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 orless 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.

**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.

1. 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.
2. 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:
3. The submission of an application;
4. A preliminary conference as necessary; and
5. 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.



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.

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.

**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.**

1. Air relief valve. Air relief valves shall be placed at high points in the force main, as necessary, to relieve air locking.
2. Bedding. All force mains shall be bedded to supply uniform support along their length.
3. Protection against freezing. Force mains shall be placed deep enough to prevent freezing.
4. 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.
5. Materials of construction. All pipe used for force mains shall be of the pressure type with pressure type joints.
6. 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.
7. 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.

1. 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.
2. 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.
3. 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.
4. 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).

1. Installation. Placement of pumping stations shall conform to the requirements for placement of septic tanks contained in 12VAC5-610-815 F.
2. 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.
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.
4. 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.
5. Ventilation. Positive ventilation shall be provided at pumping stations when personnel are required to enter the station for routine maintenance.
	1. 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.
	2. 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.

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.

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

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.1,~~ 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.

**12VAC5-610-950. Absorption Area Design.**

1. 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.
2. 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:
3. It shall have an estimated or measured percolation rate equal to or less than 120 minutes per inch;
4. 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
5. 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, gray mottlings, or redoxymorphic coloration, requires a special design based on the following criteria:

1. 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.
2. The soil horizon shall be a minimum of three feet thick for septic tank effluent and shall exhibit no characteristics that indicate wetness on 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.

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.

1. 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 = Ft²/100 Gals

x = 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.

1. 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.

1. 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.
2. Slope of absorption trench bottoms.
3. 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.
4. 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.
	1. 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.



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

|  |  |  |  |
| --- | --- | --- | --- |
|  | **TL-2 Effluent** | **TL-3 Effluent** |  |
| Pressure Trench\* Loading (gpd/sqft) | Gravity Trench\* Loading (gpd/sqft) | Drip\*\* Loading) (gpd/sqft) | Pad/MoundLoading\*\* (gpd/sqft) | Pressure Trench\* Loading (gpd/sqft) | Gravity Trench\* Loading (gpd/sqft) | Drip\*\* Loading (gpd/sqft) | Pad/Mound Loading\*\* (gpd/sqft) |  |
| PercolationRate (mpi) |  |
|  |
| 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.

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 section 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. Thiswould 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?

1. The minimum installation depth is not required to be increased for slope.
2. 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.
3. When shallow-placed trenches are installed at less than 12 inches from the ground surface, timed dosing shall be used to disperse the effluent.
4. Designs supported by Division approved manufacturer’s design manuals may deviate from 12VAC5-610-950.K5 and K6.
5. ~~The minimum trench bottom absorption area is 320 square feet.~~

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.**

1. An elevated sand mound is a soil absorption system that incorporates 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.
2. Mound systems are considered Type III systems (see 12VAC5-610-250 C).
3. 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 2000 or the successor manual.
4. 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.
5. 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.
6. 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.
7. 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]**

1. 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.

1. 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.
2. 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?

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

D is directly from 147, VDH recommends deleting

1. Pads shall be limited to sites with slopes 10% or less.
2. 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.
3. When shallow-placed pads are installed at less than 12 inches from the ground surface, timed dosing shall be used to disperse the effluent.
4. 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.

1. 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.

1. ~~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.

1. 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.

1. 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

O

1. 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.