Main line: 860-509-7296
Amanda Clark 860-509-7368
Amanda.Clark@ct.gov
Sean Merrigan 860-509-7383
Sean.Merrigan@ct.gov
Matt Pawlik 860-509-7384
Matthew.Pawlik@ct.gov
Robert Scully 860-509-7385
Robert.Scully@ct.gov
Environmental Engineering Program

Regional Engineering Coverage
- Matthew Pawlik
- Robert Scully
- Sean Merrigan

Amanda Clark: Enforcement, Training and General Questions
CONNECTICUT PUBLIC HEALTH CODE

On-site Sewage Disposal Regulations and
Technical Standards for Subsurface Sewage Disposal Systems

PHC Section 19-13-B100a (Building Conversions, Changes in Use, Building Additions)

Effective August 3, 1998

PHC Sections 19-13-B103a through 19-13-B103f (Design Flows 5,000 Gallons per Day or Less*)

Effective August 16, 1982

Technical Standards for Subsurface Sewage Disposal Systems

Effective August 16, 1982

Revised January 1, 2018

PHC Sections 19-13-B104a through 19-13-B104d (Design Flows Greater than 5,000 Gallons per Day*)

Effective August 16, 1982

*Note: The 5,000 gallons per day jurisdictional design flow was increased to 7,500 gallons per day by Public Act No. 17-146, Section 30 effective July 1, 2017.

State of Connecticut
Department of Public Health
Environmental Engineering Program
410 Capitol Avenue - MS #12SEW
P.O. Box 340308
Hartford, Connecticut 06134
(860) 599-7290

www.ct.gov/dph/subsurfacesewage

January 2018
Public Act No. 17-146, Section 30 raised the jurisdictional design flow from 5,000 GPD to 7,500 GPD effective July 1, 2017.
Subsurface Sewage Disposal

Crematoriums, Mausoleums, Columbarium's, Private Burial

Water Treatment Wastewater Discharge
July 2017 DEEP/DPH WTW Delegation Agreement that provides the authority for the DOH or licensed sanitarian to approve and permit discharges to a WTW dispersal system, WTW holding tank, or to a SSDS if authorized by DPH.

Went into effect Jan 1. 2018
• WTW discharges shall also be in accordance with any future regulations promulgated by DPH.

• WTW discharges to the ground surface, wetlands or open watercourse are not authorized.
Technical Standards
Code Advisory Committee

CADH - Local Health Directors
CEHA - Environmental Health Association
COWRA - Onsite Wastewater Recycling Assoc.
DEEP - Dept of Energy and Environ Protection
DPH - Dept of Public Health
Home Builders and Remodelers Association
Professional Engineers, Soil Scientist

*CTWWA - CT WELL WATER ASSOCIATION
Definition of WTW

Water Treatment Wastewater (WTW): Wastewater generated by a device used for the treatment of well water that enhances the quality of water and/or provides for the removal of iron, manganese, radionuclides and other substances.
Conventional Septic System

- Plumbing Vent
- Septic Tank
- Infiltrator
- Leachfield / Drainfield
- Effluent absorption and purification
- Groundwater
Septic Tank outlet filter
Leachfield
Septic tank installed
Septic tank opening
Deteriorated septic tank cover
Distribution box
Distribution box
Plastic manhole risers and covers
Plastic septic tank
Plastic distribution box
Leachfield failures
Leachfield failures
Woodbridge CT SSDS malfunction
Sewage Disposal System cause?
## Analysis Report

**Date:** June 28, 2018

### Sample Information
- **Matrix:** DRINKING WATER
- **Location Code:** LHWI-DW
- **Rush Request:** Standard
- **P.O. #:** 40.8

### Custody Information
- **Collected by:** B
- **Received by:** B
- **Analyzed by:** see "By" below
- **Date:** 06/22/18
- **Time:** 7:00

### Laboratory Data
- **SDG ID:** GCA76354
- **Phoenix ID:** CA76354

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>PQL</th>
<th>Dil</th>
<th>Units</th>
<th>AL</th>
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<td>Calcium</td>
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<td>MA</td>
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<tr>
<td>Iron</td>
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<td>0.01</td>
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<td>mg/L</td>
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<td></td>
<td></td>
<td>06/29/19</td>
<td>EK</td>
<td>E200.7</td>
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<td>Hardness (CaCO3)</td>
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<td>Magnesium</td>
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<tr>
<td>Manganese</td>
<td>1.01</td>
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<td>mg/L</td>
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<td><strong>Manganese exceeds Secondary Goal of 0.05</strong></td>
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<tr>
<td>Sodium</td>
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<td><strong>Sodium exceeds Secondary Goal</strong></td>
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<tr>
<td><strong>For public water systems the goal is 28 mg/L, private water systems the goal is 100 mg/L</strong></td>
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<tr>
<td><strong>The conservative goal of 28 is used for this report</strong></td>
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<tr>
<td>Escherichia Coli</td>
<td>Absent</td>
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<td>1</td>
<td>/100 ml</td>
<td>0</td>
<td></td>
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<td>O</td>
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<tr>
<td>Total Coliforms</td>
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<td>Chloride</td>
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<td>2</td>
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<tr>
<td>Color, Apparent</td>
<td>75.0</td>
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<td>5</td>
<td>Color Units</td>
<td>15</td>
<td></td>
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<td>06/22/18</td>
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<td>O</td>
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<tr>
<td><strong>Color, Apparent exceeds Secondary Goal of 15</strong></td>
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<td></td>
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<tr>
<td>Fluoride</td>
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<td>mg/L</td>
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<tr>
<td>Nitrate as Nitrogen</td>
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<td>0.004</td>
<td>1</td>
<td>mg/L</td>
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<tr>
<td>Odor at Room Temperature</td>
<td>&lt; 1</td>
<td>1</td>
<td>T.O.N.</td>
<td>3</td>
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<td>17:00</td>
<td>O</td>
<td>SM2150B-97</td>
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<tr>
<td>pH</td>
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<td>pH Units</td>
<td>6.5-8.5</td>
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<td>23:07</td>
<td>RWR/KOB/SM4500H-B-11</td>
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<td>Sulfate</td>
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<tr>
<td>Turbidity</td>
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<td>NTU</td>
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<td>06/22/18</td>
<td>21:33</td>
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</table>
# Treated Water Quality Test Results

**Aquatek Labs**

3 Research Drive - Woodbridge, CT 06525

**WATER ANALYSIS REPORT**

**TO:** HUNGERFORDS PUMP SERVICE  
301 STATE STREET  
NORTH HAVEN, CT 06473-

**TEST ID:** 005151426  
**DATE SAMPLED:** 5/15/2014  
**SAMPLE POINT:** KITCHEN SINK  
**AFTER TREATMENT SYSTEM**  
**SAMPLED BY:** BEN URIEIN

### BACTERIA

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<thead>
<tr>
<th>PARAMETER</th>
<th>LIMITS</th>
<th>METHOD</th>
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<tr>
<td>COLIFORM (total)</td>
<td>PRESENT</td>
<td>SM 9222</td>
</tr>
<tr>
<td>E. COLI (total)</td>
<td>PRESENT</td>
<td>SM 9222</td>
</tr>
<tr>
<td>CHLORINE</td>
<td>PRESENT</td>
<td>SM 9222</td>
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### PHYSICAL PARAMETERS

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<tr>
<th>PARAMETER</th>
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<th>METHODOLOGY</th>
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<tr>
<td>PH</td>
<td>7.4 - 8.4</td>
<td>4500-H2</td>
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<tr>
<td>TURBIDITY</td>
<td>≤ 0.5 NTU</td>
<td>SM 2130 B</td>
</tr>
<tr>
<td>COLOR</td>
<td>≤ 5</td>
<td>SM 2130 B</td>
</tr>
<tr>
<td>ODOR</td>
<td>≤ 5</td>
<td>SM 2130 B</td>
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### CHEMICALS

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<th>PARAMETER</th>
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<th>METHODOLOGY</th>
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<tr>
<td>FLOUREIDE</td>
<td>≤ 1.0 mg/L</td>
<td>EPA 300.0</td>
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<tr>
<td>CHLORIDE</td>
<td>≤ 250 mg/L</td>
<td>EPA 300.0</td>
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<tr>
<td>NITRATE NITROGEN</td>
<td>≤ 10 mg/L</td>
<td>EPA 300.0</td>
</tr>
<tr>
<td>SULFATE</td>
<td>≤ 250 mg/L</td>
<td>EPA 300.0</td>
</tr>
<tr>
<td>CALCIUM</td>
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<td>EPA 300.0</td>
</tr>
<tr>
<td>MAGNESIUM</td>
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</tr>
<tr>
<td>HAFNAC</td>
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<td>SM 3111 B</td>
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<tr>
<td>SODIUM</td>
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<tr>
<td>COPPER</td>
<td>≤ 1.0 mg/L</td>
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</tr>
<tr>
<td>IRON</td>
<td>≤ 0.3 mg/L</td>
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</tr>
<tr>
<td>MANGANESE</td>
<td>≤ 0.05 mg/L</td>
<td>SM 3111 B</td>
</tr>
</tbody>
</table>

### CONCLUSION

Based on the above results, this water was safe for drinking purposes at the time of collection.

*P = Primary limit, used to judge portability
*S = Secondary limit, recommended but not required
*MRL = Minimum Reportable Level
* Limit exceeded
ND = Not Detected

David M. Graham, Ph.D.  
Laboratory Director
## Water Quality Test Results

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>RAW WATER</th>
<th>TREATED WATER</th>
<th>LIMITS</th>
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<tbody>
<tr>
<td>pH</td>
<td>7.5</td>
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<td>Turbidity</td>
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<td>0.4</td>
<td>5</td>
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<tr>
<td>Color</td>
<td>75</td>
<td>Non Detect (ND)</td>
<td>15</td>
</tr>
<tr>
<td>Calcium</td>
<td>79</td>
<td>ND</td>
<td>N/A</td>
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<tr>
<td>Magnesium</td>
<td>27</td>
<td>ND</td>
<td>N/A</td>
</tr>
<tr>
<td>Iron</td>
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<td>ND</td>
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<tr>
<td>Manganese</td>
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<td>ND</td>
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<tr>
<td>Sodium</td>
<td>41</td>
<td>174</td>
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<tr>
<td>Chloride</td>
<td>146</td>
<td>77</td>
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<tr>
<td>Hardness</td>
<td>308</td>
<td>ND</td>
<td>200</td>
</tr>
<tr>
<td>Sulfate</td>
<td>22</td>
<td>27</td>
<td>250</td>
</tr>
</tbody>
</table>
Water Treatment Wastewater Dispersal System: The system includes solid conveyance piping, intermediate settling or filtration structures if any, and a receiving structure. *Receiving structures* include stone filled excavations, dry wells, galleries, pits, plastic chambers, or other structures approved by DPH.
Item Q. Water Treatment Wastewater Dispersal System: Revised special provision relative to setbacks for the three discharge categories. (<150GPD, 150-500GPD and >500GPD)
WHAT IS NOW REQUIRED??

• The applicant shall submit a plan/sketch to the DOH showing the proposed WTW dispersal system or connection to the SSDS.

• The name and contact information of the installer shall be noted.
Section X: Water Treatment Wastewater

• The applicant shall submit information on the water treatment system including WTW backwash volume per cycle and cycle frequency.

• Plans for new SSDSs should designate an area where a WTW dispersal system could be installed.
Compliance with PHC Section 19-13-B100a (e) may need to be demonstrated. Note: This B100a subsection concerns sewage disposal area preservation and it governs activities that affect soil characteristics or hydraulic conditions that may reduce a potential repair area or eliminate a code complying area.
• The DOH or licensed sanitarian shall approve the design prior to the installation of WTW dispersal system or WTW holding tank.

• The WTW disposal system installer shall provide twenty-four (24) hour minimum advance notice to the DOH prior to commencement of installation, unless otherwise approved by the DOH.
• DOHs may request an inspection prior to covering the WTW disposal system.

• Applicable permits (electrical, plumbing) shall be obtained from the local building official.
Section X: Water Treatment Wastewater

- Minimum storage volume of 1.5 times of either the anticipated discharge per cycle or daily average, whichever is greater.

- Stone aggregate used shall be free of silt, dirt and debris and covered with approved filter fabric.
• WTW solid conveyance piping shall be approved by DOH and protected from freezing. Referenced gravity and pressure pipes in Tables 2-A and 2-B as acceptable pipes.

• Conveyance piping shall be 25’, 75’ and 100’ to both public and private wells. DOH can reduce down to 10 feet for private wells only on existing sites if compliance cannot be met.
• WTW dispersal systems shall meet the minimum separating distances to sewage systems per Item Q in Table 1.

• WTW holding tanks, including piping, shall be located at least 10’ from SSDSs.
WTW dispersal system receiving structures shall meet the minimum separating distances in Table 9.

<table>
<thead>
<tr>
<th>Item</th>
<th>Separation Distance (feet)</th>
<th>Special Provisions</th>
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</thead>
<tbody>
<tr>
<td>Public or private water supply well with required withdrawal rate of:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10 GPM</td>
<td>75</td>
<td>The DOH may allow certain separation distance reductions on existing developed properties if compliance cannot be met due to site limitations. (1)(2)(3)</td>
</tr>
<tr>
<td>10 to 50 GPM</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>&gt; 50 GPM</td>
<td>200</td>
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<tr>
<td>Open watercourse</td>
<td>25</td>
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<tr>
<td>Public water supply reservoir</td>
<td>100</td>
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</tr>
<tr>
<td>Property line</td>
<td>10</td>
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</tr>
<tr>
<td>Subsurface sewage disposal system</td>
<td></td>
<td>See Table 1 (Item Q)</td>
</tr>
</tbody>
</table>
DOH can reduce certain distances on existing developed properties when warranted based on site limitations; however distance reductions for water supply wells can only be considered for private wells and the distance shall not be reduced to less than 25 feet.
• WTW discharges less than 75 feet up-gradient of private wells shall be avoided, whenever possible.

• The DOH may not allow a reduced setback to a private well if there is a concern the WTW may impact the quality of the groundwater.
Non-discharging WTW disposal system components (WTW holding tanks, WTW settling or filtration structures) and any air gaps/breaks in conveyance piping outside of building foundation shall meet the minimum separating distances in Table 9, unless otherwise authorized by DPH.
• WTW receiving structure bottoms shall be located a minimum 12 inches above maximum groundwater and 24 inches above ledge rock.

• WTW Holding tanks shall provide an access cleanout to grade and be equipped with a high-level alarm.
WTW Dispersal System Receiving Structures

• WTW dispersal systems and holding tanks in vehicular travel areas shall be H-20 load rated.

• An as-built drawing (swing ties to 2 or more fixed reference points) shall be submitted to the DOH.
Section X: Water Treatment Wastewater
Section X: Water Treatment Wastewater

4. Run pipe from source to drain.

5. Gravel provides extra capacity; filter fabric protects gravel from mixing with backfill. Both are optional per manufacturer.
External Air Gap

7. Drain is installed outside the home to prevent flooding in the event system ever fails.
Internal Discharge Air Gap
Select fill 5’

Clean backfill material

Bottom of leaching system has to be minimum 18 or 24 inches above groundwater and 48 inches above ledge.
What type of backfill?

How much backfill material?

Bottom of leaching system has to be minimum 12 or above groundwater and 24 inches above ledge.

Top Soil removed?
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).

- volume of 60 ft³ (10’ x 3’ x 2’ = 60 ft³)
- void space of 24 ft³ (60 ft³ x 0.4 = 24 ft³)

24 ft³ x 7.48 gallons/ft³ = 179.5 gallons
Therefore about 180 gallons of WTW storage.
• DPH may authorize certain WTW to discharge to a SSDS (Appendix E in the TS).

• 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.

• No WTW is authorized to discharge to a cesspool.
Appendix E (new) is referenced in Section X. The appendix cites authorized WTW sources, WTW discharge limits, existing SSDS requirements, and proprietary leaching system considerations.
• Authorized WTW Sources: WTW shall only be from a calcite filter, granular activated carbon filter, or a Point of Use (POU) reverse osmosis unit.

• Can’t be discharged to a significantly undersized (<50%) leaching system.
WTW Discharge Limits:

• Single-family residential buildings: WTW discharge is less than 150 gallons per backwash cycle, and cannot exceed a daily average of 50 GPD.

• Other buildings: WTW discharge is less than 150 gallons per backwash cycle or less than 10 percent of the building’s SSDS daily design flow, whichever is greater. Discharges cannot exceed a daily average of 50 GPD or 2 percent of the buildings SSDS daily design, whichever is greater.
Section V: Septic Tanks

• 250 gallons additional capacity required for WTW discharges of 50 to 150 gallons (per Appendix E)

• 500 gallons additional capacity required for WTW discharges greater than 150 gallons.
Discharge to a single family residential SSDS

Max 150 gal/cycle and cannot exceed 50 GPD average.

- WTW system discharge 140 gal/cycle 2 times per week.

  280 gal/7 days = 40 GPD daily average < 50 GPD (OK)

- WTW system discharge 140 gal/cycle 3 times per week

  420 gal/7 days = 60 GPD daily average > 50 GPD (NO)
Discharge to a non-residential SSDS

Max 150 gal/cycle or less than 10% of Daily Design Flow; whichever is greater. AND discharge cannot exceed 50 GPD daily average or 2% of Daily Design Flow; whichever is greater.

Example: 6000 GPD commercial building and WTW system discharges 300 gal/cycle.

• If WTW cycles 2 times per week, daily average (600/7) = 85 GPD average
  1. 10% of 6000 GPD = 600 GPD (300 < 600 OK)
  2. 2% of 6000 GPD = 120 GPD  (85 < 120 OK)
• If WTW cycles 3 times per week, daily average (900/7) = 128 GPD average
  1. 10% of 6000 GPD = 600 GPD (300 < 600 OK)
  2. 2% of 6000 GPD = 128 GPD  (128 > 120 NOT OK!)
Existing SSDS Requirements

• Septic tanks must have two compartments, an effluent filter, and be properly sized for the daily design flow of the building.

• Single compartment tanks can remain if receiving WTW from a POU reverse osmosis unit that discharges less than 50 GPD.

• Septic tanks must have been cleaned and inspected within three years with no reported signs of malfunctioning.
Proprietary leaching system companies may not support the discharge of WTW into their SSDS products. Therefore the applicant should consult with the proprietary company to determine if use of their leaching system product is suitable with WTW discharge.
QUESTIONS?
“The disposal of water treatment wastewater shall be in accordance with the requirements of either the Department's Technical Standards for Subsurface Sewage Disposal Systems, or the Comprehensive General Permit for Discharges to Surface Water and Groundwater issued by the Department of Energy and Environmental Protection. It is your responsibility to consult with your local health department to determine the applicable requirements for water treatment wastewater disposal.”