

Summary of Proposed January 1, 2018 Revisions to the Technical Standards for Subsurface Sewage Disposal Systems

- **Cover Page and Table of Contents**
 - Change 5,000 GPD references to 7,500 GPD, and include notations referencing Public Act No. 17-146, Section 30 on both cover page and table of contents.
 - List new program mailstop (MS) #: 12-SEW on cover page.
 - Cite new Section X name: Water Treatment Wastewater in table of contents.
 - Add new appendix (Appendix E) for water treatment wastewater authorized to discharge to a subsurface sewage disposal system (SSDS).
 - Add notation that applies to Appendices B, C, D, and E indicating that DPH may revise the appendices prior to the next publication of the *Technical Standards for Subsurface Sewage Disposal Systems* (Technical Standards), and updated revisions of any such appendices shall be posted on the Department's website.

- **Section I Definitions:**
 - Free Draining Material definition: Change the CT DOT form reference from Form 816 to Form 817.
 - Stone Aggregate definition: Change the CT DOT form and specification reference from Form 816/Specification M.01.01 to Form 817/Tables M.01.02-1 and M.01.02-2. Rephrase to stipulate stone aggregate shall meet the soundness, loss of abrasion, and fines (material passing #200 sieve) criteria for coarse aggregate per Table M.01.02-1, and the gradation in Table M.01.02-2 for No. 4 or No. 6 coarse aggregate. Adopt similar aggregate language (clean, hard, tough, durable fragments) in CT DOT Form 817 M.01.02. Remove the cited loss of abrasion (LOA) and soundness (S) test and specification information, as they are in Table M.01.02-1. Editorial note: The LOA and S specifications are more stringent (LOA: 40% max., S: 10% max) than the specifications in the current Technical Standards, and a maximum 1% passing the #200 sieve is now included in the criteria. Reference to the gradation cited in Section VIII A will remain, but the maximum allowable percent passing the #200 sieve will be lowered from 1.5% to 1.0%, and the reference to #40 sieve gradation is to be deleted.

- **Section II Location of Sewage Systems:**
 - Subsection C. Record Plans: Reference regulation requirement (PHC Section 19-13-B103e (g)(4)) for record plan (a.k.a., as-built drawing), and note other individuals (e.g., licensed land surveyor) may submit record plan if acceptable to the local director of health.
Table 1 Modifications:
 - Item A Water Supply Well: Revise the special provision language to clarify the cited percolation rate is the receiving soil percolation rate.
 - Item H. Storm Water Systems: Revise special provision language for single-family residential building lots to allow local director of health to approve a reduced distance to 10 feet between sewage tanks and minor infiltration systems (e.g., rain gardens).
 - Item P. Buried Fuel Tanks: Add special provision language noting distance to sewage tank shall be reduced to 10 feet.
 - Item Q. Water Treatment Wastewater Dispersal Structure: Revise language to use terms in July 2017 DEEP/DPH Delegation Agreement: Water Treatment Wastewater Dispersal System, Holding Tank System. Cite special provision reduction to 10 feet to holding tank system, and

limit the current 10 feet special provision reduction to small (<150 GPD) and medium (150 – 500 GPD) discharges.

- Item S. Grade Cuts or Soil Disturbance Down-gradient of Leaching System: Revise special provision language to ensure preservation of receiving soil cited in Minimum Leaching System Spread Appendix A.
- **Section III Piping:**
 - Subsection A. Building Sewers: Building sewer foundation penetrations shall comply with the plumbing code, which is enforced by the local building official.
 - Subsection D. Drainage & Water Supply Piping: Add reference to ASTM F 2487 specification for verifying proper joint performance, which is an infiltration/exfiltration test. List polypropylene pipe (PP) along with PVC and PE currently listed pipe. Consider adding Uni-bell UNI-B-6-98 reference that is a recommended practice for low pressure air testing of installed sewer pipe.
 - Table 3 (Approved Tight Pipe): Add ADS HP Storm Pipe and ADS SaniTite Sanitary Pipe (Approved by DPH on July 10, 2015).
- **Section IV Design Flows:**
 - Subsection A. Residential Buildings: Reduce design flows for single-family residential buildings with 4 or more bedrooms: Note that the design flow for single-family residential buildings is 75 GPD for each bedroom beyond 3 (changed from the current 4 bedrooms). Note: This change would also impact septic tank sizing (Section V), Leaching System Sizing (Section VIII G), and the flow factor in MLSS (Appendix A)
 - Subsection C. Water Usage Monitoring and Permits to Discharge: Cite the design flow range (2,000 to 7,500 GPD) for large systems. Make similar revision throughout the Technical Standards. Make note that on a limited SSDS repair (e.g., septic tank or leaching system replacement only) the permit to discharge should document SSDS components replaced and what components are pre-existing.
- **Section V Septic Tanks & Grease Interceptor Tanks:**
 - Subsection A. General: Remove language in item 1 b) concerning plastic tank submissions to DPH by July 1, 2015, and make note that all plastic tanks must meet the IAPMO/ANSI (International Association of Plumbing and Mechanical Officials/American National Standards Institute) Prefabricated Septic Tank Standard, unless otherwise approved by DPH. Add note stipulating DPH may revise Appendix D (Approved Non-Concrete Septic Tank List) prior to the next publication of Technical Standards if deemed necessary.
 - Subsection A. General: Add language to item 2 stipulating DPH may revise Appendix B (Approved Effluent Filter List) prior to the next publication of Technical Standards if deemed necessary.
 - Subsection A. General: Revise item 3 and recommend a secondary safety device be provided for a septic tank without a tank cover that has a riser cover weighing more than 59 pounds. Provide similar language in Subsection C for grease interceptor tanks.
 - Subsection A. General: Add note to Figure 4 (Typical Septic Tank) in item 2 that an air gap is required above the compartment divider.
 - Subsection B. Septic Tank Capacities: Revise the single-family column in Table 5 in item 1 and eliminate the middle row (4 bedrooms), and revise last row to cite “For each bedroom beyond

3” instead of “For each bedroom beyond 4”. Note: This revision is dependent upon the design flow reduction for single-family residential buildings (See Section IV Design Flows).

- Subsection B. Septic Tank Capacities: In item 4 add Water Treatment Wastewater (WTW) to the plumbing fixtures that require increased septic tank capacities. Stipulate WTW that is authorized to discharge to a SSDS (See Section X and Appendix E) requires an increased septic tank capacity of 250 gallons for WTW discharges between 50 and 150 gallons, and 500 gallons for WTW discharges of 150 gallons or greater.
- Subsection C. Grease Interceptor Tanks: Add Class 2 food establishments to the other cited (Class 3 & 4) food establishments to be in line with new definitions per PA 17-93 that becomes effective July 1, 2018.
- **Section VI Effluent Distribution, Pump Systems & Air Injection Processes:**
 - Subsection A. General: Change the Geomatrix HydroAir system name to HyAir.
 - Subsection A. General: Add “watertight” to the language about H-20 risers to grade for leaching system access points in paved areas.
 - Subsection C. Pump Systems: Recommend a secondary safety device be provided for a pump chamber without a cover that has a riser cover weighing more than 59 pounds. Make note that high-level alarms shall be located to readily alert building occupants when activated, and the alarm shall be audible and visible unless otherwise approved by the local director of health. Force main foundation penetrations shall comply with the plumbing code, which is enforced by the local building official.
 - Subsection C. Pump Systems: Add language about passive nitrogen reduction (PNR) technology that, where warranted (e.g., community pollution areas), can be used in conjunction with SSDS’s that utilize low-pressure effluent distribution (requires PE designs unless otherwise approved by DPH) or proprietary pressure-dosed dispersal systems. PNR technology does not aerate the contents of a septic tank and only uses a single or dual alternating effluent pumps for low-pressure dosing. PNR technology uses a subsurface wood product (e.g., sawdust, wood chips, mulch) through which partly treated sewage effluent flows. The wood product provides the carbon source for denitrification of nitrified wastewater below or down gradient of a leaching system. PNR technology typically mixes the wood product/carbon source with soil (e.g., sand, loamy sand). Use of PNR technology in a SSDS repair or new installation would necessitate plans to include media specifications, and placement and construction requirements. Stipulate the PNR technology plan designer shall supervise the installation and provide a certification to the local director of health that the installation conformed to the approved plan. PNR technology could only be approved and permitted by the local director of health if it is established it is not classified as an alternative treatment system that requires DEEP approval, which will require consultation with DPH and DEEP.
 - Subsection E. Leaching System Clogging Break-up: Add the patented (check) EarthBuster process, and cite same requirements as the patented Terra-lift process.
- **Section VII Percolation Tests:**
 - Fifth paragraph, first sentence: Clarify that “elevated” means the bottom of the leaching system is above existing grade.

○ **Section VIII Leaching Systems:**

- Subsection A. General: Revise the language and requirements for increased separation above maximum groundwater and ledge rock for fast percolation rate conditions. Require a 24-inch minimum separation between the bottom of a leaching system and maximum groundwater if the percolation rate of the receiving soil is faster than 5 minutes per inch. Reference a receiving soil percolation rate (faster than 1.0 minutes per inch) rather than the design percolation rate for the increased separation above ledge rock.
- Subsection A. General: Clarify wording about creating new lots with unsuitable soil conditions, and note there shouldn't be unsuitable soil conditions in the leaching system area (within 10 feet of primary and reserve leaching areas). Cite the need to evaluate surrounding soil (see Appendix A) for the primary leaching system for MLSS compliance purposes. Make recommendation for new lot creation, all the primary leaching system receiving soil, which includes surrounding soil, be on the lot.
- Subsection A. General: Add note stipulating DPH may revise Appendix C (Approved Filter Fabric List) prior to the next publication of Technical Standards if deemed necessary.
- Subsection A. General: Revise the No. 4 & No. 6 stone aggregate specifications by lowering the maximum percent passing the #200 sieve size from 1.5% to 1.0%, and remove the #40 sieve specifications. Editorial note: This revision adopts the same specifications in DOT Form 817 for aggregate (#200 sieve) and coarse aggregate (other sieves). Note that No. 4 and No. 6 aggregate can be obtained from aggregate producers and locations included on DOT's Qualified Materials List for Portland Cement Concrete Aggregates. Stone aggregate from other sources need to be approved by a CT licensed professional engineer that confirms compliance with the specifications noted in the definition of stone aggregate (See Section I).
- Subsection A. General: Manufactured fill shall have a minimum average permeability of 10 feet per day. Additional testing may be required for manufactured fill with a minimum average permeability of 10 to 15 feet per day. Manufactured fill approval applications and annual registrations for approved suppliers shall include a signed statement attesting that the test results submitted to DPH are typical of routine quality control/quality assurance (QC/QA) test results. Stipulate annual manufactured fill registration for approved suppliers shall include updated test results and QC/QA narratives.
- Subsections B. Leaching Trenches and D Leaching Galleries: Note that when distribution pipe is placed on top of aggregate that the stone must be cradled around the bottom portion of the pipe to prevent filter fabric from obstructing the perforated pipe openings.
- Subsection E. Proprietary Leaching Systems: Add proprietary leaching systems (Eljen Mantis Double-wide, Infiltrator Quick 4) approved after the January 1, 2015 revision to the Technical Standards, and change name of Eljen Type "B" units to B43. Change the DOT form and specification reference from Form 816 Specification M.03.01 to Form 817 Table M.01.03-1.
- Subsection F. Proprietary Pressure-Dosed Dispersal Systems: Incorporate this current subsection into a new subcategory (9) in Subsection E Proprietary Leaching Systems (see next bullet for further explanation).
- Subsection G. Leaching System Sizing: Change this subsection to Subsection F as B100a includes a definition of "design flow" that references daily discharge flows per Technical Standards Sections IV and VIII F, and the design flows are currently cited in Subsection G; whereas they should be in Subsection F to align with B100a.
- Subsection G. Leaching System Sizing: In item 1 for residential buildings, stipulate that for a central SSDS design for a single-family residential building and a residential outbuilding shall

base the outbuilding bedroom required ELA based on a multi-family classification unless the outbuilding doesn't have additional permanent living quarter associated plumbing fixtures (e.g., kitchen sink, dishwasher, washing machine) beyond a full bathroom.

- Subsection G. Leaching System Sizing: Revise Table 6 (residential building leaching system sizing) in item 1 to eliminate the 4-Bedroom Building column, and revise the header of the last column to cite "For each bedroom beyond 3" instead of "For each bedroom above 4". Note: This revision is dependent upon the design flow reduction for single-family residential buildings (See Section IV Design Flows).
- Subsection H Leaching System Product Approvals, ELA Ratings, Center to Center Spacing: Limit the center to center (C to C) spacing reduction consideration language to shallow leaching system in low-pressure effluent distribution applications, and stipulate a minimum of 6 inches edge to edge for each 1 square feet, or part thereof, per linear foot ELA credit shall be provided.
- **Section IX Groundwater, Roof, Cellar and Yard Drainage:**
 - No changes

Section X Other Wastewater:

- Change section name to Water Treatment Wastewater.
- Remove reference to DEEP's General Permit for Low Flow Water Treatment Wastewater and water treatment wastewater (WTW) discharges exceeding 500 GPD.
- Make reference to the July 2017 DEEP/DPH Delegation Agreement concerning WTW, and stipulate the local director of health or licensed sanitarian acting as the local director of health's authorized agent, pursuant to PHC Sections 19-13-B103e (b) (1) and 19-13-B103e (b) (2) (a.k.a., Phase I), may approve WTW discharges to a WTW dispersal system, holding tank system, or if authorized by DPH to a SSDS. Make note that WTW discharges shall also be in accordance with regulations DPH is promulgating.
- Cite the various WTW Dispersal System receiving structures, excavations or components that are cited in the delegation agreement: stone filled excavations, dry wells, leaching trenches, leaching galleries or pits, plastic leaching chambers, or any other receiving structure, excavation or component approved in writing by DPH, in consultation with DEEP.
- The applicant (property owner or duly authorized agent) shall submit a sketch showing the proposed WTW dispersal system or holding tank system, with information to demonstrate compliance with sizing and siting criterion. The applicant shall also submit information on the water treatment system including WTW volume per cycle and cycle frequency.
- Recommend SSDS plans designate an area where a WTW dispersal system could be installed per the siting criterion.
- Make note that no license is required for WTW disposal system or holding tank system installer; however the installer shall be specified in writing by the applicant.
- Local director of health or sanitarian licensed pursuant to CGS Chapter 395 shall approve the design prior to the installation of WTW dispersal system or holding tank system. Note that such systems are subject to review by the local director of health in accordance with PHC Section 19-13-B100a (e), and it would need to be demonstrated that the activity does not reduce potential repair area or eliminate a code complying area. Following approval, the WTW installer shall provide twenty four (24) hour minimum advance notice to the local health department prior to commencement of installation, unless otherwise approved by the local

health department. Local health departments may request an inspection prior to covering the WTW dispersal system or holding tank system. Local health departments may also request an inspection of the water treatment system and plumbing connections.

- Make note that building plumbing work requires a permit from the local building official, and applicable building codes would dictate the required separation (e.g., air gap, air break) between plumbing and a WTW Disposal System. WTW piping foundation penetrations shall be subject to approval by the local building official.
- WTW dispersal system storage volume: 1.5 times anticipated discharge volume. For calculation purposes it can be assumed stone filled excavations provide 40% void space (storage volume). Cubic feet (ft³) times 7.48 equals gallons. Example: A WTW Dispersal System that consists of a stone filled excavation (Dimensions: 10 feet long, 3 feet wide, 2 feet deep) has a volume of 60 ft³ (10' x 3' x 2' = 60 ft³) and a void space of 24 ft³ (60 ft³ x 0.4 = 24 ft³), which equates to 179.5 gallons (24 ft³ x 7.48 gallons/ft³ = 179.5 gallons) of WTW storage capacity.
- WTW dispersal systems that include stone filled excavations, or other receiving structures or components that include stone shall utilize approved filter fabric (Appendix C) to cover the stone. Also note that the stone shall be clean.
- WTW dispersal system and holding tank system siting (minimum separating distances): sewage system: see Table 1 Item Q, property line: 15 feet*, open watercourse: 25 feet*, public water supply reservoir: 100 feet, and water supply wells*: <10 gpm: 75 feet, 10 to 50 gpm: 150 feet, >50 gpm: 200 feet. *Local director of health or licensed sanitarian can reduce distances on existing developed sites when warranted based on site limitations; however distance reductions for water supply wells can only be considered for private wells and the distance shall be maximized but in no case shall be less than 25 feet. WTW discharges less than 75 feet up-gradient of private wells shall be avoided if at all possible, and local director of health or licensed sanitarian may decline to allow a reduced setback to a private well if there is a concern the WTW may impact the quality of the groundwater and in turn the quality of the private well.
- WTW dispersal system minimum separation above: maximum groundwater 12 inches, ledge rock 24 inches
- Holding tank systems shall provide an access cleanout to grade. Holding tank systems shall have a high-level alarm unless the local health department approves otherwise based on other arrangements (e.g., routine pump-out service) to prevent tank overflow.
- WTW dispersal systems and holding tank systems in vehicular travel areas shall be H-20 load rated.
- Note that WTW dispersal systems may include filtration or sedimentation processes to keep iron and manganese sludge from fouling the dispersal structure.
- Following the installation of a WTW dispersal system or a holding tank system, an as-built drawing shall be prepared and submitted to local health department, and the drawing shall include the distance from two or more permanent reference points to the dispersal structure or holding tank.
- Stipulate DPH may authorize certain WTW to discharge to a SSDS if a finding is made that the nature and volume of the discharge is unlikely to cause SSDS malfunction or failure. WTW from ion exchange systems, both cationic (a.k.a., softeners) and anionic (e.g., radionuclide treatment systems), are not be authorized to discharge to a SSDS as part of the January 1, 2018 revisions. No WTW is authorized to discharge to a cesspool. WTW that is authorized by

DPH to discharge to a SSDS are listed in Appendix E. Stipulate DPH may revise Appendix E prior to the next publication of the Technical Standards if deemed necessary.

- **Section XI Non-Discharging Toilet & Sewage Disposal Systems:**
 - Subsection G. Holding Tanks: Make reference to holding tanks for the temporary storage of sewage. Recommend a secondary safety device be provided for a holding tank without a cover that has a riser cover weighing more than 59 pounds. Specify high-level alarms shall be located in a location that readily alerts building occupants when the alarm is activated.
- **Forms #1, 2, 2A, 3, & 4:**
 - Forms 2 and 2A: Add soil scientist to the examples of others present for site investigations
 - Form #3 Final Inspection Report: Add new items: Secondary Safety Device (Y/N), Water Treatment Wastewater Disposal. Other minor word revisions
- **Appendix A, MLSS Revisions:**
 - The titles to the 2nd and 3rd MLSS categories are being changed (new wording underlined) to: Leaching System Repairs and B100a MLSS Compliant Potential Repair Areas, Non-compliant MLSS Repairs and B100a Non-compliant Potential Repair Areas
 - Consideration is being given to breaking the 1st category into two separate categories to for clarity purposes. One category would be for B100a Code-Complying Area designations and conceptual SSDS's for new lots, and the other would be for new SSDS installations.
 - Diagrams (e.g., cross section, plan view) for each of the categories to be added.
 - Flow Factor (FF) Chart: Note that the 75 GPD/bedroom design flow allocation starts with bedrooms beyond 3 rather than 4 for single-family residential buildings, which makes the FF for a 4-bedroom home: $525/300 = 1.75$, and each bedroom beyond 4 increases by 0.25. Eliminate the 5-bedroom line from the chart. Note: This revision is dependent upon the design flow reduction for single-family residential buildings (See Section IV Design Flows).
 - Percolation Factor (PF) Chart: Provide asterisks to the 30.1 to 45.0 and 45.1 to 60 minutes/inch rows and stipulate that the PF's for those rows can be reduced to 2.5 and 3.0 respectively if the leaching system is elevated entirely in a select fill package, and leaching system bottom is located at least 24 inches above maximum groundwater. Clarify that "elevated" means the bottom of the leaching system will be above existing grade.
- **Appendix B, Approved Septic Tank Effluent Filters**
 - Replace list with the list of approved filters dated July 8, 2015.
- **Appendix C, Approved Filter Fabric for Covering Stone Aggregate**
 - No changes
- **Appendix D, Approved Non-Concrete Septic Tanks:**
 - Replace list with the list of approved non-concrete tanks dated December 17, 2015.

- **Appendix E, Authorized Water Treatment Wastewater Discharges to SSDS's**
 - New appendix that is referenced in Section X
 - The following WTW are authorized to discharge a SSDS if the following conditions are met:

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| <u>WTW Maximum Volumes Per Cycle</u> |
| <p>Single-family residential buildings: The WTW volume is less than 150 gallons per cycle at a frequency that occurs less than every other day.</p> <p>Other buildings: The WTW discharge volume per cycle is less than 10 percent of the design flow of the building served and the cycle frequency that occurs less than every other day. A WTW discharge exceeding 150 gallons per cycle must be at a low rate to prevent negative impacts to the septic tank.</p> |
| <u>Authorized WTW Sources</u> |
| <p>The WTW is from a point of use (POU) reverse osmosis unit, or calcite, granular activated carbon filter.</p> <p>Note: Consideration is being given to allowing iron (Fe)/manganese (Mn) filters that do not use a brine salt solution to regenerate the filter media to discharge their WTW to SSDS's if they are being used to treat specified low levels of Fe or Mn. For example, WTW from filters treating raw water with Fe not exceeding 1.5 mg/l and Mn not exceeding 0.25 mg/l based on recent (within past year) water quality testing by a state certified laboratory. Further discussion and vetting warranted. Probably will not be in the 1/1/18 Technical Standards revisions, but can be incorporated into a revised Appendix E at a later date.</p> |
| <u>Septic Tank Construction and Maintenance</u> |
| <p>WTW other than limited (less than 50 gallons) discharges of POU reverse osmosis WTW: The septic tank has two compartments and an effluent filter, and has been cleaned within the last two years with no reported malfunction or failure conditions (See Section V A 4).</p> <p>Limited (less than 50 gallons) quantities of POU reverse osmosis WTW: The septic tank has been cleaned within the last 5 years with no reported malfunction or failure conditions.</p> |
| <u>Septic Tank Sizing Requirements</u> |
| <p>For WTW other than limited (< 50 gallons) discharges of POU reverse osmosis WTW:</p> <p>Single-family residential buildings: The septic tank is properly sized for the number of bedrooms in the single-family residential building without consideration of increased tank capacities for plumbing fixtures (large tubs, garbage grinders, water treatment systems) identified in Section V B 4.</p> <p>Other buildings: The septic tank is properly sized for the design flow of the building served without consideration of increased tank capacities for plumbing fixtures (large tubs, garbage grinders, water treatment systems) identified in Section V B 4.</p> |