19	0.13	0.30
115	0.28	0.14	0.09	0.19	0.35	0.18	0.12	0.29
120	0.25	0.13	0.08	0.17	0.32	0.16	0.11	0.28

*Loading rates to trenches, whether gravity or pressure dosed, are based on the gallons per day of wastewater applied to the bottom of the trench.

**Loading rates to drip systems, pads, and mounds are based on the infiltrative surface area provided and are on an areal basis.

Commented [DM(7): Develop document that describes how rates were determined.

J. Controlled blasting. When rock or rock outcroppings are encountered during construction of absorption trenches the rock may be removed by blasting in a sequential manner from the top to remove the rock. Percolation piping and sewer lines shall be placed so that at least one foot of compacted clay soil lies beneath and on each side of the pipe where the pipe passes through the area blasted. The area blasted shall not be considered as part of the required absorption area.

These two sections of GMP 147 are confusing and conflicting. They intertwine pads and trenches and it's difficult to separate the two, but pads have some distinctive and separate restrictions.

GMP 147 C waives 950E1 and says systems (pads or trenches) can be installed at grade even on steeper slopes. No waiver was provided to the separation distance between trenches. It waives the increase in sidewall with slope too

GMP 147D waives 596.C.1 for slopes up to 15% allowing any Texture Group can be used for trenches shallower than 12 inches. This would suggest that on slopes greater than 15% shallow placed systems less than 12 inches are not allowed. However no max slope is explicitly stated for trenches, but there's a 10% max for pads. As a result no max slope is listed for trenches. Maybe it should be 15%?

The proposed language limits the shallowness of the installation to the required sidewall for a given dispersal method unless an approved deviation from an approved manufacturer's manual is used

K. For trenches receiving TL2 or better quality effluent, the following exceptions to the above requirements apply.

1. Trench bottom loading rates shall not exceed the values in Table 5.5.
2. The minimum standoff to a limiting feature is achieved under the trench infiltrative surface.
3. The minimum cover over the absorption area is 6 inches. If the cover is mounded above grade, the finished sideslope cannot exceed 1:4 (rise:run); Soil cover material shall support vegetative growth.

GMP 147 has a minimum requirement of 4 inches of cover. Should that be increased to 6 inches for pressure dispersal and 12 inches for gravity?

4. The minimum installation depth is not required to be increased for slope.
5. The minimum installation depth is equal to the sidewall of the dispersal system construction as defined in 12VAC5-930.F, 12VAC5-610-950.E.1, and 12VAC5-610-940 (gravelless). On sloping sites, the minimum installation depth is measured on the downhill side.
6. When shallow-placed trenches are installed at less than 12 inches from the ground surface, timed dosing shall be used to disperse the effluent.
7. Designs supported by Division approved manufacturer's design manuals may deviate from 12VAC5-610-950.K5 and K6.
8. The minimum trench bottom absorption area is 320 square feet.

Commented [DM(8): This is from the GMP – should this be modified?

Commented [DM(9): In order to be a 'trench' the system must have sidewalls. This defines the minimum depth as equal to the sidewall requirement of a given dispersal method. 930 F is gravelless; 950E is gravel trench; 940 is LPD

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Commented [DM(10): This is from GMP 147 (K bullet 6). VDH recommend deleting the minimum – see mod of D above to limit minimum to STE

GMP 147 blurs the lines between pads and mounds. Pads have level bottoms and have some storage capacity defined by the sidewalls of the pad. The bottom of a mound follows the contour of the natural soil. There is little storage in these systems so pressure dosing is a requirement unless a manufacturer has tested their system with gravity dosing and demonstrated compliance. Changes to the mound section of the regs is to make clear these distinctions and requirements.

12VAC5-610-960. Elevated Sand Mound.

A. An elevated sand mound is a soil absorption system that incorporates ~~low~~ pressure distribution and sand filtration to produce treated sewage prior to absorption in the natural underlying soil. The elevated sand mound utilizes less gross soil area than most other soil absorption systems~~—~~. Sand mounds differ from pads in that they follow the natural contour of site, are always above ground systems, may receive septic tank effluent, and always require pressure distribution.

Commented [DM(11): Need to address loading rates for STE mounds or beef up referenced below

B. Mound systems are considered Type III systems (see [12VAC5-610-250 C](#)).

C. Mound systems shall be designed and constructed in accordance with the Wisconsin Mound Soil Absorption System Siting, Design and Construction Manual prepared by the Small Scale Waste Management Project, School of Natural Resources, College of Agricultural and Life Sciences, University of Wisconsin- Madison dated January ~~1990~~[2000 or the successor manual](#).

D. The manual referred to in subsection C of this section shall be used for the designated construction of elevated sand mounds. The following criteria are required for all elevated sand mound systems in addition to the requirements found in the manual.

1. The construction permit shall require permanent water saving devices; however, there shall be no corresponding reduction in the basal area. The construction permit shall be recorded and indexed in the grantor index under the holder's name in the land records of the clerk of the circuit court having jurisdiction over the site of the sewage disposal system pursuant to [12VAC5-610-250 J](#).
2. The proposed mound site shall be fenced, roped or otherwise secured, and marked, to prevent damage by vehicular traffic. Activities on the mound site shall be severely limited in order to protect it to the greatest extent possible.
3. Formal plans and specifications, prepared by a licensed professional engineer in accordance with [12VAC5- 610-250 G](#), shall be required and must be approved by the health department prior to any site-disturbing activities.

4. The local health department shall be notified at least 48 hours before any work begins on the site, including delivery of materials. The mound must be constructed during dry weather and soil conditions. The contractor shall schedule a conference with the local health department to review the plans and specifications prior to beginning any phase of construction, including delivery of materials.
5. Wooded sites shall not be used unless it is shown by the applicant that the wooded site is the only site available, and if the applicant can demonstrate that the site can be properly prepared (plowed). If a wooded site is used, trees shall be removed by cutting them off at ground level, leaving the stumps in place. The cut trees shall be removed using methods that do not require driving equipment over the mound site and that do not result in the removal of any soil from the site. Larger basal areas may be required on wooded sites.
6. When the depth to a restriction, shrink-swell soils or a water table is less than 24 inches, pretreatment sufficient to produce a secondary quality effluent may be used to reduce these distances as shown in Table 4.4.

Some questions for consideration. GMP 147 has a minimum of 4 inches of cover for all of these systems. Recommend increasing to 6 inches to be consistent with section 955 for cover over drip systems with TL2/TL3 effluent.

E. Elevated sand mounds receiving TL2 or better quality effluent shall adhere to the following additional design criteria:

1. The basal area loading rate shall not exceed the values found in Table 5.5 for pads/mounds.
2. The minimum sand depth under the dispersal system is 6 inches.
3. The minimum cover over the absorption area is 6 inches. The finished sideslope cannot exceed 1:4 (rise:run); Soil cover material shall support vegetative growth.
4. Designs supported by Division approved manufacturer's design manuals may deviate from pressure dosing but do require dosing to a gravity distribution system at a minimum.

12VAC5-610-966. Pads. [NEW section based on 147. Red indicates new or changes from 147]

- A. A pad is an absorption area wider than 3 feet but not longer than 100 feet with a level absorption surface. The minimum standoff to a limiting feature is to be met under the entire infiltrative surface.

GMP 147 only allowed TL3 for pads, B allows TL2 as well.

- B. The minimum effluent quality dispersed to a pad is **TL2** and pad bottom loading rates shall not exceed the values for pads noted in Table 5.5.
- C. A system may contain one or more pads, but the combined area of all pads in a system may not exceed **1,200 square feet.**

In C, This limit of 1200 sf is straight from GMP 147. We have routinely seen pads bigger than this. Do we need to maintain this or otherwise qualify? Is there a cutoff to switch to pressure dosing?

Commented [DM(12): Options? Set a maximum SF per pad; or if over 1200 sf has to be pressure dosed, etc. ?

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

D is directly from 147, VDH recommends deleting

- E. Pads shall be limited to sites with slopes 10% or less.
- F. All pads **must be dosed** to a gravity distribution or pressure distribution dispersal system found in this Chapter. **Pad systems over 1,000 gpd must be pressure dosed.**
- G. **When shallow-placed pads are installed at less than 12 inches from the ground surface, timed dosing shall be used to disperse the effluent.**
- H. Pads must be installed on contour with the longest dimension of the pad along the contour. Contour means 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.

GMP 147 K bullet 6 requires 20 ft between pads unless a designer certifies otherwise. The modification in I is intended to simplify this requirement.

- I. When multiple pads are used on a site, the pads **must be separated by the width of the pad across contour.**

GMP 147 has a minimum system size. VDH recommends eliminating it for treated effluent.

- ~~J. The minimum pad bottom absorption area is 320 square feet.~~

There is increasing confusion on how shallow a pad can be. This reg change intends to clarify that the pad is constructed using an approved dispersal system either found in the regs or in an approved manual. The dispersal system must have the minimum sidewall required by the dispersal system. Gravel pads must have a 12 inch sidewall. Gravelless pads have sidewall minimums equal to their approved manual requirements.

- K. The minimum installation depth is equal to the sidewall of the dispersal system construction. Gravel pads shall have a minimum installation depth of 12 inches. Pads using gravelless materials shall have a minimum installation depth equal to the height of the gravelless material being used. On sloping sites, the minimum installation depth is measured on the downhill side. Designs supported by a Division approved manufacturer's design manual may deviate in accordance with the approved manual.
- L. No portion of the pad bottom or the sidewall may be installed in fill material.

GMP 147 has a minimum requirement of 4 inches of cover. Should that be increased to 6 inches for pressure dispersal and 12 inches for gravity? Recommend at least 6 inches. Or consider it as just 6 inches for higher quality effluent

- M. The minimum cover over the absorption area is 6 inches. If the cover is mounded above grade, the finished sideslope cannot exceed 1:4 (rise:run); Soil cover material shall support vegetative growth.

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**

<u>Regulation</u>	<u>Discussion</u>
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 <i>Regulations</i>	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 <i>Code of Virginia</i> , Title 54.1-400 et. seq. of the <i>Code of Virginia</i> 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 <i>Alternative Discharging Regulations</i>	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 <i>Alternative Discharging Regulations</i> , 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/ft²) 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.