

**WESTCHESTER COUNTY HEALTH DEPARTMENT
RULES AND REGULATIONS
FOR
THE DESIGN AND CONSTRUCTION OF
RESIDENTIAL ONSITE WASTEWATER TREATMENT SYSTEMS
AND
DRILLED WELLS
IN
WESTCHESTER COUNTY, NEW YORK**

(Formerly known as Green Book – 2002)

**Adopted by the Commissioner Pursuant to
Article II, Section 873.203.1 of
Chapter 873 of the Laws of Westchester County**

Effective Date: April 1, 2022

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SUBSTANTIAL CHANGES

1. Design flow per bedroom 110/130/150 gallons per day
2. Application rates associated with percolation rates
3. ETU/ATU use permitted for new construction with Declaration/
Hold Harmless (Outside NYC Watershed)
4. Absorption trench installation requires six (6) feet on center
5. Percolation testing procedures
6. Acceptance of OWTS repairs
7. Minimum well casing depth of fifty (50) feet from ground surface on all new wells
8. Requirements for multiple wells on a single property
9. Updated Forms must accompany applications

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1.0 General Provision/Statement of Policy

In accordance with the provisions of Article VIII, Section 873.726 of the Laws of Westchester County, a construction permit and approval of plans is required prior to the start of construction of a new or remediation of an existing Onsite Wastewater Treatment System (OWTS) for a new or existing building to be served by such system(s) and prior to occupancy of such new or renovated building and use of said system(s). The construction application (new or remediation of an existing OWTS) shall be signed and sealed by the design professional and shall be accompanied by a written authorization from the property owner. All plans for new and remediation of an existing Onsite Wastewater Treatment Systems (OWTS) must be designed and prepared under the supervision of a licensed Professional Engineer or Registered Architect, currently registered to practice in the State of New York. All plans and supporting documents shall bear the original seal and original signature of such professional engineer or registered architect and shall be prepared in accordance with the New York State Education Law. The design professional supervising construction shall thereafter be responsible for the completion of work in complete conformance with the construction permit and the approved plan or approved amendments thereto and in accordance with The Rules and Regulations of the Department. Approval is also required prior to placing the system in operation pursuant to the provisions of Article VIII, Section 873.726 of the Laws of Westchester County.

In addition, written approval is required prior to a licensed septic system contractor performing a septic repair. At the discretion of the Department, an emergency repair of an OWTS component may not require prior written approval; however, all emergency repairs will require verbal approval from the Department. The repair application and proposed repair plan shall be signed by the licensed septic system contractor and shall be accompanied with a written authorization from the property owner. The licensed septic system contractor shall be responsible for completion of the septic repair in conformance with septic repair approval.

Issuance of no objection for the adequacy of the existing OWTS is required upon referral from local building departments for additions and/or modifications to existing structures served by the existing OWTSs

Provisions of the Westchester County Sanitary Code prohibit the issuance of a permit on the basis of inexperience, incompetency, pending prosecution, or verified non-compliance with any health law, rule or regulation affecting any individual sewage system under construction or within the first year of continuous use.

OWTS located in a County, City, Town or Village sewer district will be considered for approval **only** under special provisions of the Westchester County Sanitary Code. Where the lot is located in an approved realty subdivision, the individual sewage system shall be designed and located in accordance with the improvement plans approved and on file with this Department. These improvement plans are available for inspection at the Department office. The Department reserves the right to require additional testing on lots which are part of approved subdivisions prior to construction permit issuance for the OWTS. See Article X of the Westchester County Sanitary Code (WCSC) for other Realty Subdivision regulations.

Where on-site improvements of drainage or final grade are necessary for the proper design and operation of a proposed OWTS, these improvements should be discussed with this Department. The Department can require the completion of certain improvements prior to the issuance of a construction permit.

Each new OWTS shall be constructed to serve only the premise(s) located on the property survey filed with the application. No new OWTS shall serve more than one (1) building lot, and the OWTS shall be located on the same lot as the structure which it will serve.

The design standards set forth in these rules and regulations apply to residential systems receiving sewage in quantities of less than 1,000 gallons per day. The rules and regulations of the New York State Department of Health as set forth in 10NYCRR, Part 75, Appendix 75-A apply to the approval of all plans, subject to the modifications set forth in these Rules and Regulations. The New York State Department of Environmental Conservation (NYSDEC) Design Standards for Intermediate Sized Wastewater Treatment Systems, March 5, 2014 or latest revision, shall apply to all commercial or mixed used OWTS designs.

The design, location, and construction of the each OWTS shall be such that with reasonable maintenance it will function in a satisfactory manner without creating a nuisance or unsanitary condition. Many proposed sites are not naturally suited for the treatment of sewage by conventional methods. It is the obligation of the applicant to show that the proposed site is suitable. The issuance of any approval or certification by the Department shall not be construed as a guarantee that the system has been properly constructed or will function satisfactory, nor shall it in any way restrict the actions or powers of this Department or any other authority in the enforcement of any law or regulation.

Where OWTS are to be located on the watershed or well head area of public water supplies, the rules and regulations enacted by the State Department of Health for the protection of these supplies must be observed. Where systems are to be located on the watershed of the City of New York, the approval of the New York City Department of Environmental Protection (NYCDEP) or its designated agent may also be required.

A site inspection will be made by Health Department personnel. (Site inspections may be omitted only at the discretion of the engineer in charge of the permit issuing office.) The inspections may include, but are not limited to, subsoil investigation evaluations, and witnessing of the percolation tests, as appropriate.

Open work inspections shall be made by the design professional supervising the construction. The design professional who supervised construction shall, within 24 hours of completion of the system, notify the issuing office that the OWTS has been completed and is ready for inspection. The Department can require that the system be uncovered if it is backfilled prior to receiving permission from the Health Department. The Health Department reserves the right to waive such open work inspection.

If, for any reason, the approved plan cannot be followed, a revised plan must be prepared and submitted to the Department. No portion of the system is to be constructed until revised plans are approved. Revised plans shall be reviewed in the same manner as the original plans. If the revised plans show the proposed OWTS in a location other than that shown on the original plans, soil percolation tests and subsoil investigations may be required in the new area.

2.0 Construction Permits (New Construction or Remediation)

Required Information

- A. **Construction or Remediation Approval Application** – (Form provided by the Department)** Submit five (5) copies each of which must be signed and sealed by the New York State licensed and registered design professional and accompanied by a Letter of Authorization from the property owner to which that application applies. For corporate ownership, a Certificate of Resolution for Authorization form must also be submitted with the application.
- B. **Design Data Sheets** – (Form provided by the Department)** Provide and record field data, including date(s) of tests, each type of soil encountered, depth to ground water, depth to rock or other impermeable strata and depth to any mottled layer. Stabilized percolation test results, including dates of presoaking, must also be submitted to the Department bearing the original signature and seal of the licensed and registered design professional.
- C. **Site Development Plan** – Provide five (5) complete sets, signed and sealed by the licensed and registered design professional which shall include both plan and profile views of the OWTS and the required information listed on the Department’s Comprehensive Checklist. **
- D. **Floor Plans of Building Served** – For new OWTS construction, two (2) sets of floor plans only, including the basement, are required, one of which will be returned to the applicant to accompany a copy of the approved Construction Permit to the building inspector. These plans will be used as a basis for determining the OWTS design flow. Plans need not be signed and sealed by the design professional preparing such plans. Please note that Department reserves the right to request floor plans of existing dwellings for those projects involving OWTS remediations.
- E. **Property Survey** – Where a building lot is not part of a realty subdivision approved by the Department, a copy of an official survey of the property, bearing the signature and seal of a New York State licensed land surveyor, shall be submitted, along with such other information which may be required to determine the origin of the lot.
- F. **Comprehensive Checklist** – (Form provided by the Department) ** Completed in accordance with the requirements for the specific application (new construction/remediation OWTS.)
- G. **Fees** – In accordance with the requirements of Article XXI of the Westchester County Sanitary Code.
- H. **Expiration/Renewal**- The approval for new construction, expires one (1) year from the date of issuance, unless construction has commenced on the structure to be served by the OWTS. The approval for OWTS remediation expires one (1) year from the date of issuance. Renewal applications must be accompanied by a letter from the licensed design professional, bearing his/her original signature and seal, certifying that a visual inspection has been performed on the property, with the recent date of the inspection, and the site conditions have remained unchanged since the issuance of the original approval, and the floor plans of the proposed structure remain the same. The date of the visual inspection is to be added to the all renewal plans. The renewal application shall consist of the application fee, approval application, Comprehensive Checklist, site development plans, letter of authorization, certificate of resolution for authorization, certification letter and proposed floor plans (if floor plans have changed.)

- I. **Transferability** – This permit may be transferred to subsequent owners, provided there are no changes in use. A complete re-submittal, including plans and applications with new names, letter of authorization, and filing fee is required.

** Forms can obtained at <https://health.westchestergov.com>

3.0 Certificate of Construction Compliance (New Construction or Remediation)

Required Information

- A. **Certificate of Construction Compliance** - (Form provided the Department)** Submit five (5) copies each of which must be completed and signed and sealed by the New York State licensed and registered design professional.
- B. **As-Built Plans** – Provide five (5) copies, signed and sealed by the New York State licensed and registered design professional showing the OWTS constructed with all features drawn to scale, including tie-ins from permanent fixed points for future use in locating septic tank covers, distribution box and junction box covers, ends of absorption trenches, and all other aspects of the installed OWTS and drilled well.
- C. **Guaranty** – (Forms provided by the Department)** Submit three (3) copies of the Guaranty of Onsite Wastewater Treatment System (OWTS) for new construction projects or three (3) copies of the Guaranty of Remediation Work Onsite Wastewater Treatment System (OWTS) for remediation projects to be signed and dated by the property owner or general contractor and counter signed by the Westchester County licensed septic system contractor.
- D. **Enhanced Treatment Unit (ETU) Maintenance Agreement** – For those projects which involve the installation of an ETU, a copy of the required declaration filed with Westchester Count Land Records and a completed and executed maintenance agreement between the property owner and maintenance service provider must be submitted to the Department.
- E. **Well Completion Report** – (Forms provided by the Department)** Shall be completed by a New York State Department of Environmental Conservation (NYSDEC) registered well driller and submitted to the Department. In addition, all new wells must be sampled and tested in accordance with Westchester County’s Private Well Testing Law and sampling results must be entered in appropriate Private Well Testing Results database, before approval can be issued by the Department.
- F. **As-Built Foundation Survey**- A copy of an official survey bearing the signature and seal of the New York State licensed land surveyor, of the house or building location shall be used as the basis for all subsequent locations.
- G. **Electrical Underwriter’s Certificate** – A copy of the underwriter’s certificate for electrical facilities is required where pumps or other electrical devices are used in the OWTS.
- H. **Comprehensive Checklist** – (Form provided by the Department)** Completed in accordance with the requirements for the specific application (new construction/remediation OWTS.)

** Forms can be obtained at <https://health.westchestergov.com>

4.0 Site Location

A. Absorption Area Requirements.

1. Absorption area is the ground area to which the effluent from a septic tank, pump or dosing chamber, or enhanced treatment unit is distributed through a subsurface treatment system for infiltration into the soil.
2. Absorption area for an onsite wastewater treatment system should not be located where natural ground slope is greater than 15%, and shall not be located where natural ground slope is greater than 20%.
3. Absorption areas located in an area of 15-20% may require special design requirements as determined by the Department (refer to Section 4(I) for further requirements).
4. Absorption area for an onsite wastewater treatment system shall contain in situ useable soils for a depth of not less than 3 ½ feet above ledge rock, impermeable soil, or high seasonal groundwater with or without site drainage improvements.
5. Soil with a percolation rate slower than sixty (60) minutes per inch or faster than one (1) minute per inch are unsuitable for an absorption area. For properties located within the New York City Watershed, soil with a percolation rate slower than sixty (60) minutes per inch or faster than three (3) minutes per inch are unsuitable for an absorption area; however, this unsuitable soil may be removed and replaced with fill with a percolation rate of between three (3) and ten (10) minutes per inch with the prior approval of the NYCDEP and the Department. (Refer to Section 4(H) for further requirements)
6. In determining the location of an absorption area, due consideration shall be given to weather, recent rain or lack thereof, size of the system, varying types of strata, etc.
7. A minimum usable soil absorption area equal to twice the size of the proposed onsite wastewater treatment system is required. This area shall provide for 100% replacement of the system if needed in the future.
8. Absorption area shall contain useable soil for a depth of not less than seven (7) feet above ledge rock, impervious soil, or high seasonal groundwater with or without site drainage improvements. When seven (7) feet of in situ useable soil does not exist and where in situ useable soil exist to a depth of at least 3 ½ feet above ledge rock, impermeable soil, or high seasonal groundwater with or without site drainage improvements, either placement of fill may be considered only in areas where the natural ground has adequate surface and subsurface drainage, or an enhanced treatment unit must also be included in the onsite wastewater treatment system design. See Section 7 for ETU requirements.
9. No site shall be deemed suitable for development as an absorption area for an onsite wastewater treatment system which would require the removal of in situ soils for a depth greater than 3 ½ feet, or placement of fill for a depth greater than 3 ½ feet.
10. The size of the absorption area shall be based on the results of the soil percolation tests and the sewage design flow.
11. Sub-soil structure, depths to any ledge rock or impermeable soil, and high seasonal groundwater elevations shall be determined by deep test hole excavations. Deep test holes shall be identified by appropriate markings and located to give an accurate representation of the sub-soil characteristics in the absorption area.
12. Absorption area shall not be located under impervious surfaces, driveways or other areas subject to heavy loading. [Seepage pits and other concrete absorption structures may be located](#) under impervious surfaces, and driveways and other areas subject to heavy loading if properly designed and as approved by the Department.

13. Absorption area must be isolated and effectively protected against damage by erosion, storage of earth or materials, or compaction by machines or equipment. Requirements to field locate and fence off the absorption area will be based upon its location with respect to perceived construction traffic.
14. If the onsite wastewater treatment system or absorption area may be damaged by heavy equipment during site construction, fencing will be required to protect the absorption area. Absorption areas found to be compacted shall be retested and the new percolation test results witnessed by and submitted to the Department.
15. After evaluating the condition of the absorption area, the Department may suspend the construction permit and/or require additional improvements to the absorption area prior to construction continuing.

NOTE: See Article X of the Westchester County Sanitary Code for information pertaining to absorption area requirements for realty subdivisions subject to approval by the Westchester County Department of Health.

B. Restrictive Distances.

1. Separation distances between OWTS components and property boundaries, structures (existing or planned) and other site features are required to maintain OWTS performance, permit service, allow for repairs and minimize undesirable effects of underground wastewater dispersion. These include property lines, rights-of-way, easements, water supplies, wetlands, watercourses, buildings and utilities. Required minimum separation distances from various wastewater system components are shown on Table 1.

C. Deep Test Hole Excavations.

1. After the submission of the Site Evaluation request, which consists of the completed Request Form, two (2) copies of the site plan showing the location of the proposed soils testing and required fee, the Department shall contact the licensed and registered design professional prior to excavation to arrange a suitable time for the deep test inspections.
2. At least three (3) deep test holes shall be excavated in the area proposed for the OWTS with a minimum of two (2) deep test holes in the proposed primary area and minimum of one (1) deep test hole in the proposed expansion area. The deep test holes shall be excavated to a sufficient depth to demonstrate the proposed absorption area meets the usable area requirements set forth in these Rules and Regulations. Based on the size of the proposed OWTS, the Department reserves the right to require additional soil testing beyond the minimum number specified.
3. The location of the holes should be in an area which will provide a representative cross-section of the sub-soils. If observations of deep test holes reveal varying soil profiles and where ledge rock is encountered, more than three (3) holes may be required.
4. The licensed and registered design professional or his representative shall record the depth to groundwater, ledge rock, or impervious strata and the sub-soil profile encountered on the appropriate forms provided by the Department.
5. All OWTSs shall be designed to reflect the most severe conditions observed within the proposed absorption area.

SAFETY: The Department realizes there are safety hazards associated with such excavations. Therefore, it is imperative that the inspection and backfilling of the holes occur as soon as possible. It is the applicant or his/her representative's responsibility to ensure that the working conditions on the site are not hazardous to workers or the public. (See the New York State Industrial Code, Rules 23, Subpart 23-4, Excavation Operation.)

D. Percolation Tests. (Figure 1)

1. At least three (3) percolation tests shall be performed in the area proposed for the OWTS with a minimum of two (2) percolation test holes in the primary area and a minimum of one (1) percolation test hole in the proposed expansion area. Based on the size of the proposed OWTS, the Department reserves the right to required additional soil testing beyond the minimum number specified.
2. Percolation tests shall be witnessed by the Department, unless otherwise directed by the Department.
3. Tests shall be conducted in presoaked holes which shall have been dug in unfrozen ground within three (3) days.
4. In the event of non-uniform results in adjacent holes, the design shall be based on the slowest stabilized rate. The percolation test results shall not be averaged.
5. Percolation test results must be consistent with the sub-holes observed. Non-consistent test results must be repeated and all test results must be reported.
6. All field data and test results should be reported on the appropriate form supplied by the Department.
7. Percolation Test Procedure:
 - a. **STEP 1 - Digging the holes:** Dig or bore a twelve (12) inch diameter hole with vertical sides to a depth of 24 to 30 inches for conventional absorption trenches. When seepage pits area proposed, percolation tests are required at both one half and full depth of the proposed pit.
 - b. **STEP 2 - Soil Data:** Record the depth of each percolation test hole.
 - c. **STEP 3 - Reference Point:** Establish a fixed reference point at the top of the hole from which all measurements will be taken.
 - d. **STEP 4 - Presoaking:** Fill the test hole with water and allow it to drain out completely. This should be done the day prior to the scheduled percolation test. This saturation step is necessary for reliable test results, especially for silty and/or well compacted soils.
 - e. **STEP 5 - Final Preparation of the Hole:** Scrape the sides of the hole and remove loose soil, slime and silt. Cover the bottom of the hole with approximately two (2) inches of $\frac{3}{4}$ to 1 $\frac{1}{2}$ inch washed aggregate.
 - f. **STEP 6 - Start of Test Run:** Slowly introduce clean water into the hole to a depth of six (6) inches above the bottom of the test hole. It is strongly recommended that the water be introduced through small diameter tubes or siphons from the bottom up so that splashing or turbulence is held to a minimum.
 - g. **STEP 7 - Measurements:** Measure the time it takes for the water level to drop from the six (6) inch level to the five (5) inch level. If after 30 minutes, one (1) inch drop has not occurred, continue the test until the whole inch increment has been reached. Do not report increments of less than one (1) inch.
 - h. **STEP 8 - Repeat** test as in Step 6, again slowly introducing clean water to fill the hole to its original starting point until at least two (2) successive test results are within approximately ten (10) percent and stabilization has been determined. A minimum of three (3) runs per hole is required.
 - i. **STEP 9 - Calculations:** Calculate the time per inch of drop in water level, using the maximum time it takes the water level to drop. This is the soil percolation rate in units of minutes per inch (min/in.)

SPECIAL NOTE: Tests made in dry weather are frequently misleading. The Health Department may require adjustment of the dry weather percolation test results. The Department may require the design professional to perform percolation tests during seasonal high groundwater conditions. The presence of groundwater will interfere with percolation test results.

The Department may require the construction of test drains to demonstrate the ability of a curtain drain to lower groundwater prior to approval of the site. In such event, the construction of the test curtain drains to dry out the area may be required before proceeding further. A repetition of the percolation tests will be required after the construction of the test curtain drains. The Department reserves the right to suspend performance of the percolation testing due to extended periods of dry weather conditions (drought).

E. Protection of Sewage Treatment System Area

1. Absorption area shall not be located under impervious surfaces, driveways or other areas subject to heavy loading, parts of buildings, or under above-ground swimming pools. Seepage pits and other concrete absorption structures may be located under impervious surfaces, and driveways and other areas subject to heavy loading.
2. The disposal area must be isolated and effectively protected against damage by erosion, storage of earth or materials, or compaction by machines or equipment. Requirements to field locate and fence off the sewage disposal area will be based upon its location with respect to perceived construction traffic.
3. If the system or area may be damaged by heavy equipment during site construction, fencing will be required to protect the absorption area. Areas found to be compacted shall be retested and the new percolation test results witnessed by and submitted to the Department.
4. After evaluating the condition of the usable area, the Department may suspend the construction permit and/or require additional improvements to the sewage disposal area prior to construction continuing.

F. Curtain Drain (Figure 2)

1. A curtain drain may be required to intercept and redirect groundwater and perched water tables away from the proposed sewage treatment areas.
2. For areas with slopes greater than or equal to five (5) %, such drains shall not be closer than 15 feet to any portion of the usable absorption area and shall be of such depth and construction to intercept and redirect groundwater.
3. The curtain drain should be installed prior to the installation of the absorption facilities to allow sewage absorption subsoils to dry.
 - a. The curtain drain trench shall be eighteen (18) to twenty-four (24) inches wide and shall consist of four (4) inch perforated pipe laid in the trench with holes down.
 - b. The trench shall be backfilled with washed gravel $\frac{3}{4}$ to 1 $\frac{1}{2}$ inch in size to grade. As an alternate, two (2) inches of salt hay plus four (4) inches of topsoil or permeable geotextile plus four (4) inches of topsoil may be used for the top six (6) inches of stone.
 - c. The bottom of the trench shall extend to the minimum depth needed to ensure the required depth of unsaturated soils exist below the bottom of the absorption trenches or pits for the type of systems proposed for installation.
 - d. The intercepted drainage must flow by gravity to a suitable outlet on the property beyond the total usable area, including the 100% replacement area. The outlet is to be provided with suitable protection to prevent surface erosion at the outlet discharge point.
 - e. Non-perforated, watertight pipe installed on the in-situ soil bedding at least ten (10) feet from the absorption facility should be used to convey the collected groundwater to the surface.
4. If groundwater or mottling is observed less than **thirty** (30) inches to grade and a curtain drain is proposed to be installed, the design professional must submit a site plan showing the location of the curtain drain and the monitoring locations to the Department for review and approval prior to its installation.

- a. The proposed monitoring locations must include a minimum of one (1) location above the curtain drain and a minimum of two (2) locations below the curtain drain in order to allow monitoring of ground water levels to be performed to determine the effectiveness of the curtain drain. Monitoring locations to be approved by the Department prior to installation.
- b. Upon approval, the curtain drain and monitoring locations shall be installed and the Department notified upon completion of the installation.
- c. The curtain drain monitoring must be performed over a “wet” season, which is March 15th – June 30th, and the Department must be notified that the monitoring has started, as the Department reserves the right to perform site visits to verify the monitoring and curtain drain effectiveness.
- d. Upon completion of the monitoring, the design professional shall submit a summary report to the Department. If acceptable, the Department will then schedule deep test hole re-inspections.

G. Placement of Fill (Figure 3)

1. Placement of fill may be considered only in areas where the natural ground has adequate surface and subsurface drainage and where in situ useable soils exist to a depth of at least 3 ½ feet above ledge rock, impermeable soil, and/or high seasonal groundwater with or without site drainage improvements.
2. The fill shall consist of Run of Bank sand and gravel and should contain no more than five (5) percent (preferably no more than two (2) percent) fines by weight. Fines are clay and silt particles that pass a 200 sieve. No more than ten (10) percent by weight of the fill material shall pass a 100 sieve. The fill shall be taken from a borrow pit where the soil in place has a soil percolation rate of ten (10) minutes per inch or less. No large boulder, broken masonry, stumps, unclassified material or other waste material shall be used for fill.
3. Fill should not be tamped, rolled, or puddle. No heavy equipment or machinery shall be permitted to pass over or within five (5) feet of the sewage disposal area before or after placement.
4. The fill pad preparation shall proceed under the supervision of the design professional.
 - a. All erosion and run off controls should be in place prior to the commencement of the fill operation.
 - b. The layer of topsoil shall be removed from the proposed fill pad area.
 - c. Soil moisture at approximately an eight (8) inch depth should be checked before construction. If the soil can be rolled into a ribbon between one’s hands, it is too wet, and fill placement must be postponed.
 - d. Fill cannot be placed on frozen ground.
 - e. Trees should be cut to the ground, leaving roots in place and excess vegetation should be mowed.
 - f. The fill site should be plowed perpendicular to the slope to a depth of eight (8) to twelve (12) inches (or to such a depth as to penetrate the topsoil layer.) Rototillers shall not be used except on sandy soils. Every effort must be made to eliminate traffic on prepared plowed areas. Immediately after the site is plowed, the fill should be placed on the upslopes and side edges of the fill site, and pushed into place using a small track-type tractor blade. A minimum of six (6) inches of fill shall be kept beneath the tracks at all times to minimize soil compaction.

- g. Fill should be placed to a desired depth and side slopes shaped. For fill pads greater than two (2) feet, the fill shall extend to at least ten (10) feet beyond the limits of the disposal field and then tapered to existing grade at a maximum 1:3 (V:H) slope, with a clay or impervious soil as a barrier on the perimeter. For fill pads greater than two (2) feet in depth, the toe of the fill section must be at a minimum of ten (10') feet from any property line.
 - h. After the fill is placed on an in-situ soil with a percolation rate slower than thirty (30) minutes per inch, a six (6) to twelve (12) month settling period including a freeze-thaw cycle or stabilization by mechanical compaction is required. Mechanical compaction is to be utilized only with the direct consent of the Department.
 - i. The fill pad must be protected from erosion and sedimentation during settlement.
5. In those specific instances approved by the Department, where the fill is greater than 3-1/2 feet, percolation tests must be made in the settled fill to ensure that it percolates no slower than eight (8) to ten (10) minutes per inch.
 6. Where the fill is less than 3 ½ feet, the system shall be designed on the basis of soil tests made in the original existing soil. In cases where the required fill exceeds 3 ½ feet, the system will be designed on the average of the percolation rates in the settled fill and the percolation rates of the original soils. Also, all fill sections, regardless of depth, must consist of only Run of Bank sand and gravel.
 7. For systems which call for the use of fill, all restrictive distances are measured from the toe of slope of the fill.
 8. Fill shall not be used to reduce the size of the required absorption area. Soil replacement or the excavation of sewage treatment area to be replaced with run of bank material will not be approved.

NOTE: The Department may waive the placement of fill required within the 100% expansion area until such time as the use of the 100% expansion area is required, provided that the 100% expansion area shall remain accessible for equipment to be used for future fill placement without crossing over the existing OWTS absorption area and with a written request submitted by the owner of the property.

H. Soil Replacement.

1. The Department may consider soil replacement in special circumstances and only if the following Department protocol is followed and the required conditions are met:
 - a. Soil replacement will only be considered if the soil percolation is faster than one (1) minute per inch for those properties located outside of the New York City Watershed or three (3) minutes per inch for those properties located within the New York City Watershed. For those absorption areas with a percolation rate faster than three (3) minutes per inch located within the New York City Watershed, approval for the soil replacement is also required from the NYCDEP.
 - b. Before considering soil replacement, the Department must witness the percolation tests to verify the percolation rates.
 - c. The Department will not approve design plans until the proposed area is determined to be useable/suitable for septic use.
 - d. The design professional must submit a written proposal to the Department for consideration. The proposal must provide the details regarding the soil replacement, the fill pad, and the fill stabilization.
 - i. The Fill Section:
 - 1) The resultant absorption area after soil replacement shall meet all minimum required vertical separation distances from the bottom of the absorption system to the restrictive layer/unusable soil
 - 2) Run of Bank sand and gravel fill must be used for replacement purposes

- 3) Fill pad can be to grade or above grade. If the latter, the fill pad requires 3:1 taper if greater than two (2) feet above grade
- ii. The Site Plan must show the limits of the area proposed for soil replacement.
- iii. The fill is to settle a minimum of six (6) months and extend through a freeze/thaw cycle as approved by the Department.
- e. If the proposal is acceptable to the Department, the design professional must:
 - i. Supervise the process for the installation of the fill pad.
 - ii. Notify the Department prior to the start of the fill pad installation and upon its completion. The Department will inspect the pad to verify the pad's depth and the Run of Bank fill material. Inspection of the provided deep test holes may be required.
 - iii. Submit the Site Evaluation Form, site plan, and requisite fee when ready for the soil percolation of the pad after stabilization. The Department must witness the percolation testing

I. Slopes.

- 1. Careful selection of the absorption area is essential to ensure proper operation of the OWTS. Absorption trenches should not be installed on slopes exceeding fifteen (15) percent and the absorption trench spacing shall be six (6) feet on center.
 - a. For proposed areas with slopes exceeding fifteen (15) percent, but not greater than twenty (20) percent, the Department will address the situation using one of the following criteria:
 - i. For individual lots NOT on the New York City Watershed, the Department will make an inspection to evaluate the actual conditions and ensure that all areas considered for septic to avoid the slope issue. If in the Department's determination that a more suitable area does not exist for septic, the Department will review and handle the application, provided that special design considerations are met. As part of the review, the Department reserves the right to request additional information as required, in the Commissioner of Health's Policy Memo on Slope Variances, dated May 5, 2004.
 - ii. For individual lots on the New York City Watershed, the Department will make an inspection, generally in conjunction with the NYCDEP, to evaluate the actual conditions and ensure all areas are considered for septic to avoid the slope issue. If it is determined that more suitable areas do not exist for septic, the Applicant will be advised that they must first apply for a slope variance from the NYCDEP. If the NYCDEP approves the slope variance, the Department will review and handle the project using Criteria # i.
 - iii. For NEW realty subdivisions, the Department SHALL NOT consider any new lots to be created with septic areas with slopes exceeding fifteen (15) percent as per Section 75-A.4(a)(1), 10NYCRR Appendix 75A and Chapter 873, Article X, Section 873.1001(1) of the Laws of Westchester County, NY. The Applicant may appeal the denial and request variance from the slope requirements, but must meet the criteria set forth on the Commissioner of Health's Policy Memo, dated May 5, 2004.
 - iv. For realty subdivisions previously approved by this Department, the Department must honor the approval and therefore will work with the Applicant to attain approval for the individual lot(s). This will necessitate an inspection similar to those described above to evaluate the actual conditions and ensure that all areas are considered for septic to avoid the slope issue.

2. Special design considerations will be required for the final OWTS layout should the Department allow for the installation of the OWTS in grades exceeding fifteen (15) percent but not greater than twenty (20) percent. The installation of absorption trenches on sloped sites is recommended (instead of site modification, such as cut or fill, to reduce site slopes) because in-situ installation of absorption trenches will maintain soil structure and minimize site disturbance, compaction, and erosion. Absorption trenches can be installed when acceptable soil conditions exist and trench separation as follows is used:
 - a. The in-situ soil must have a percolation rate of one (1) to sixty (60) minutes per inch.
 - b. Provide the required minimum depth of seven (7) feet of usable soils as per section 4(c)(2).
 - c. Absorption trench design (length) is in accord with Tables 4, and 7.
 - d. Absorption trenches shall be constructed parallel to contours and extend up to sixty (60) feet for gravity systems or one hundred (100) feet for pumped or dosed systems.
 - e. When approved by the Department, a minimum horizontal separation distance between parallel absorption trenches of 9' is to be provided when the minimum vertical separation distance from the bottom of any absorption trench to high ground water, ledge rock, or impermeable soil is 5'.

5.0 Design Standards

A. General.

1. All sewage shall be discharged into a septic tank or enhanced treatment unit followed by a subsurface treatment system.
2. Roof, footing, garage, cellar, surface water drainage, and multi-person hot tubs equipped with recirculation and disinfection must be excluded from the onsite wastewater treatment system.

B. Sewage Design Flows.

1. Onsite wastewater treatment system designs for new residential homes shall be based upon a minimum daily sewage flow of 110 gallons per day per bedroom. For two (2) and three (3) family homes and single family homes each with more than one kitchen, an additional 25 percent of the design flow for the bedrooms in each additional unit(s) shall be included for each additional kitchen facility.
2. For residential group homes, the design basis is 110 gallons per day per client and fifteen (15) gallons per day (eight (8) hour shift) per staff member; lower group home design flows may be accepted upon justification from the design professional and the appropriate sponsoring agency.
3. Other design flows listed in Table 2 may be applicable for systems receiving wastewater from dwellings equipped with older plumbing fixtures and waterless toilets.

C. House Sewer/Traps.

1. In designing the house sewer, the local plumbing code shall apply. Ninety (90) degree elbows are not permitted. All forty-five (45) degree bends shall have an accessible cleanout and the cleanout(s) must be the same size as the house sewer. House sewers shall be laid on a firm foundation at a minimum grade of one-quarter inch per foot. The minimum diameter for a house sewer is four (4) inches. If a house trap is installed, such trap shall be provided with a clean-out and a fresh air intake having a minimum diameter one-half the size of the sewer to which it connects.
2. House sewer construction, including materials, shall comply with the applicable sections of the New York State Building and Plumbing Code. Acceptable materials for house sewers include, but are not limited to, cast iron, ductile iron pipe, and sewer grade PVC.
3. House sewer lines and water service lines shall be separated by not less than five (5) feet horizontally. If this condition cannot be met, the bottom of the water service shall be at least eighteen (18) inches above the top of the sewer line. If a common trench is used, the water service shall be laid on a solid shelf excavated at one side of the common trench. Where the lines must cross, there must be a minimum separation of eighteen (18) inches between the outside of the water main and the outside of the sewer. This shall be the case where the water service is either above or below the sewer.
4. Suction waterlines from wells shall never cross under house sewers or any other component of the OWTS.

D. Septic Tanks. (Figure 4)

1. General Information.

- a. Septic tank capacities shall be based upon the number of household bedrooms. An expansion attic may be considered as an additional bedroom and discussions with the Department may be required to determine the number of bedrooms for system design. Table 3 specifies minimum septic tank capacities and minimum liquid surface areas. For residences having more than six (6) bedrooms or for multi-family housing, prior to the submission of the construction permit application, the design professional should confer with the Department for septic tank sizing.
- b. The following must be excluded from the septic tank:
 - Roof and footing drainage
 - Cellar and garage drains
 - Cooling water
 - Materials not readily degraded (see below)
 - Sump pump discharge
 - Large hot tubs
- c. All toilet, bathroom, kitchen, and laundry waters from a household must be discharged into the septic tank. Household chemicals such as bleaches, disinfectants, cleansers, etc., when used in normal household applications should not disrupt septic tank or absorption system operation. Materials not readily degraded (e.g. paper towels, newspaper, wrapping paper, rags, sanitary napkins, disposable diapers, coffee grounds, cooking fats/oils, bones, facial tissues, and cigarette butts) should not be flushed into septic tanks. These products do not degrade in the tank and can clog inlets, outlets, and the absorption system. Examples of other products which must not be discharged into septic tanks include: anti-freeze, pesticides, herbicides, oil, gasoline, paint, turpentine, and concentrated acids or alkalis (e.g. sulfuric acid or sodium hydroxide)
- d. Brine backwash waste from household water softening equipment at low discharge rates may be discharged into the septic tank. If a water softening system is to discharge to an OWTS, the system should be programmed to backwash based on demand/usage as opposed to backwashing on an automatic timer.
- e. Effluent filters, when installed, protect absorption areas from premature clogging and failure due to the release of non-settleable solids and/or non-degradable flushed materials from the septic tank. Effluent filters are installed on the outlet of the septic tank or the last septic tank in-series before distribution to the absorption area. Installation of septic tank effluent filters is an inexpensive method to enhance the effectiveness of a septic tank. When an effluent filter is installed there should also be a manhole riser installed extended to the ground surface for access to the filter for maintenance. It is required to use filters that have been certified under NSF Standard 46. Effluent filters should be inspected about every four (4) to six (6) months for signs of clogging; however, unless premature clogging of the filter is detected, filters should only need to be cleaned during routine septic tank maintenance and inspection.
- f. Garbage Grinders are not permitted.

2. Design and Installation.

- a. General Requirements. The following applies to all septic tanks regardless of material:

- i. A minimum liquid depth of forty-eight (48) inches. The maximum depth for determining the allowable design volume of a tank shall be sixty (60) inches. Deeper tanks provide extra sludge storage, but no credit shall be given toward design volume.
- ii. The minimum distance between the inlet and outlet of the septic tank shall be six (6) feet. All tanks shall meet the minimum surface area requirement for the specific design volume specified in Table 3. The effective length of rectangular tanks should not be less than two (2) nor greater than four (4) times the effective width.
- iii. Tanks must be watertight, constructed of durable material not subject to corrosion, decay, frost damage, or cracking. After installation, all septic tanks shall be able to support at least 300 pounds per square foot (psf).
- iv. Driveways or other facilities shall not be constructed above septic tanks unless specially designed and reinforced to safely carry the load imposed. All septic tanks under pavement shall be specified to meet AASHTO H-20 loading conditions and shall have risers and manholes to finished grade for all access ports.
- v. The top of the tank should have a minimum fill cover of six (6) to twelve (12) inches. Where manholes are more than twenty-four (24) inches below final grade, an extension collar shall be provided over each opening. The maximum cover to the top of the tank to the final grade shall not exceed twenty-four (24) inches without an extension collar. . If the cover exceeds twenty-four (24) inches Extension collars shall not be brought flush with the ground surface unless the cover can be locked to prevent tampering. Inspection openings should be provided at both the inlet and outlet ends of the septic tank and all compartments should have access covers for pumping and inspections.
- vi. Tanks shall have a top opening with a minimum of twenty (20) inches in the shortest dimension to allow entry into the tank.
- vii. Tanks shall have inlet and outlet baffles, sanitary tees or other devices to prevent the passage of floating solids and to minimize disturbance of settled sludge and floating scum by sewage entering and leaving the tank. Outlet designs such as gas deflection baffles are strongly recommended in all tanks. Inlet and outlet baffles shall extend a minimum of sixteen (16) and eighteen (18) inches respectively. The distance between the outlet baffle and the outlet shall not exceed six (6) inches. Baffles shall be constructed of a durable material not subject to corrosion, decay, or cracking.
- viii. There shall be a minimum of one (1) inch clearance between the underside of the top of the tank and the top of all baffles, partition and/or tees to permit venting of tank gases. The installation of gas baffles at the outlet end of the tank is encouraged. Multi-chamber and multi-tank systems shall also be designed to permit the venting of tank gases.
- ix. Tanks shall be placed below the frost layer on at least a three (3) inch bed of sand or pea gravel to provide for proper leveling and bearing. Additional instructions provided by the manufacturer shall also be followed.
- x. There shall be a minimum drop in elevation of two (2) inches between the inverts of the inlet and outlet pipes.
- xi. Septic tanks may be forced toward the ground surface during cleaning or dewatering operations if they have been installed within the ground water zone. Septic tanks installed in groundwater should be anchored to prevent "floating." Septic tanks installed in groundwater and not properly anchored should not be completely dewatered.

- xii. All septic tanks shall be installed in accordance with the manufacturer's requirements and/or recommendations.
- b. Multi-compartment tanks or tanks in series.
 - i. Dual compartments are recommended for all tanks and shall be required on all tanks with an interior length of ten (10) feet or more.
 - ii. The first compartment or tank (inlet side) shall account for 60-75 percent of the required total design volume.
 - iii. The baffle separating the compartments shall extend from the bottom of the tank to at least six (6) inches above the invert of the outlet pipe. The baffle separating the tank compartments shall terminate at least one (1) inch below the underside of the tank roof to permit venting of tank gases.
 - iv. Compartments shall be connected by a four (4) inch vertical slot at least 18 inches in width, a six (6) inch elbow, or two (2) four (4) inch elbows located at a distance below the liquid level equal to one-third the distance between the invert of the outlet and the bottom of the tank.
 - v. Each compartment shall have at least one (1) manhole opening and a visual access opening above the inlet/outlet baffle. A manhole opening may replace a visual access opening. A manhole opening above the inlet/outlet baffle satisfies the requirement.
 - vi. Tanks in series shall have a minimum drop in elevation of two (2) inches between the inverts of the inlet and outlet pipes within each tank. Tanks in series should be connected by a single pipe with a minimum diameter of four (4) inches.
 - vii. The volume and surface area for meeting the requirements of Table 3 shall be based upon the total volume and surface areas of all the tanks and chambers.
- c. Pre-cast Reinforced Concrete Tanks.
 - i. Concrete shall have a minimum compressive strength of 2,500 pounds per square inch (psi) at 28 days set; 3,000 psi concrete is recommended as a minimum.
 - ii. Wall thickness shall be a minimum of three (3) inches unless the design has been certified by a New York licensed professional engineer as complying with all appropriate requirements for thin-wall construction. All walls, bottom and top shall contain reinforcing to assure support for 300 psf.
 - iii. All joints shall be sealed such that the tank is watertight; joints below the liquid level must be tested for water tightness prior to backfilling.
 - iv. Sanitary tees for pre-cast or prefabricated concrete septic tanks should be cast or built into the tank wall. Built-in baffles are preferred for better distribution of effluent and for more effective velocity reduction.
- d. Cast-in-place Concrete Tanks.
 - i. Concrete shall have a minimum compressive strength of 2,500 pounds psi at 28 days set; 3,000 psi concrete is recommended as a minimum.
 - ii. The walls and floor of cast-in-place tanks shall be poured at the same time (monolithic pour.)
 - iii. The walls, floors and roof shall be at least three (3) inches thick with adequate reinforcing to assure support for 300 psf. Unreinforced walls and floor shall be a minimum thickness of six (6) inches.
 - iv. Access covers shall contain reinforcing to assure support for 300 psf.
 - v. Tanks with a joint below the liquid level must be tested for water tightness prior to backfilling.

- e. Fiberglass and Polyethylene tanks. These tanks must meet the following additional requirements:
 - i. All walls, floor, roof and access covers shall assure support for 300 psf.
 - ii. These tanks shall not be installed in areas where the groundwater level can rise to the level of the bottom of the septic tank unless the manufacturer has an installation feature or method, which prevents the tank from floating. The manufacturer's installation requirements and/or recommendations must be followed.
 - iii. Particular care must be taken during installation, bedding, and backfilling of these units so as to prevent damage to tank walls. The manufacturer's installation instructions shall be followed.
 - iv. All tanks should be sold by the manufacturer completely assembled. If, because of size, the tank is delivered to the site in sections, all joints shall be sealed with watertight gaskets and shall be tested for water tightness after installation, and prior to backfilling. Tanks with a joint below the liquid level must be tested for water tightness prior to backfilling.
 - v. Inlet and outlet baffles or sanitary tees should be installed by the manufacturer or supplier or the manufacturer shall provide appropriate tools, equipment and/or instructions for installing the inlet and outlet. The manufacturer's installation recommendations shall be followed.
3. Inspection and Maintenance.
- a. The contents of the septic tank should be pumped out by a Westchester County licensed septage hauler every two (2) to three (3) years, or whenever any of the following conditions apply:
 - i. The total depth of sludge and scum exceeds 1/3 of the liquid depth of the tank,
 - ii. The bottom of the scum layer is within three (3) inches of the bottom of the outlet baffle, or
 - iii. The top of the sludge layer is within ten (10) inches of the bottom of the outlet baffle.

NOTE: Property owners should check with their respective municipality as local regulations regarding pump out frequency may apply.
 - b. Septic tanks should be inspected annually to determine structural integrity and ensure that the inlet and outlet baffles or tees are in place. All baffles, inlet and outlet piping should be inspected using a strong light and repairs made if necessary.
 - c. The effluent filter and/or gas deflection baffle should be inspected and cleaned following the pump-out of the tank.

NOTE: DO NOT ENTER A SEPTIC TANK, IT CONTAINS TOXIC GASES AND THE LACK OF OXYGEN CAN CAUSE GAS ASPHYXIATION AND DEATH.

E. Pump and Dosing Chambers. (Figures 5 and 6)

- 1. Dosing is recommended for all systems as it promotes better treatment of wastewater and system longevity. The use of a septic pump or dosing device (i.e. flout) permit the rapid distribution of effluent throughout the absorption system followed by a rest period during which no effluent enters the system.
- 2. Septic pumps are required where the absorption area is located up gradient from the dwelling/building.
- 3. The maximum length of each absorption lateral used in conjunction with these methods shall be one hundred 100 lineal feet.

4. For systems utilizing absorption fields, a dose volume of approximately 0.5 gallons per lineal foot of fields shall be used.
5. In absorption fields, at minimum single dosing device is required when the total absorption trench length exceeds 500 lineal feet. For absorption trench lengths exceeding 1,000 lineal feet, automatic alternate dosing is required. Each alternate dosing device shall discharge to an equal absorption area.
6. The use of manually operated septic pumps or flouts is not acceptable. Only septic pumps designated by the manufacturer for use as sewage effluent pumps shall be used.
7. Pump chambers shall be equipped with an audio/visual high level alarm, located in a conspicuous location to alert the homeowner/resident of a pump malfunction. Proof of the electrical underwriter's inspection is required for final approval from the Department. Flout dosing systems are normally designed to include an overflow pipe discharging to the distribution laterals. An audio/visual alarm may be required to be installed in a dosing/siphon tank.
8. When the pump discharge pipe is not buried below the frost line, the pipe shall be drained between doses or adequately insulated to prevent freezing. Draining the pump discharge line back into the pump chamber between doses is preferred over insulating. Draining the force main can be accomplished by one the following:
 - a. Using a solenoid with a drain port on the discharge side within a pump chamber
 - b. Elimination of the check valve at the pump shall be at the discretion of the Department.
 - c. Providing a "weep hole" in the pump discharge line inside the tank and downstream of the pump check valve
9. Pump chambers shall be sized to provide a minimum of one (1) day's design flow storage between the high level alarm and the inlet of the chamber. One day's storage available is preferred; however, duplex pumps with individual audible and visual alarms and provision of a permanent back up power may be used in-lieu-of a single effluent pump and one (1) day's reserve storage capacity. Immediate repair or replacement is necessary whenever either of the pumps malfunction.
10. Pump chambers shall be placed below the frost layer on at least a three (3) inch bed of sand or pea gravel to provide for proper leveling and bearing. Additional instructions required of the manufacturer's installation requirements must also be followed.
11. Pump chambers installed below the maximum ground water table are subject to the buoyancy effect of the displaced volume of the station. Any buoyancy effect shall be addressed in the design of pump chambers (for instance, anchoring) to prevent damage to the inlet and outlet piping and the pump chamber integrity.
12. The top of the pump chamber should have a minimum fill cover of six (6) to twelve (12) inches. Where manholes are more than twelve (12) inches below final grade, an extension collar shall be provided over each opening. Extension collars shall not be brought flush with the ground surface unless the cover can be locked to prevent tampering. Inspection openings should be provided at both the inlet and outlet ends of the pump chamber and all compartments should have access covers for pumping and inspections.
13. The construction/operation of all dosing devices shall be inspected by the Department prior to placing the system into operation.

F. Distribution Boxes (Figure 7)

1. A distribution box evenly distributes wastewater effluent to subsurface absorption areas or seepage pits.
2. Distribution boxes shall be constructed of concrete and the concrete shall have a minimum compressive strength of 2,500 pounds per square inch at 28 day set.
3. For accessibility, it is necessary that the distribution box be located and have a removable cover not more than twelve (12) inches below grade. Where, due to site conditions, a distribution box must be greater than twelve (12) inches below the surface, an extension collar shall be installed to within twelve (12) inches of the surface.
4. All outlets from the distribution box shall be at the same level to insure the even distribution of flow.
5. To minimize frost action and reduce the possibility of movement after the distribution box has been installed, distribution boxes must be set on a bed of sand or pea gravel at twelve (12) inches thick. In addition, the bottom of the box must be set level and supported solidly to below the frost line and the footing is to extend to 42 inches below ground level.
6. All distribution boxes shall be equipped with a 90 degree elbow facing down on the inlet pipe and a baffle.
7. The drop between the inlet and outlet inverts shall be at least two (2) inches.
8. There shall be a minimum two (2) inch clearance between the inverts of the outlets and the bottom of the box to prevent short circuiting and reduce solids carry-over.
9. Speed leveler devices on the outlets are recommended to ensure equal flow to each lateral.
10. Distribution boxes should be inspected periodically to ensure equal flow to all absorption lines and to check for solids leaving the septic tank.

G. Junction Boxes (Figure 8)

1. Junction boxes are used on sloping sites to direct effluent to distribution lines parallel to site contours. Junction boxes maximize flow to the uppermost absorption trenches and produce sequential trench distribution with the uppermost trenches being utilized until biomat buildup causes overflow to the next down gradient trench(es).
2. Junction boxes shall be constructed of concrete and the concrete shall have a minimum compressive strength of 2,500 pounds per square inch at 28 day set.
3. For accessibility, it is necessary that the junction box be located and have a removable cover not more than twelve (12) inches below grade.
4. To minimize frost action and reduce the possibility of movement once the junction box is installed, junction boxes must be set on a bed of sand or pea gravel at twelve (12) inches thick and the bottom of the box must be set level.
5. The invert of all outlets (located at the direct connections to distribution lines) within each junction box shall be at the same elevation to assure uniform distribution at a given contour line.
6. The inverts of the outlets should at least two (2) inches above the bottom of the junction box to prevent short-circuiting and reduce solids carry-over.
7. The drop between the junction box inlet and distribution line inverts should routinely exceed two (2) inches.
8. The drop between the junction box inlet and junction box overflow (the connection to the next junction box or distribution line) shall be at least one (1) inch and the slope of the connection pipe shall be at least 1/32 inch per foot. The invert of the overflow should be at least 1-1/4 inches above the outlet inverts.

6.0 Conventional Subsurface Treatment Systems.

A. General.

1. All wastewater effluent from septic tanks shall be discharged to a subsurface treatment system.
2. The minimum distances that all treatment system components shall be separated from other site features are listed in Table 1.
3. A minimum depth of five (5) feet of useable soil for conventional systems shall be provided between the lowest part of any subsurface treatment system and ledge rock, impermeable soil, or high seasonal groundwater level with or without site drainage improvements.
4. Site surface drainage shall be diverted from the vicinity of the absorption area.
5. Subsurface treatment systems shall not be located under impervious surfaces, driveways or other areas subject to heavy loading, parts of buildings, or under above-ground swimming pools, unless approved by the Department. Seepage pits and other concrete structures may be located under impervious surfaces, and driveways and other areas subject to heavy loading, as approved by the Department.
6. The minimum length per system, based on the observed soil testing and the number of proposed bedrooms, shall be stated in the tables for the lineal foot of required absorption trench for each respective type of system.
7. The maximum length per lateral for a gravity system shall be sixty (60) feet and the maximum length per lateral for a dosed system shall be one hundred (100) feet.

B. Absorption Trench Systems. (Figure 9)

1. Site requirements. A minimum of seven (7) feet of useable soil shall exist above ledge rock, impervious soil, or high seasonal groundwater.
2. Absorption trenches should not be installed on slopes exceeding 15% and shall not be installed on slopes greater than 20%. For slopes exceeding 15% but not greater than 20%, absorption trenches shall be installed in in situ soil and comply with increased spacing requirements. Refer to Section 4(I)

NOTE: Properties **located on the New York City Watershed** must also comply with the rules, regulations and standards of the New York City Department of Environmental Protection (NYCDEP).

3. Design criteria.
 - a. The required lengths of an absorption trench system based strictly on bedroom count are listed in Table 4. For projects not based strictly on bedroom count, the required lengths of an absorption trench system can be calculated from Table 5 utilizing the observed percolation testing and the applicable application rate.

NOTE: No conventional absorption trench system shall be smaller than the requirements for a two (2) bedroom system, based on NYSDOH Appendix 75-A, or 125 linear feet of absorption trench, whichever is greater.

- b. The maximum trench depth shall be thirty (30) inches below ground surface.
- c. The maximum trench width for design purposes shall be twenty-four (24) inches.
- d. Adjacent trenches shall be separated by at least four (4) feet of undisturbed soil (i.e. spaced six (6) feet on center). Individual trenches shall be constructed parallel to the final ground contours with trench bottoms as level as possible.

4. Materials.

- a. Perforated distributor pipe shall be used in the trenches. Solid (non-perforated) pipe shall be used between the distribution box and the trenches. Perforated pipe shall be made of rigid or corrugated plastic and be labeled as fully meeting ASTM standards for use in septic systems. Corrugated plastic pipe delivered in coils shall not be used in the construction of absorption trenches.
- b. Aggregate shall mean washed gravel or crushed stone $\frac{3}{4}$ to $1\frac{1}{2}$ inches in diameter. Large diameter or finer substances and run of bank gravel are not acceptable.
- c. The aggregate shall be covered with a material that prevents soil from entering the aggregate after backfilling, yet must permit air and moisture to pass through. The preferred material for covering the aggregate is a permeable geotextile. Untreated building paper or a four (4) inch layer of hay or straw is acceptable. Polyethylene and treated building paper are relatively impervious and shall not be used.

5. Construction.

- a. Trench locations and depths should be marked by stakes before the trenches are excavated. The natural surface shall not be significantly disturbed. If the site is regraded or similarly disturbed, the soil shall be allowed to stabilize and new percolations tests conducted as required by the Department.
- b. Absorption trench construction is not allowed in wet, frozen, frost, or snow covered soil.
- c. The trench depth shall be as shallow as possible, but not less than eighteen (18) inches or greater than thirty (30) inches. At least six (6) inches of aggregate is placed below the distribution line and two (2) inches above the line. Trenches shall be excavated to design depth with bottoms practically level. Heavy equipment shall be kept away from the field because the weight may permanently alter soil characteristics due to compaction, cause trench cave-ins, and/or misalign and break pipe.
- d. Trench bottoms are to be raked and immediately covered with at least six (6) inches of aggregate.
- e. Any smeared surfaces on the trench walls are to be raked. Distributor lines are carefully placed on the aggregate and covered with aggregate to a depth of at least (2) inches over the top of the pipe. The total earth cover over the aggregate should not exceed eighteen (18) inches in order to enhance natural aeration and nitrogen uptake by plant life. Additional aggregate may be required to bring the top of the aggregate to within six (6) to twelve (12) inches of the surface.
- f. In gravity distribution systems, the pipe shall be carefully sloped at between $\frac{1}{16}$ inch and $\frac{1}{32}$ inch per foot. In dosed distribution systems, the pipe shall set as level as possible. Grades shall be determined by an engineer's level, transit or carpenter's level.
- g. After the upper aggregate is placed, the geotextile, untreated building paper, hay or straw is to be immediately installed as the installation of the trench(es) continues. Extreme caution must be taken to preclude fines from entering the trenches.
- h. After installing the absorption system, trenches shall be backfilled as soon as possible to prevent rainwater from washing in and settling in the trenches. If the trenches cannot be backfilled immediately, the trench opening should be covered with an impervious material until backfilling occurs. The trenches SHALL NOT be backfilled without Department approval.
- i. The earth backfill used to cover the system shall be clean dry earth only and shall be tamped, puddle or rolled using only a hand roller for lawn making. At least four (4) inches of clean topsoil should extend over the entire absorption area and must be immediately seeded and mulched.

C. Cut and Fill Systems.

1. A cut and fill system is an absorption trench system installed on site where impermeable soil overlays a permeable soil. These systems are generally used where the impermeable overlaying soil is one (1) to five (5) feet deep.
2. Site Requirements. Cut and fill systems may be used where all the following conditions are found:
 - a. A soil with a percolations rate slower than 60 minutes per inch, such as clay or clay loam, overlays a useable soil with a percolation rate faster than 60 minutes per inch;
 - b. At least five (5) feet of useable soil is available beneath the tight soil;
 - c. All minimum vertical and horizontal separation distances can be maintained as described in Table 1.
3. Design Criteria.
 - a. It shall provide for the removal of the overlaying unusable soil and replacement by soil having a percolation rate comparable with the underlying soil. The excavation method selected should assure that the useable underlying soil is not made un-useable through compaction.
 - b. An absorption trench system is designed as described in Section 8.B of these Rules and Regulations
 - c. The required length of absorption trench is based upon the percolation of the underlying soil or the fill material, whichever has the slower percolation (lower permeability.)
 - d. Stabilization of the fill is required prior to conducting percolation tests and constructing absorption trenches if the bottoms of all trenches are not in or at the underlying useble soil.
 - e. Fill greater than three (3) feet in depth is to be stabilized by natural settlement for at least six (6) months including at least one (1) freeze/thaw cycle.
4. Construction.
 - a. The area excavated and filled must provide at least a five (5) foot buffer in each direction beyond the trenches.
 - b. The soil placed above the trenches shall have a percolation rate faster than sixty (60) minutes per inch.
 - c. Original surface material (the overlaying impervious soils) shall not be used as backfill above the trenches.
 - d. The surface area of the fill system must be mounded and graded to enhance the runoff of rainwater from the system and seeded to grass.
 - e. On sloped sites, a diversion ditch or berm shall be constructed on the uphill side of the absorption area to prevent surface runoff from entering the fill.

D. Seepage Pits. (Figure 10)

1. General.
 - a. A seepage pit, sometimes called a leaching pit, leaching pool, or incorrectly a cesspool, is a covered pit with an open-jointed or perforated lining though which septic tank effluent seeps into the surrounding soil.
2. Site Requirements.
 - a. If soil and site conditions are adequate for absorption trenches, seepage pits shall not be used.
 - b. A minimum five (5) foot vertical separation must exist between the bottom of any seepage pit and the high groundwater level, ledge rock, or other impervious layer.

- c. Sufficient area must be available to provide three (3) times the effective diameter between pits (this includes the undisturbed soil between pit excavations) and all required horizontal separation distances from any pit as listed in Table 1 shall be met.

3. Design Criteria.

- a. Two (2) percolations tests (corresponding to each deep test hole) shall be made for each pit: one (1) at the halfway depth and the other at the bottom of the seepage pit and the results are averaged. The design of seepage pits are not allowed when the average percolation test result is faster than one (1) minute per inch or slower than sixty (60) minutes per inch.
- b. The required “effective seepage pit area” for projects based strictly on bedroom count can be obtained from Table 6. For projects with design flows not strictly based on bedroom count, the effective area can be calculated using the following equation:

$$\text{Effective Area} = (3.14) \times (\text{effective diameter}) \times (\text{effective depth})$$

- i. The effective diameter of a pit includes the outside diameter of the proposed pit plus the first six (6) inch annular ring of 2 ½ to 4 inch aggregate.
- ii. The effective depth is measured from the invert of the seepage pit inlet to the floor of the pit.
- iii. No allowance for infiltration area is made for the bottom area of the pit.
- c. Linings may be precast concrete, cast-in-place concrete, or built in place with unmortared hollow cinder or concrete blocks. Concrete shall have a minimum compressive strength of 2,500 psi and 3,000 psi is recommended. Material with comparable structural strength, determined in accordance with commonly accepted sewage construction standards, principles or practices, may be allowed on an individual basis to prevent unreasonable hardship, provided public health is not prejudiced.
- d. Pits shall be designed with sufficient structural stability to withstand lateral soil forces as well as vertical loads.
- e. When multiple pits are used, each pit shall have an approximately equal effective sidewall absorption area. A distribution box shall be included in the design to provide equal flow to each pit. Seepage pits shall not be connected in series. Multiple pits installed on level ground must have equalization lines which shall be located at half the pit depth and be a minimum of four (4) inch PVC pipe.
- f. The separation distance between the outside edges of seepage pits shall be three (3) times the effective diameter of the largest pit. This separation is measured as the undisturbed soil between pit excavations.
- g. On sloped sites, a diversion ditch or berm shall be constructed uphill from the pit(s) to prevent surface runoff from entering the pit(s).

4. Construction.

- a. The pit shall be excavated in accordance with its design dimensions (i.e. depth and sidewall area) and the bottom shall be as level as possible. The bottom and sidewall areas shall be raked to minimize smearing and enhance infiltration.
- b. At least a twelve (12) inch layer of washed aggregate, ¾ to 2½ inch in size, shall be placed over the entire bottom and leveled.
- c. If footing rings are needed, they shall be installed on the leveled bottom layer aggregate. Perforated rings shall be installed upon the footing rings or directly upon the level bottom layer or aggregate. Additional rings shall be installed as needed.

- d. The annular space between the perforated rings and the pit sidewall shall be filled with 2 ½ to 4 inch washed aggregate to the bottom of the inlet pipe elevation. A minimum four (4) inch diameter water-tight inlet pipe shall be installed at a minimum slope of 1/8 inch per foot. The annular ring of aggregate shall be covered by a permeable geotextile, untreated building paper, or four (4) inch layer of hay or straw to prevent soil from filling the aggregate voids.
- e. A reinforced concrete pit cover capable of supporting 300 pounds per square foot at its weakest point shall be installed. A manhole and removable cover with an opening at least 20 inches in diameter shall be provided. A manhole cover location marker (i.e. treated lumber or concrete post) should be installed above the top of the cover to finished grade for future maintenance. Seepage pits installed under impervious surfaces, driveways, parking areas and other areas subject to heavy loading are to be designed with a H-20 load rating and shall be provided with pre-cast risers and metal manhole covers to finished grade.
- f. Permeable soil shall be used as backfill to fill the remaining excavation to grade with some mounding to allow for settlement. The upper six (6) inches of the permeable backfill should be topsoil and immediately seeded and mulched, unless otherwise approved.
- g. Laterals leading to each seepage pit must be at least (4) four inches in diameter with a minimum slope of 1/8 inch per foot.

7.0 Gravelless Trench Systems.

A. Gravelless Absorption Systems.

1. General.
 - a. Gravelless trench products must be designed to distribute effluent and provide at least the equivalent soil surface area for wastewater treatment as a conventional absorption trench without the use of gravel or stone aggregate. All gravelless systems must also be capable of withstanding typical construction equipment and residential use loads with deformation. Gravelless trench products are **not** allowed for new construction within the NYCDEP watershed area.
2. Site Requirements.
 - a. These products may be used as an alternative to conventional gravel or stone absorption trenches in wastewater treatment systems. All other treatment system design requirements stated in these Rules and Regulations shall apply.
3. Design Criteria.
 - a. Unless otherwise specified, all absorption trench system designs incorporating gravelless products shall have the same trench length as a conventional (24-inch wide) absorption trench as listed in Table 4 or as calculated from Table 5. In order for a gravelless trench system to be approved by the Department, the proposed gravelless product must be listed on the New York State Department of Health's list of Acceptable Gravelless and Alternative Aggregate Products.
 - I. Open-bottom gravelless chambers, as per NYSDOH 75A Table or latest revisions. Absorption area designs utilizing these products may use a 25% reduction in total absorption trench lengths listed in Table 4. For projects with design flows based strictly on the bedroom count, the required absorption trench lengths are stated in Table 4. For projects with design flows not based strictly on bedroom count, the required absorption trench lengths can be calculated from Table 5 utilizing the observed percolations test results, applicable application rate and the location of the subject property. For those properties located OUTSIDE of the New York City Watershed, the calculated absorption trench length will be 75% of the required conventional absorption trench listed in Table 4 or 94 linear feet, whichever is greater. To qualify for the 25% reduction, the product must demonstrate the following features:
 - a) Minimum soil infiltration bottom area of 1.6 square feet per linear foot, and,
 - b) A minimum volumetric capacity of 7.5 gallons per linear foot, and
 - c) Open sidewall area for aeration and infiltration

II. Gravelless geotextile sand filter, as providing six (6) square feet per lineal foot rating as per NYSDOH 75A Table, for 2015 or latest edition. For projects with design flows based strictly on the bedroom count, the required absorption trench lengths are stated in Table 7. For projects with design flows not based strictly on bedroom count, the required absorption trenches can be calculated from Table 5 utilizing the observed percolation test results, applicable application rate and the location of the subject property. Absorption area designs utilizing these products do not allow for a reduction in the total absorption trench lengths listed in Table 7.

4. Special Condition.

- a. The gravelless trench length reductions may not be further reduced by the trench length reductions allowed for Enhanced Treatment Units (ETUs) as specified in Section 8.0 of these Rules and Regulations.

5. Construction.

- a. Gravelless absorption system products shall be installed in conformance with the manufacturer's instructions because of the proprietary design of some products.
- b. The gravelless trench side walls shall be separated by a minimum of four (4) feet of undisturbed soil.

8.0 Enhanced Treatment Units (ETUs) and Aerobic Treatment Units (ATUs)

A. General Information

1. Enhanced Treatment Units (ETUs) are pre-treatment units that provide enhanced biological and physical treatment of wastewater to reduce the amount of biological oxygen demand (BOD) and total suspended solids (TSS) of wastewater effluent prior to discharge to a subsurface soil absorption area. With reduced BOD and TSS, the probability of biological “clogging” of absorption areas is greatly reduced. ETUs may also reduce the amount of other wastewater pollutants, such as total nitrogen or phosphorus.
2. To be approved, an ETU must comply with the standards for a Class I unit as described in the National Sanitation Foundation (NSF) International Standard 40 or equivalent testing. ETUs are listed as Class I Standard 40 or Standard 245 units with NSF International. Class I Standard 40 units must meet effluent limits of 25 mg/L BOD and 25 mg/L TSS to be listed by NSF. Standard 245 units are also tested and have a label indicating such compliance to meet Standard 40 criteria.
3. Aerobic Treatment Units (ATUs) are units that provide for the biological decomposition of the organic portion of the wastewater by mechanical aeration of the wastewater prior to discharge to a subsurface soil absorption area.
4. All ETU and ATU installations require a Declaration be filed in the Westchester County Land Records office and proof of such filing submitted with a copy of the recorded declaration the application for Construction Compliance for final approval of the OWTS by the Department. Draft Declarations must be submitted for review and approval by the Department prior to the filing of the Declaration in the Land Records office. This Declaration documents the installation of the ETU/ATU and acknowledgement of the ETU/ATU’s required maintenance and sampling. This requirement is to be clearly indicated on the construction plans.
5. The volume of liquid wastewater discharged by ETUs and ATUs are equal to the volume discharged by a properly sized septic tank.
6. ETUs and ATUs are generally more expensive than a septic tank and typically require electrical power to operate pump(s), air compressor(s), and/or other devices(s).
7. Regular maintenance of ETUs and ATUs is imperative to assure proper system operation for effective long-term wastewater treatment and effluent quality and the owner must present an executed maintenance agreement prior to the issuance of construction compliance.
8. All plans involving ETU and ATU installations must include the manufacturer’s requirements for the operation, maintenance, monitoring and testing of the respective unit.
9. All wastewater effluent from ETUs/ATUs shall be discharged to a subsurface treatment system.

NOTE: The reduction of the absorption trenches for systems utilizing ETU/ATU is NOT applicable for new construction on properties located within the New York City watershed.

B. ETU Design Criteria.

1. The minimum rated capacity of these units shall be 1000 gallons or the minimum septic tank capacity as determined from Table 3, whichever is greater.
2. ETUs shall have an effluent filtering mechanism as part of the manufactured product or an effluent filter with a label indicating such compliance with NSF Standard 46 or equivalent installed on the system outlet prior to discharge to the absorption area.
3. Unless otherwise specified, the absorption system that follows an ETU shall be designed in the same manner as it would for septic tank effluent.

4. The required lengths of an absorption trench system based strictly on bedroom count are listed in Table 4. For projects not based strictly on bedroom count, the required lengths of an absorption trench system can be calculated from Table 5 utilizing the observed percolation testing and the applicable application rate.
5. The absorption trench reduction shall not be further reduced by the trench length reduction allowed for qualifying systems. To restate, combining the absorption trench reduction credits for ETUs and qualifying systems is not allowed.
6. The useable area shall contain absorptive natural soils for depth of not less than four (4) feet to groundwater and/or ledge rock with no site improvement. Within the useable area, the minimum depth of two (2) feet of absorptive soils shall be provided between the bottoms of the absorption system and groundwater and/or ledge rock.
7. The operation of the ETU equipment to maintain continuous treatment is required.

C. ETU/ATU Operation and Maintenance.

1. Since ETUs and ATUs are more complex than conventional septic tank systems, the Department shall have special requirements for their installation and maintenance;
 - a. Property owners must have in place for the life of the ETU or ATU a maintenance contract with the ETU or ATU manufacturer. A copy of the executed maintenance contract shall be submitted to the Department.
 - b. The ETU or ATU inspection and any manufacturer required effluent sampling must be performed in accordance with the manufacturer's specifications as indicated on the plans approved by the Department. The inspection and effluent sampling must be performed by an inspector certified to perform such activities by the manufacturer and the inspector must submit a copy of the inspection report and sampling results to the Department. Effluent sampling may be required as determined by the Department
 - c. All ETU effluent sampling results provided to the Department must include at a minimum the following parameters:
 - i. pH;
 - ii. Biochemical Oxygen Demand (BOD);
 - iii. Total Suspended Solids (TSS);
 - d. The analysis of the samples must be done by a certified New York State testing laboratory.
 - e. The property owner shall be responsible for both the maintenance inspection report being submitted to the Department as well as ensuring that required sampling is performed and sample results submitted to the Department within the required time period. The Department may require sampling not specified by the manufacturer.

D. Repairing an ETU or ATU system.

1. When ETU or ATU system does not function or operate as designed, the property owner must either repair or replace the failed component or system, just as a conventional septic system. Options include:
 - a. Repair or replace the component; however, this would require an approval from this Department. In some instances, manufacturer warranties may apply.
 - b. Replace the unit with another type of ETU or ATU; which would require an approval from this Department.
 - c. Replace with a conventional septic system, if feasible; which would require an approval from this Department.
2. Until an ETU or ATU system is repaired or replaced, the Department can order interim measures to protect public health and the environment.
3. Refer to Section 10.0 for further requirements for repair of ETU/ATU

9.0 Other Systems.

A. General.

1. In rare cases where a soil absorption area cannot be installed because water and plumbing are not available, power is not available or to resolve a failing system on limited sites, “wastewater containment” or a “no discharge” type system may be necessary or more practicable as a means of wastewater treatment or management. For these systems, the residual or accumulated wastes must be removed periodically by a Westchester County licensed septage hauler and disposed of in an approved manner. Approval for the installation of these systems by the Department is required.

B. Holding Tanks.

1. The use of holding tanks shall not be permitted for new home construction except where occupancy of a home is permitted while the sewage treatment system is under construction.
2. Holding tanks are not acceptable for long term use on year-round residences. Approval for the seasonal use only or as otherwise permitted by the Department, is required.
3. Tank size shall be based upon five (5) days design flow or 1,000 gallons, whichever is greater and meet the same construction requirements as a septic tank except that the holding tank shall not have an outlet.
4. The holding tank must be designed, installed and maintained in a way that promotes ease of access for pumping and cleanup. Holding tanks should be provided with access to grade. The access should be provided with a cover that is water tight and lockable to prevent inappropriate or unapproved access.
5. Holding tanks may need to be properly vented through the house vent stack to avoid odor issues and related nuisances.
6. All holding tanks shall be equipped with an alarm (audio and visual) located in a conspicuous place to indicate when a pump out is necessary.
7. A service contract agreement with a Westchester County licensed septage hauler is required as part of the permit and final approval of a holding tank.

10.0 Onsite Wastewater Treatment System Repairs

A. General.

1. Repair shall mean the replacement in kind and in situ of broken, damaged, or worn OWTS components of an existing OWTS to correct an OWTS failure, or impending failure, resulting in, or that may result in, the discharge of domestic sewage or other waterborne offensive material on to the surface of the ground, into a storm sewer, or into a watercourse or water body. Repair shall not apply to maintenance or servicing of OWTS components such as evacuation of a septic tank or servicing of an enhanced treatment unit (ETU) or aerobic treatment unit (ATU).
2. Emergency repair shall mean the repair or replacement in kind and in situ of broken or damaged tankage, including sewage pumps or other components of an onsite wastewater treatment system whose failure, at the discretion of the Department, poses an immediate threat to public health or safety.
3. Request for Approved Septic System and Well Records form must be completed and submitted to the Department for location of existing OWTS and/or wells previously approved by the Department. All required information such as the original and current section, block, and lot numbers and the years of original house construction and major additions for each property must be provided on the request form.
4. Repair Acceptance Application form must be completed and should be accompanied by the Westchester County Health Department approval, and submitted to the Department by a Westchester County Department of Health licensed septic system contractor for acceptance prior to the OWTS repair being performed.
5. Repairs are to be performed only by a Westchester County Health Department licensed septic contractor.
6. A repair cannot be performed on an OWTS that was subject to a previous repair and must instead be considered as a Remediation. Refer to Section 11.0 for Remediation requirements.

B. Routine OWTS Repair – In Kind In Situ

1. In situ is the area of the existing septic absorption trenches, not to exceed three and one half (3-1/2) feet from the location of the first or last absorption trench, or the area between existing septic absorption trenches
2. No person shall perform an in kind in situ repair without first having obtained written acceptance from the Department.
3. The Department may require pre-inspection of the area of the proposed septic repair prior to the issuance of the OWTS repair approval; on a case by case basis.
4. The Department shall require a minimum of one (1) business day notification upon completion of the approved repair and prior to the backfilling of the OWTS repair.
5. Upon completion of the septic repair work, the licensed septic system contractor shall be required to submit the Repair Acceptance Form to the Department within 30 days.

C. Emergency OWTS Repairs

1. The Department shall require the licensed septic system contractor to contact the Department with the nature of condition requiring the emergency OWTS repair and their intent to perform the repair.
2. If the stated condition meets the requirement of an emergency OWTS repair, as previously defined, a verbal acceptance shall be given to the licensed septic system contractor to perform the repair.
3. The licensed septic system contractor shall be required to submit the Repair Acceptance Form to the Department within two (2) business days of the completion of the emergency OWTS repair.

11.0 OWTS Remediation.

A. General Information

1. An OWTS remediation is the installation or replacement of an OWTS within an area not previously approved by the Department to correct an OWTS failure, or impending failure, resulting in, or that may result in, the discharge of domestic sewage or other waterborne offensive material on to the surface of the ground, into a storm sewer, or into a watercourse or water body; alteration or modification of an OWTS to correct a continuing OWTS failure or where OWTS repairs have not been satisfactory.
2. An OWTS remediation shall not include repairs which are defined as the replacement in kind and in situ of broken, damaged, or worn OWTS components of an existing OWTS to correct an OWTS failure, or impending failure, resulting in, or that may result in, the discharge of domestic sewage or other waterborne offensive material on to the surface of the ground, into a storm sewer, or into a watercourse or water body.
3. An OWTS remediation approval shall only be issued for projects where there are conditions on site which prevent an OWTS from meeting all aspects of these Rules and Regulations.
4. An OWTS remediation requires a site evaluation inspection, plans and applications be prepared and submitted by a licensed design professional and must receive Department approval prior to the commencement of the proposed remediation project.

B. Design Criteria

1. The basis for the design of an OWTS remediation shall be the criteria/requirements set forth in Sections 4 through 8 of these Rules and Regulations.
2. In those instances in which there is limited available septic area, the Department will require the design to incorporate the “best fit” system to ensure the maximum sewage treatment and minimize the potential for further and/or future septic failures.
3. In cases in which the existing conditions do not meet stated restrictive separation distances to individual drinking water wells, water bodies, NYSDEC wetlands, etc., the Department will require the existing separation distance remains unchanged by preventing further encroachment by the OWTS remediation.

12.0 Private Drilled Wells

A. General

1. Where a public water supply is not available, individual wells may be used to provide a potable water supply to the dwelling.
2. Each lot must have its own drilled well, and no well may serve more than one (1) lot unless it has been approved by this Department as a “private water supply” in accordance with the provisions of Article VII of the Westchester County Sanitary Code.
3. Only one (1) drilled well is permitted for each lot. For additional wells to be installed (domestic or irrigation), the attached Appendix B-1 requirements are to be included on the construction plans for any additional drilled well.
4. The use of individual wells for potable water supply to a parcel located within the corporate limits of a City, Village, Town, or public water supply district will not normally be approved (See Article X, Section 873.1051, and Article VII, Section 873.712 of the Westchester County Sanitary Code).
5. Only drilled wells are acceptable for potable water supply.
6. In accordance with the provisions of Article VII, Section 873.709, all drilled wells require an approval from this Department, even if used for purposes other than potable water supply (i.e. irrigation, cooling water).
7. All drilled wells are to be installed by a New York State Department of Environmental Conservation registered well driller.
8. Upon completion of disinfection and prior to placing the well in service, a construction compliance package must be submitted to the Department for review and approval and the well may not be placed into service until the Certificate of Construction Compliance is issued by the Department.

B. Well Location and Protection

1. All wells shall be located so that adequate access to the well for inspection, maintenance, repair, renovation, treatment, and testing is provided.
2. All wells shall be located where it is not subject to seasonal flooding or surface water contamination, or it shall be constructed in such a manner that seasonal floodwater cannot enter the well.
3. All wells shall be located up gradient of any potential or known source of contamination unless property boundaries, site topography, location of structures and accessibility require a different location. The minimum required horizontal separation distances from potential sources of contamination listed in Table 1 and New York State Department of Health, Part 5, Sub-part 5-1, Appendix 5B, Table1 must be maintained from the well.

4. The following additional minimum separation distances listed below shall be maintained to the well:

Property Line	10 feet
Foundation	10 feet
Swimming Pools	10 feet
Watercourses or waterbody	50 feet
Absorption trench	100 feet, 200 feet general path of drainage
Seepage Pit/Leach Galley	150 feet, 200 feet general path of drainage
Tri-Galley	150 feet, 200 feet general path of drainage
Flow Diffusor	100 feet, 200 feet general path of drainage

5. The top of the well casing must extend a minimum of eighteen (18) inches above grade and the ground surface immediately surrounding a well casing shall be graded to divert surface water away from the well. Concrete shall not be used for grading purposes.

C. Well Construction (Figure 11)

1. All drilled wells must be constructed in accordance with New York State Department of Health’s Part 5, Subpart 5-1, Appendix 5-B: Standards for Water Wells, May 2018 or latest revision, with the following exception:
 - a. All drilled wells in Westchester County must be constructed with a minimum of **fifty (50)** feet of casing measured from finished ground surface with a minimum of ten (10) feet extending into water-bearing rock

D. Well Yield and Water Flow

1. The minimum well yield for a single family residential dwelling is five (5) gallons per minute and the minimum corresponding pressure tank capacity shall not be less than 42 gallons.
2. A six (6) hour stabilized pump test is the minimum required test for all wells. For those wells which have a reported yield of less than five (5) gallons per minute (gpm) after a six (6) hour stabilized pump test, a twelve (12) hour pump test is required (See Appendix “B”).
3. All well yields of less than five (5) gpm, supplemental storage must be provided as follows:
 - a. Well yields of four (4) gpm require supplemental storage of 100 gallons
 - b. Well yields of three (3) gpm require supplemental storage of 200 gallons
 - c. Well yields of two (2) gpm require supplemental storage of 300 gallons

NOTE: The above capacities are in addition to any storage that may be available in the well or the hydropneumatic tank serving the premises.
4. Well yields of less than two (2) gpm are not acceptable.

E. Well Pumps: Construction, Installation, Repair and Maintenance

1. All water supply system equipment shall be easily accessible for maintenance or repair.
2. A pump shall be installed so that there are no unprotected openings into the interior of the pump or the well casing.
3. Drop pipe shall be: a continuous unspliced length, except where spliced and adequately joined to accommodate use of a check valve or where spliced and adequately joined to support a depth extension on an existing well pump, of plastic pipe approved for use with drinking water with a minimum working pressure of 160 pounds per square inch containing a label or imprint indicating compliance with NSF or UL; or threaded and coupled schedule 80 or heavier PVC pipe containing a label or imprint indicating compliance with NSF or UL; or threaded and coupled galvanized steel, stainless steel or copper pipe. In addition, drop pipe should be sufficiently sized and installed to accommodate potential working stresses considering well depth, pumping level, pump size, and pump setting.
4. A casing vent shall be provided on all well caps and seals, except for those used on double pipe-packer jet installations. The vent shall be screened, downward facing, and terminate at least twelve (12) inches above grade or six (6) inches above the floor of a well house.
5. Vent screening shall be 20 to 30 mesh per inch screen, shall not reduce the vent open area by more than 50 percent, and shall be of stainless steel or other non-corrodible material.
6. Well caps and seals shall be tightly secured to the well casing, watertight, vermin-proof, and provide vented as noted in this section. Split caps shall not be accepted.
7. Only lubricants with a label indicating compliance with USDA, USFDA, or NSF approved food contact grade formulations shall be used as submersible pump motor and vertical turbine shaft lubricants.
8. After a new well has been constructed or an existing well has been repaired or serviced in a manner that required the opening of the well casing, the well shall be pumped to waste until the pumped water is reasonably clear.
9. After pumping to waste and prior to the collection of samples for bacteriological and chemical analyses, the well, pumping equipment, storage tank, and building plumbing shall be disinfected in accordance with the following procedure:
 - a. For each 50-foot depth, mix one (1) quart of solution containing 5-1/4% available chlorine in five (5) gallons of water. Guidance from the New York State Department of Health advised that laundry bleach with additives (i.e. scented, softening agents, etc.) and lacking NSF/ANSI Standard 60 approval for use in drinking water treatment should not be used for well disinfection purposes.
 - b. Pour this solution into the well and recirculate water through the household plumbing and a garden hose back into the well to assure the entire well water column is chlorinated. Open all taps one at a time until a noticeable chlorine odor appears at the tap then turn them off.
 - c. Again add chlorine solution to the well and recirculate water through the garden hose back into the well to assure the entire well water column is chlorinated. Shut off the pump and replace the well cap or sanitary seal on top of the casing. Allow the chlorine solution to remain in the system for a minimum of eight (8) hours, or overnight, if possible.

- d. Thoroughly flush the system until the chlorine odor dissipates. A DPD chlorine test kit may be used to determine when the chlorine has dissipated.
- e. Collect sample(s) for bacteriological/chemical analysis by a New York State ELAP certified laboratory.

F. Well Capping and Abandonment

1. All well capping, abandonment and decommissioning shall be in accordance with requirements specified in New York State Department of Health Appendix 5-A – Recommended Standards for Water Works.

G. Replacement Wells

1. Replacement wells require an approval issued by the Department and must be sited to meet all restrictive distances.
2. For those sites where it is not possible to meet the restrictive distances, the well must be located as far as practical from all sources of pollution. Special construction may be required and the property owner will also be required to file a declaration in the Office of the County Clerk – Land Records holding Westchester County and the Department harmless from all claims resulting from its acceptance of a well not meeting restrictive distances.

13.0 Waiver

A. General

1. The Department reserves the right to grant waivers from these Rules and Regulations and also the right to require additional information. Statutory requirements cannot be waived.

B. Criteria

1. The applicant must demonstrate to the Commissioner of the Westchester County Department of Health or his/her designee (hereinafter referred to as “the Commissioner”) that these standards have created an unnecessary hardship due to the unique configurations of the property.
 - a. The applicant must identify the specific provision(s) of these Rules and Regulations from which the waiver is sought; and
 - b. The applicant cannot realize a reasonable return, provided that the lack of return is substantial as demonstrated by competent financial evidence; and
 - c. The alleged hardship relating to the property is unique, and does not apply to a substantial portion of the general area or neighborhood; and
 - d. The alleged hardship has not been self-created; and
 - e. The applicant must establish ownership of the property before enactment of these standards and that the property was in compliance with all existing OWTS standards at the time of acquisition; and
 - f. The applicant must establish that there is no other feasible manner in which to meet the standard.
2. The applicant must demonstrate sufficient mitigation measures are proposed to avoid contamination of surface and/or groundwater.
3. All costs associated with the application process and/or meeting the requirements herein shall be borne by the applicant; and
4. In granting the waiver, the Commissioner shall grant the minimum waiver he/she deems necessary and adequate to address the unnecessary hardship proven by the applicant, and at the same time, preserve and protect the character of the neighborhood and the health, safety and welfare of the community; and
5. In granting the waiver, the Commissioner shall have the authority to impose such reasonable conditions and restrictions as are directly related to and incidental to the proposed use of the property. Such conditions shall be consistent with the spirit and intent of the State, County, and local laws and regulations relating to these requirements and shall be imposed for the purpose of minimizing any adverse impact such waiver may have on the neighborhood, community and/or local water bodies and watersheds.

C. Guidance

1. The following examples of the terms utilized herein are illustrative and only to provide guidance for consistent and fair review of waiver applications and are not intended to restrict or otherwise limit the submission requirements and/or review criteria:
 - a. **Competent financial evidence.** Consists of “dollars and cents” proof supported by relevant financial data. Relevant financial data may include, but is not limited to, income and expense statements concerning the subject parcel for more than one (1) year (to show the recurring nature of the lack of reasonable return), amount paid for the subject parcel, maintenance costs, encumbrances, and present value. In the event an economic analysis is provided, in whole or in part, by a professional (financial, real estate, or the like), the professional opinion should be supported with factual data.

- b. Unique. The physical circumstances, including irregularity, narrowness or shallowness of parcel size or other physical conditions peculiar to the parcel (not duplicated in other parcels in the same vicinity), and that as a result of such conditions, practical difficulties arise in complying strictly with the standards. To establish the “uniqueness” of the alleged hardship as it relates to the property, the applicant should demonstrate that the circumstances that cause the hardship are uncharacteristic of general neighborhood conditions. Circumstances regarding the parcel, when compared to other parcels in the vicinity, should demonstrate that the applicant’s parcel is distinct. The uniqueness of the parcel cannot be self-created. In the event the applicant recently subdivided, the entire parcel prior to the subdivisions should be considered.
- c. Hold Harmless Agreement. All waivers granted by the Department will require the legal property owner to draft and submit a “Hold Harmless” agreement to the Department for review and approval prior to the filing of said agreement with Westchester County Land Records.

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APPENDIX A

BUILDING DEPARTMENT REFERRALS

A. General

1. At the request of a local building department, the Department will review plans for proposed residential additions, major expansions of existing residential building or structures, swimming pools and inhabitable structures. Such review will require the property owner to provide all known OWTS records for the subject property.
2. Residential Addition shall be defined as any renovation or expansion to an existing residential building or structure.
3. Major expansion of an existing residential building or structure shall be defined as any renovation or expansion of an existing residential building or structure resulting in a gross floor area increase of 100% or more, an addition of greater than 1000 square feet of habitable space or resulting in an increase in the total number of bedrooms in such building or structure.
4. In the Department's evaluation of residential additions and/or major expansions, gross floor area increase shall not include new porches, decks, unheated deck or porch enclosures, and garages. However, heated deck and porch enclosures shall be included, and unfinished rooms and attic or storage spaces and mechanical equipment spaces may be included.
5. The Department defines a potential bedroom as any room which is larger than 70 square feet, affords privacy, and provides reasonable access to a full bathroom.

B. Residential Additions.

1. The Department will issue a no-objection for any residential addition provided the following conditions are demonstrated:
 - a. Verification that the total number of bedrooms in the residential addition together with the existing building or structure is consistent with Department records
 - b. Any proposed expansion in the foot print of the existing residential building or structure does not encroach on any required minimum separation distances set forth in these Rules and Regulations
 - c. Inspection of the existing OWTS for any necessary repair or remediation may be required, completed by a licensed design professional or Westchester County licensed septic contractor.

C. Major Expansion of Residential Buildings or Structures.

1. For all proposed major expansions of residential buildings or structures, the Department will conduct a review of the existing OWTS to determine if further modifications of the existing OWTS will be required.

2. Any necessary OWTS modifications will require one of the following options:
 - a. The installation of a newly constructed OWTS meeting all design standards as set forth in the Rules and Regulations; or
 - b. The property owner has a licensed design professional or Westchester County licensed septic contractor perform a comprehensive evaluation of the existing OWTS.

NOTE: An expansion area of 100% shall not be required in demonstrating compliance with the above for a proposed major expansion of an existing residential building or structure constructed prior to April 1, 1964 and where the major expansion does not result in an increase in the total number of bedrooms in such building.

D. Teardown and Rebuild.

1. The complete teardown and rebuild of an existing residential building or structure having a WCDH approval for an existing OWTS shall not constitute new building construction provided that the rebuild of the structure does not constitute a major expansion and the rebuild generally follows the existing building/structure footprint without further encroaching on any existing or required minimum separation distances set forth in these Rules and Regulations.
2. A complete teardown of an existing residence which does not have a Department approval for the existing OWTS, will require a permit for a new OWTS to be installed, even if the same number of bedrooms will be kept.
3. A residence destroyed by fire will be permitted to be rebuilt in kind if they meet building department criteria for grandfathering. Residences that do not meet building department criteria for grandfathering will require a new OWTS.

For all building department referrals, the applicant must have two (2) sets of house plans showing the proposed addition/modification and the plans must bear the signature of the building official and date.

The applicant must also provide all records of approval for the existing OWTS.

APPENDIX B

PROCEDURE FOR PERFORMING 12-HOUR WELL PUMPING TEST

1. The pump test shall be performed under the supervision of a licensed design professional who shall certify to the accuracy of the test upon completion. The pumping shall be performed with a pump capable of delivering the reported yield at the ground elevation of the wellhead. There must be an instrument capable of reading water depth in the well. Water pumped during a yield test should be discharge away from the well and to the nearest drainage ditch or water course to avoid short-circuiting of the pumped water back into the aquifer, especially in area of very permeable soils or rock.
2. Depth readings must be taken once every half-hour for the first six hours, and once every hour thereafter for a total pump test duration of 12 hours.
3. Turn off the pump at the end of the 12 hour period and record the water depth at every half-hour intervals until the water returns to its static level.
4. All depth and pumping data must be provided to the Department.
5. The Department must be notified 48 hours in advance of the pump test.

APPENDIX B-1

ADDITIONAL WELL(S) ON A SINGLE PROPERTY

In accordance with the requirements of Chapter 873, Article VII, Section 873.700 (4) of the Westchester County Sanitary Code, the Department will only issue an approval for a proposed additional well(s) on a single parcel of land within an area not served by a public water supply when one of the following conditions outlined below are met:

- When a new well is drilled and the yield of the new well is above 5 gallons per minute (gpm), the existing well is required to be abandoned, in accordance with the requirements of the Westchester County Health Department Rules and regulations. Any request to retain the existing well must be accompanied by a 6 hour stabilized yield test demonstrating that the existing well is less than 5 gpm.

(OR)

- If the existing well(s) and the new individual yields, each are above 5 gpm, offsite wells located immediately around the subject property must be identified and monitored and demonstrated to the satisfaction of the Department that there is no direct influence on any of the offsite well during the 6 hour stabilized simultaneous yield testing on all onsite wells. In this case, offsite well monitoring plans must be submitted to the Department for approval prior to the scheduled yield testing.

Accordingly plans must address the following items:

- Identify and indicate existing wells at the adjacent properties that surround the proposed parcel
- Plans must include the statement indicating the above two (2) conditions

APPENDIX C

MINIMUM STORAGE REQUIREMENTS FOR WELL YIELDS LESS THAN 5 GPM

For each gallon per minute increment under 5, or part thereof, supplemental storage of 100 gallons shall be provided:

4 GPM	100 gallons
3 GPM	200 gallons
2 GPM	300 gallons

The above capacities are in addition to any storage that may be available in the well or in the hydro-pneumatic tank serving the premises.

APPENDIX D

CHANGE OF USE

A Change of Use as defined in Article VII, Section 873.721 of the Sanitary Code of the Laws of Westchester County shall mean, but not be limited to, any change in nature of wastewater generated, any change in quantity of the wastewater generated, any change in utilization of use of the building or structure, and any change in the type of facility or facilities that occupy the building or structure. Types of facilities shall include but not be limited to housing, retail, food service, office, warehouse, dental, medical, salons, and industrial.

A Change of Use of a commercial or institutional building or structure, or an expanded use at a commercial or institutional building or structure that may result in an increase or decrease in sewage flows which may exceed the design capacity of the existing Onsite Wastewater Treatment System (OWTS) approved by the Department and or may exceed the NYSDEC SPDES permit limitations.

Therefore, it is required that any proposal for a change of use at a commercial or institutional building or structure served by an existing OWTS must be submitted to the Department. The proposal is recommended to be submitted by a design professional. The proposal must include: the appropriate application form, a copy of the existing OWTS approval and as-built plan, written inspection report of the existing OWTS and a detailed Operational Report. The operational report must describe the existing conditions, specify the intended change of use and the proposed design flow. The design flow must be determined either by supplying the Department with a minimum of one (1) year of water meter readings or theoretical flow values. If the proposal is based on water meter readings, the highest average daily flow reading must be used as the basis of the design flow.

Upon completion of the proposal review, the Department will take one of the following actions: issue a written No Objection to the Proposal, issue an objection to the Proposal or request further information or related approval(s) (i.e. public water supply, food service establishment, etc.) before making a final decision.

Upon the issuance of a written No Objection to the Proposal the approval will expire one (1) year after date of issuance.

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TABLES

Table 1
Separation Distances from Wastewater Sources

Wastewater Sources	Drilled Well or Section Line (g) (ft.)	Stream, Lake, Watercourse (b) or Wetland (ft.)	Dwelling (ft.)	Property Line (ft.)	Drainage Ditch/Rain Garden (h)(ft.)	Inground Pool (ft.)
House Sewer	25 CIP 50 Other	25	3	10	10	10
Septic Tank	50	50	10 (h)	10	10	20
Effluent Line/Force Main	50	50	10	10	10	10
Distribution Box/Junction Box	100	100	20 (d)	10	20	20
Absorption Fields (f)	100 (a)	100	20 (d)	10	20	35
Seepage Pit	150 (a)	100	20 (d)	10	20	50
Dry Well(d)						
Roof + Footings	50	25	20	10	10	20
Roads + Driveway	100	25	20	10	10	20

- (a) Wells located in general path of an OWTS must be located 200 feet or more away. All public water supply wells must be 200 feet or more away.
- (b) Mean high water mark of defined stream or lake.
- (c) Drywells are not allowed above OWTS (drywells, Storm water infiltrator units or other subsurface storm water infiltration units)
- (d) For slab on grade foundations with no drains, distance can be reduced in half
- (e) For all systems involving placement of fill, separation distances are measured from the toe of slope of the fill.
- (f) Closest part of OWTS shall be located at least ten (10) feet from any water service line (i.e. – PWS main, water service connection, well)
- (g) Recommended
- (h) Septic tanks are not permitted beneath raised decks and require a minimum of five (5) separation from deck piers (sonotubes)

Additional Separation Distances from Absorption Area to:

Piped Drainage	25 ft.
Open Channel Drainage	50 ft.
Curtain Drain (upgrade from OWTS)	15 ft.
Curtain Drain (downgrade from OWTS)	50 ft.
Catch Basin	50 ft.
Driveway	5 ft.
Storm Water Basin	100 ft. (high water elevation)
Above Ground Pool	10 ft.
Deck with Pilings/sonotube	10 ft.
Slab on Grade Foundation	10 ft.
Roof and Footing Drain Discharge Pipe	10 ft.

Table 2
Daily Design Flows

Plumbing Fixtures (based on manufactured date)	Minimum Design Flow (gallons per day per bedroom)
Post-1994 Fixtures 1.6 gallons/flush toilets 2.5 gallons/minute faucets & showerheads	110
Pre-1994 Fixtures 3.5 gallons/flush toilets 3.0 gallons/minute faucets & showerheads	130
Pre-1980 Fixtures 3.5+ gallons/flush toilets 3.0+ gallons/minute faucets & showerheads	150

Table 3
Minimum Septic Tank Capacities

Number of Bedrooms	Minimum Tank Capacity (gallons)	Minimum Liquid Surface Area (Sq.ft.)
1,2,3	1,000	27
4	1,250	34
5	1,500	40
6	1,750	47

NOTE: For residences having more than six (6) bedrooms or multi-family dwelling, the design professional should confer with the Department for septic tank sizes.

Table 4
Required Length of Conventional Absorption Trench For Standard Daily Design Flows (FEET)

	Soil Percolation Rate (min./inch)	110 gpd		130 gpd		150 gpd	
		Conventional	with ETU	Conventional	with ETU	Conventional	with ETU
1	1-5	125*	125*	125*	125*	125	125
	6-7	125*	125*	130	130	150	150
bedroom	8-10	125*	125*	145	145	167	167
	11-15	170	138	200	163	231	188
	16-20	208	158	246	186	284	215
	21-30	275	184	325	217	375	250
	31-45	367	220	434	260	500	300
	45-60	550	245	650	289	750	334
2	1-5	125*	125*	125*	125*	125	125
	6-7	125*	125*	130	130	150	150
bedroom	8-10	125*	125*	145	145	167	167
	11-15	170	138	200	163	231	188
	16-20	208	158	246	186	284	215
	21-30	275	184	325	217	375	250
	31-45	367	220	434	260	500	300
	45-60	550	245	650	289	750	334
3	1-5	138	138	163	163	188	188
	6-7	165	165	195	195	225	225
bedroom	8-10	184	184	217	217	250	250
	11-15	254	207	300	244	347	282
	16-20	312	236	368	279	425	321
	21-30	413	275	488	325	563	375
	31-45	550	330	650	390	750	450
	45-60	825	367	975	434	1125	500
4	1-5	184	184	217	217	250	250
	6-7	220	220	260	260	300	300
bedroom	8-10	245	245	289	289	333	333
	11-15	339	275	400	325	462	375
	16-20	416	315	491	372	567	429
	21-30	550	367	650	434	750	500
	31-45	734	440	867	520	1000	600
	45-60	1100	489	1300	578	1500	667
5	1-5	230	230	271	271	313	313
	6-7	275	275	325	325	375	375
bedroom	8-10	306	306	361	361	417	417
	11-15	424	344	500	407	577	469
	16-20	519	393	614	465	708	536
	21-30	688	459	813	542	938	625
	31-45	917	550	1084	650	1250	750
	45-60	1375	612	1625	723	1875	834

*Minimum Required Trench Length

Table 5
Application Rates

Percolation Rate (min/in.)	Application Rate	
	Conventional (GPD/ft ²)	With ETU (GPD/ft ²)
1-5	1.20	1.20
6-7	1.00	1.00
8-10	0.90	0.90
11-15	0.65	0.80
16-20	0.53	0.70
21-30	0.40	0.60
31-45	0.30	0.50
45-60	0.20	0.45
Soil with a percolation rate of less than 1 minute/inch or greater than 60 minutes per inch are unsuitable for conventional systems		
Required Area (sq.ft.) = Flow Rate (GPD)/Application Rate (GPD/sq.ft.)		
Required Absorption Trench Length = Required Area (GPD)/2 feet (trench width)		

Table 6
Seepage Pits – Required Absorptive Area for Standard Daily Design Flows
Square Footage Required

	Soil Percolation Rate (min./inch)	110 GPD	130 GPD	150 GPD
1	1-5	250	250	250
	6-7	250	250	250
bedroom	8-10	250	250	250
2	1-5	250	250	250
	6-7	250	260	300
bedroom	8-10	250	289	334
3	1-5	275	325	375
	6-7	330	390	450
bedroom	8-10	367	434	500
4	1-5	367	434	500
	6-7	440	520	600
bedroom	8-10	489	578	667
5	1-5	459	542	625
	6-7	550	650	750
bedroom	8-10	612	723	834

Note: Percolation rate is the average of the percolation testing performed at one half (1/2) depth and at the bottom of the proposed seepage pit depth

Table 7
Gravelless Geotextile Sand Filter Systems
Lineal Footage Required

	Soil Percolation	110 GPD	130 GPD	150 GPD	
	Rate (min./inch)	Outside NYCDEP Watershed	Outside NYCDEP Watershed	Outside NYCDEP Watershed	
1	1-5	42	42	42	
	6-7	42	43	50	
	bedroom	8-10	42	48	56
		11-15	42	66	77
		16-20	42	82	94
		21-30	46	108	124
		31-45	61	144	165
		45-60	91	215	248
2	1-5	42	42	42	
	6-7	42	43	50	
	bedroom	8-10	42	48	56
		11-15	57	66	77
		16-20	69	82	94
		21-30	91	108	124
		31-45	122	144	165
		45-60	182	215	248
3	1-5	46	54	63	
	6-7	55	65	75	
	bedroom	8-10	61	72	83
		11-15	84	99	115
		16-20	103	122	141
		21-30	137	162	186
		31-45	182	215	248
		45-60	273	322	372
4	1-5	61	72	83	
	6-7	73	86	99	
	bedroom	8-10	81	96	110
		11-15	112	132	153
		16-20	138	163	188
		21-30	182	215	248
		31-45	243	287	330
		45-60	363	429	495
5	1-5	76	90	104	
	6-7	91	108	124	
	bedroom	8-10	101	120	138
		11-15	140	165	191
		16-20	172	203	234
		21-30	228	269	310
		31-45	303	358	413
		45-60	454	537	619

Note: Lengths may need to be increased to factor in available product length
*Minimum required trench length

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FIGURES

- HAND DIG A HOLE ABOUT 12" IN DIAMETER - 24" TO 30" DEEP OR TO THE DEPTH OF SYSTEM DESIGN.
- SCRAPE SIDES AND REMOVE LOOSE SOIL FROM BOTTOM OF HOLE.
- INSTALL MEASURING STICK.
- PLACE 2" OF GRAVEL OR CRUSHED STONE ON BOTTOM (OPTIONAL)
- PRESOAK AND SATURATE HOLE.
- OBSERVE AND RECORD THE TIME IN MINUTES REQUIRED FOR THE WATER TO DROP FROM 6" TO 5".
- REPEAT THE TEST AT LEAST 3 TIMES UNTIL THE TIME FOR WATER TO DROP FROM 6" TO 5" FOR TWO SUCCESSIVE TESTS IS APPROXIMATELY EQUAL.

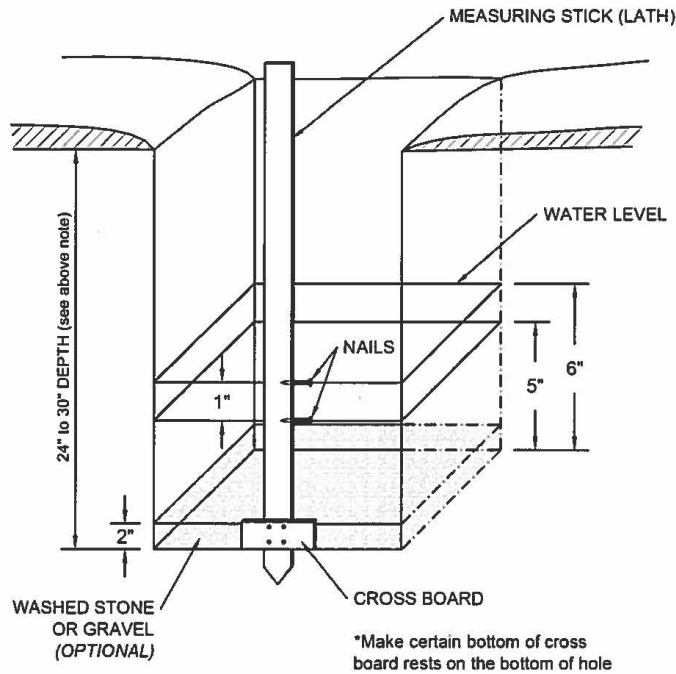
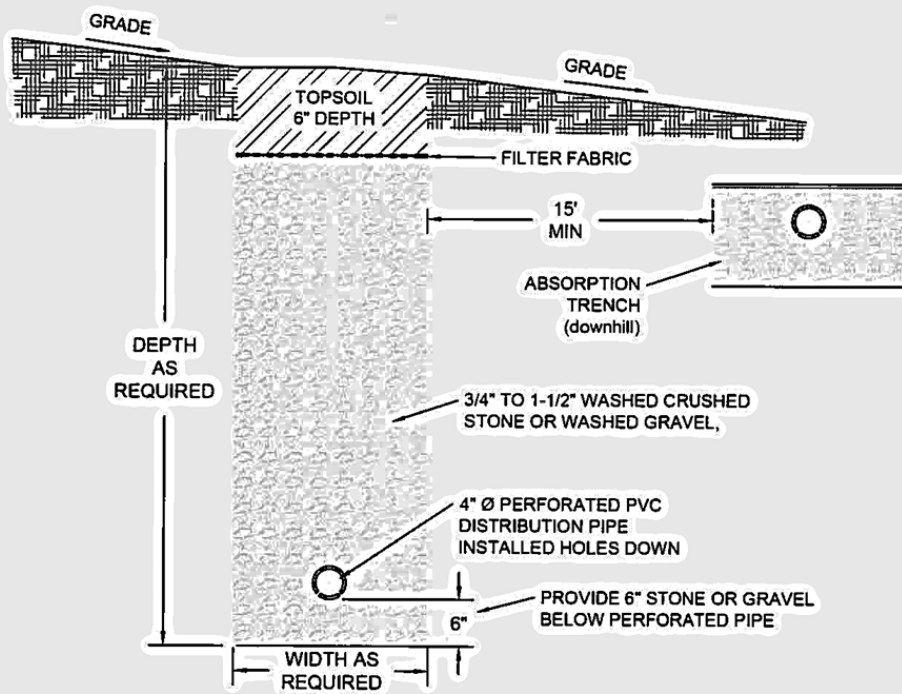
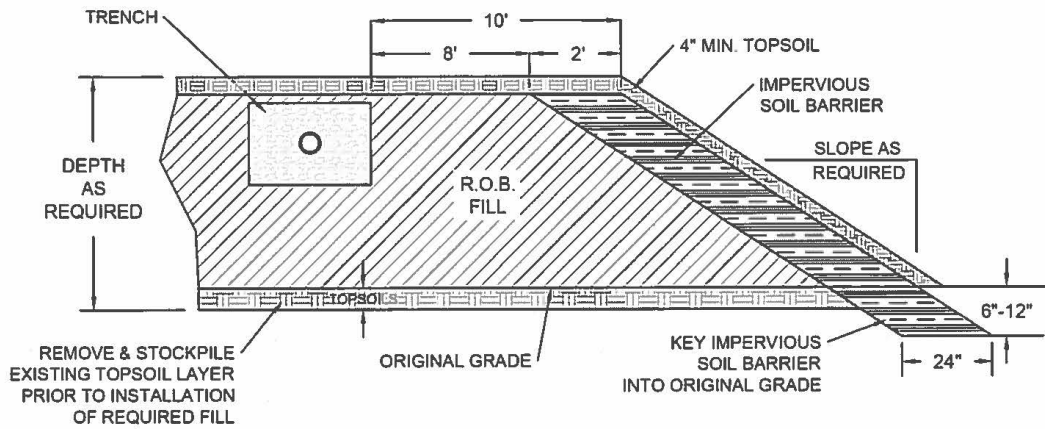


FIG: 1 SOIL PERCOLATION TEST DETAIL
N.T.S.



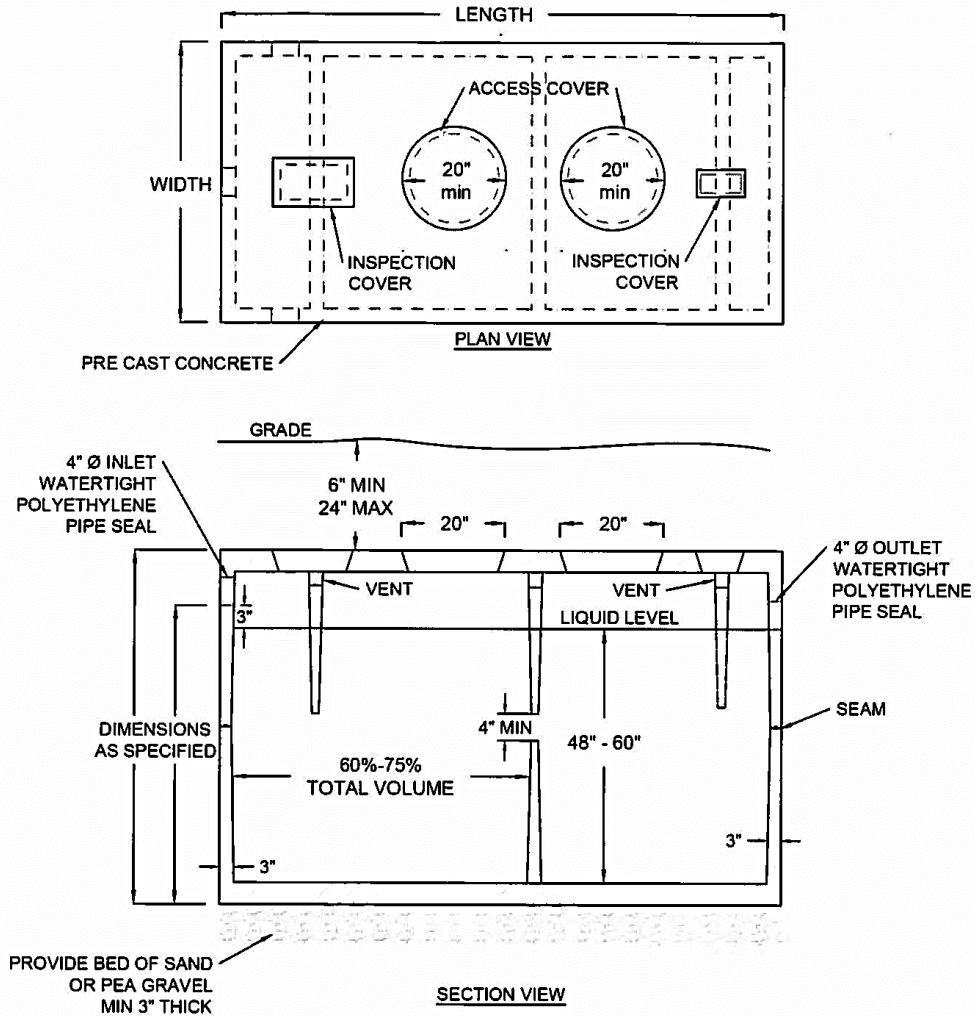
1. PROVIDE A MINIMUM DEPTH AS REQUIRED FROM GROUND SURFACE AT POINT WHICH CURTAIN DRAIN IS INSTALLED.
2. PROVIDE A MINIMUM SEPARATION DISTANCE OF 15' FROM EDGE OF CURTAIN DRAIN TO EDGE OF ANY "DOWNHILL" ABSORPTION TRENCH.
3. PROVIDE A MINIMUM SEPARATION DISTANCE OF 50' FROM EDGE OF CURTAIN DRAIN TO EDGE OF ANY "UPHILL" ABSORPTION TRENCH.
4. OUTLET PIPE TO DISCHARGE BELOW EXPANSION SYSTEM AREA.

FIG: 2 CURTAIN DRAIN DETAIL
N.T.S.



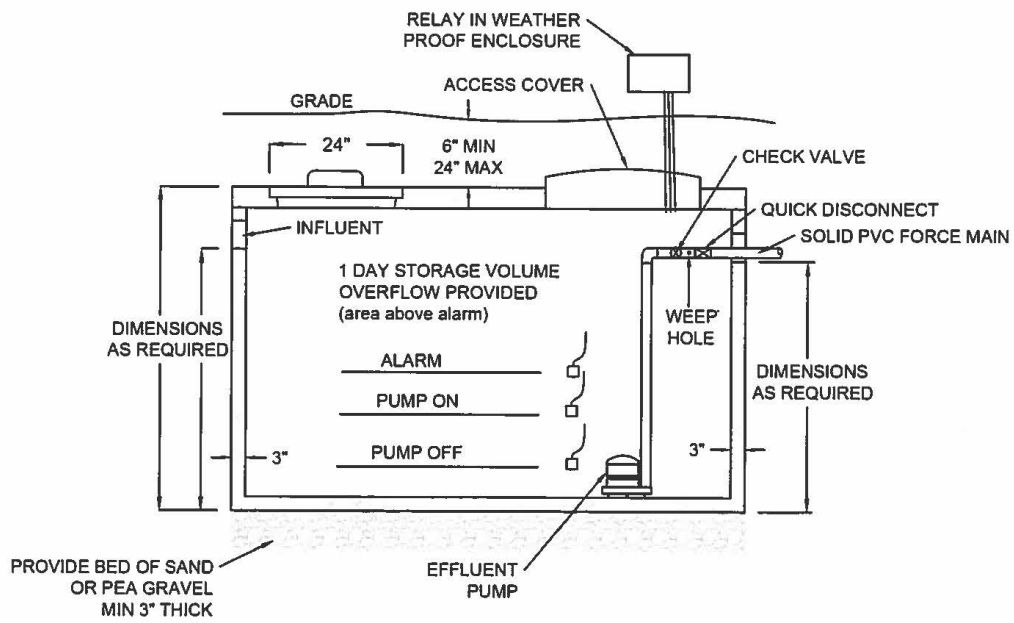
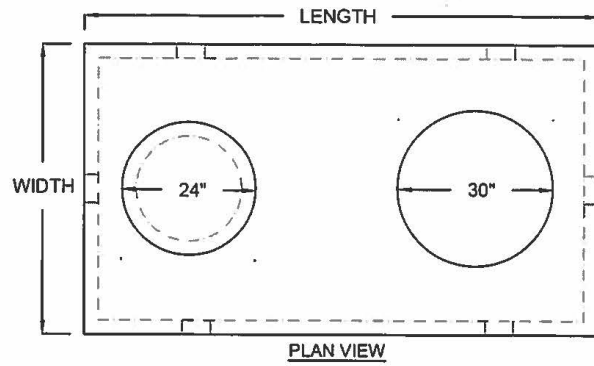
1. RUN-OF-BANK (R.O.B.) FILL SHALL BE SUITABLE FOR SEWAGE ABSORPTION, BE FREE OF FINES OR OTHER UNSUITABLE MATERIAL AND SHALL HAVE AN IN-PLACE PERCOLATION RATE OF 10 MIN/INCH OR LESS. THE ENGINEER /ARCHITECT SHALL PERFORM A FINAL PERCOLATION TEST IN THE FILL AFTER STABILIZATION, IF REQUIRED BY THE DEPARTMENT.
2. FILL SUITABLE FOR SEWAGE ABSORPTION SHOULD CONTAIN NO MORE THAN 10% BY WEIGHT OF CLAY AND SILT PARTICLES THAT PASS A 200 SIEVE.

FIG: 3 FILL SECTION DETAIL
N.T.S.



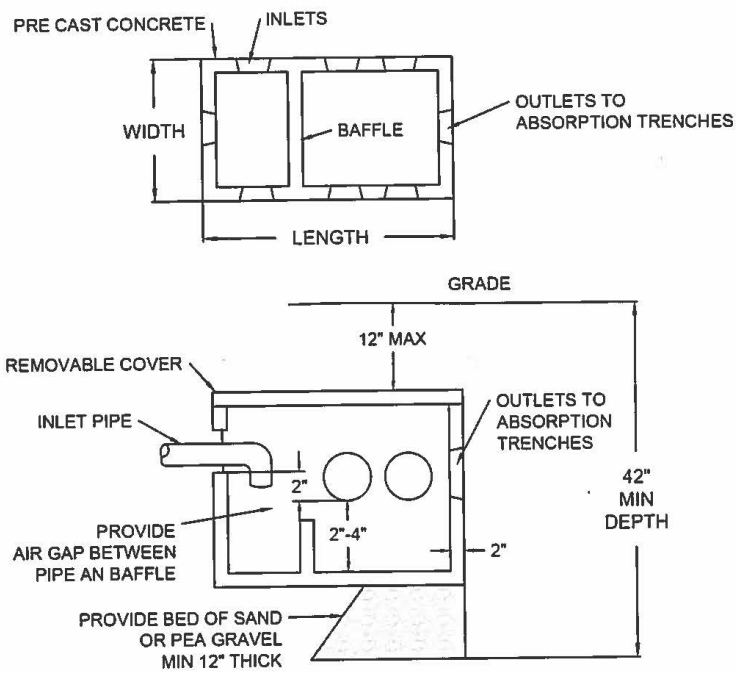
- SEPTIC TANK MUST BE WATERTIGHT, CONSTRUCTED OF DURABLE MATERIAL AND NOT SUBJECT TO EXCESSIVE CORROSION, DECAY, FROST DAMAGE OR CRACKING.
- MINIMUM TOP DESIGN LOADING 300 PSF.
- IF DEPTH FROM TOP OF TANK TO GRADE IS GREATER THAN 24" A RISER AND MANHOLE SHALL BE PROVIDED.

FIG: 4 SEPTIC TANK DETAIL
N.T.S.



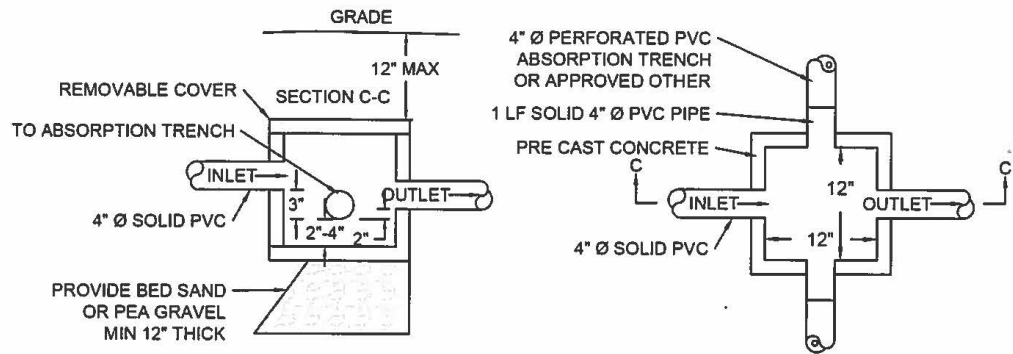
- PROVIDE AUDIBLE / VISUAL ALARM IN DWELLING IN CONSPICUOUS LOCATION
- IF DEPTH FROM TANK TO GRADE IS GREATER THAN 24" A RISER AND MANHOLE SHALL BE PROVIDED

FIG: 5 PUMP CHAMBER DETAIL
N.T.S.



1. BOTTOM OF BOX MUST BE LEVEL AND FIRMLY SUPPORTED TO BELOW FROST LINE. FOOTING TO EXTEND TO 42" BELOW GROUND LEVEL.
2. WATERPROOF MASONRY CONSTRUCTION.
3. TIGHT JOINT PIPE FROM SEPTIC TANK, DISCHARGE LINE FROM DOSE CHAMBER, OR FORCE MAIN FROM PUMP CHAMBER TO INLET SIDE OF DISTRIBUTION BOX.
4. TIGHT JOINT PIPE BETWEEN ALL BOXES.
5. OUTLET PIPES TO BE CUT FLUSH WITH INSIDE OF DISTRIBUTION BOX

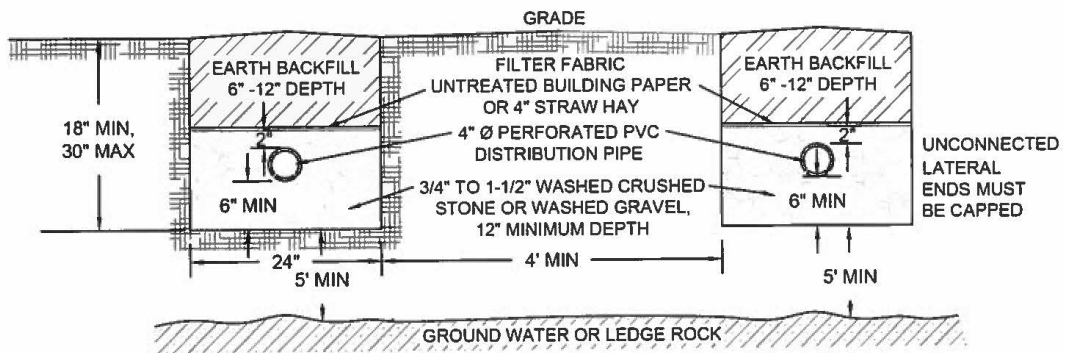
FIG: 7 DISTRIBUTION BOX DETAIL
N.T.S.



1. BOTTOM OF BOX MUST BE LEVEL AND FIRMLY SUPPORTED.
2. PLACED ON SINGLE BRANCH DISTRIBUTORS.
3. WATERPROOF MASONRY CONSTRUCTION.
4. TIGHT JOINT SOLID PIPE FROM SEPTIC TANK OR DISTRIBUTION BOX TO JUNCTION BOX AND BETWEEN ALL BOXES.
5. INSIDE PIPES TO BE CUT FLUSH WITH INSIDE OF JUNCTION BOX.

FIG: 8 **JUNCTION BOX DETAIL**
 N.T.S.

CROSS SECTION VIEW

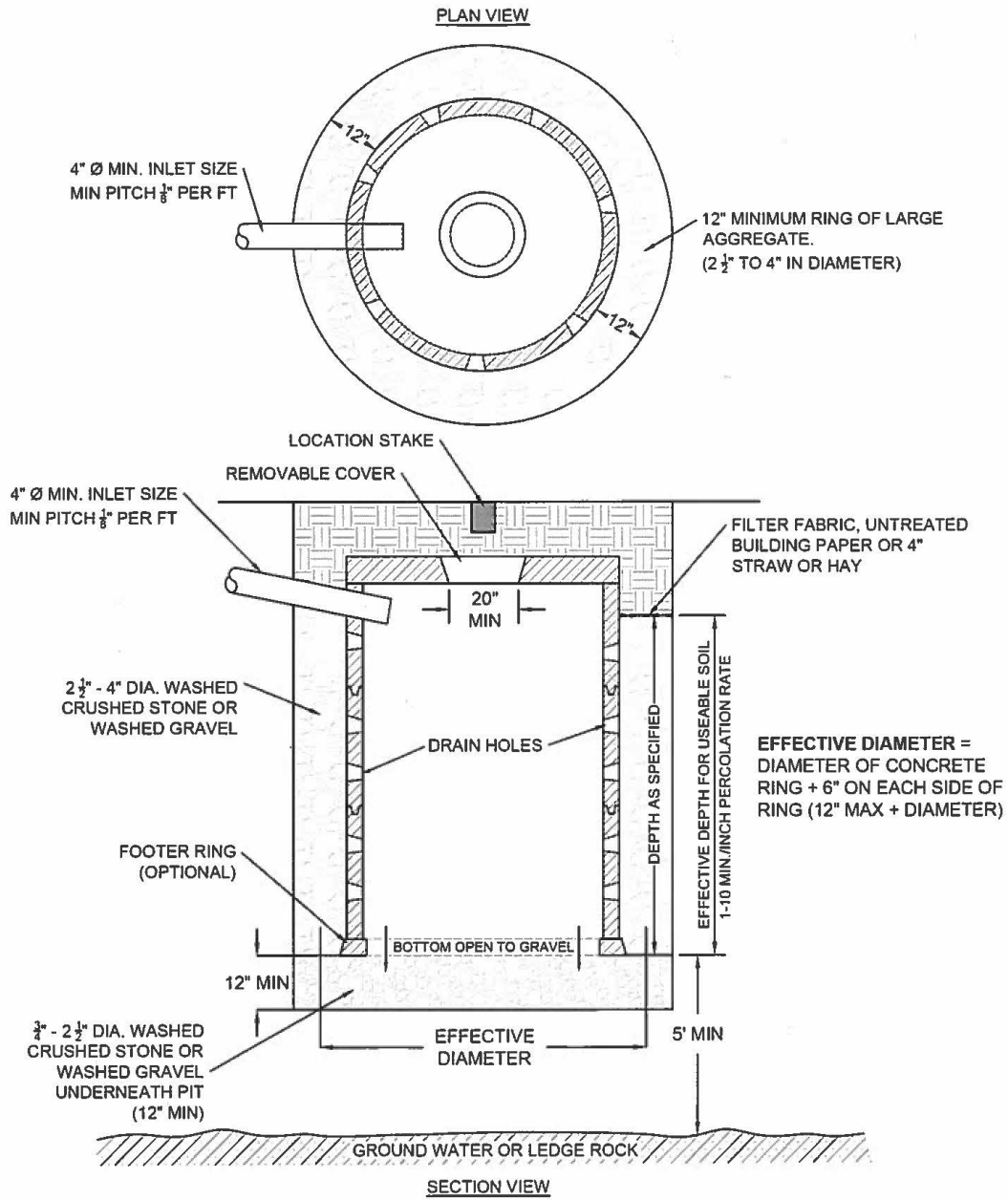


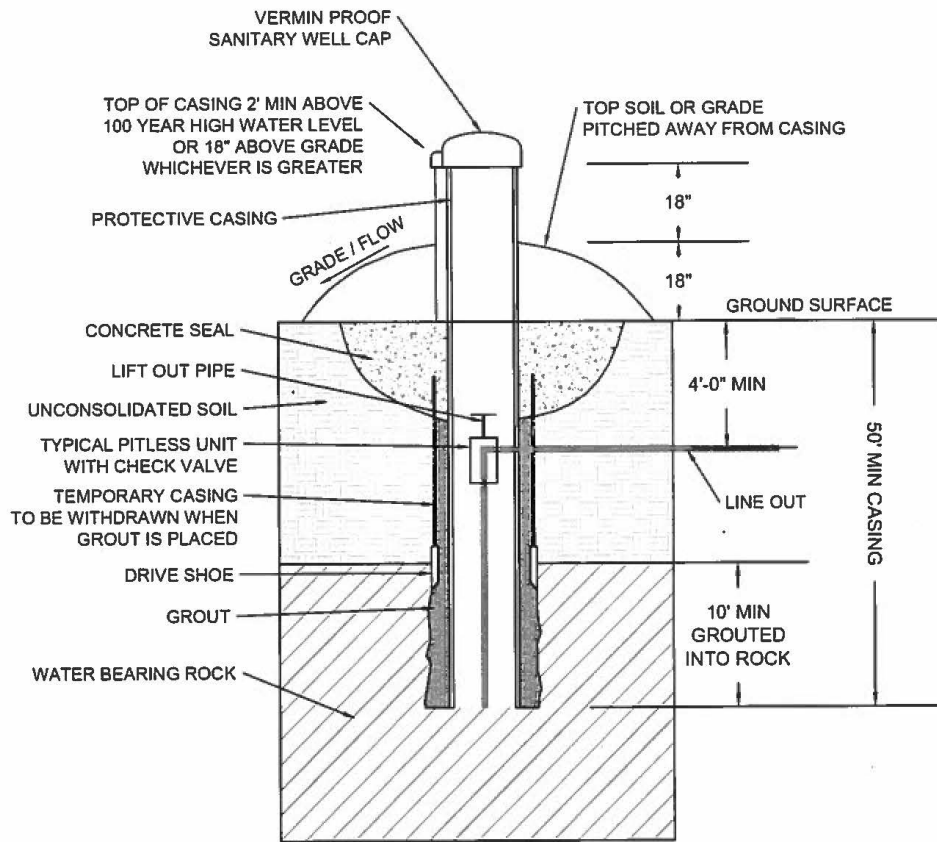
- A SEPARATION DISTANCE OF 5' MINIMUM IS REQUIRED BETWEEN THE BOTTOM OF THE ABSORPTION TRENCH AND THE PRESENCE OF LEDGE ROCK AND/OR GROUND WATER
- PVC DISTRIBUTION PIPE IS TO BE SET AT 1/16" TO 1/32" PITCH FOR GRAVITY SYSTEMS AND SET LEVEL FOR DOSED SYSTEMS
- **DO NOT** INSTALL ABSORPTION TRENCHES IN WET OR FROZEN SOILS
- ABSORPTION TRENCHES ARE TO BE INSTALLED PARALLEL TO CONTOURS

FIG: 9

ABSORPTION TRENCH DETAIL

N.T.S.





1. 50 FOOT MINIMUM CASING LENGTH TO BE MEASURED FROM GROUND SURFACE

FIG: 11 WELL DETAIL
N.T.S.

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GLOSSARY

10NYCCRR – Title 10 (Health) of the Official Compilation of New York Codes, Rules and Regulations

AASHTO-H20 – American Association of State Highway Transportation Officials

ABSORPTION AREA - An area to which settled septic tank effluent is distributed for infiltration into the soil.

ABSORPTION BED – A single shallow excavation which includes several distribution laterals for the distribution of septic tank or ETU effluent.

ABSORPTION FIELD – The area to which settled septic tank or ETU effluent is distributed for infiltration into the soils by means of a network of pipes.

ABSORPTION TRENCH – A long narrow area which includes a pipe for the distribution of septic tank or ETU effluent.

AERATION – The process of transferring oxygen to water/wastewater by providing intimate contact between air and water/wastewater.

AEROBIC TREATMENT UNIT (ATU) – A type of ETU system that provides for the biological decomposition of the organic portion of the wastewater by mechanical aeration of the wastewater.

AGGREGATE – Washed gravel or washed crushed stone $\frac{3}{4}$ to 1 $\frac{1}{2}$ inches in diameter. Number 2 stone or gravel meets this size requirement.

API – American Petroleum Institute.

APPLICATION RATE – The rate at which septic tank or ETU effluent is applied to a subsurface absorption area, expressed in gallons per day per square foot (gpd/sq.ft.) for design purposes.

ASTM – American Society for Testing and Materials.

BAFFLE – A flow deflecting device used in septic tanks and distribution boxes to inhibit the discharge of floating solids, reduce the amount of settleable solids that exit, and reduce the exit velocity of the wastewater.

BIOCHEMICAL OXYGEN DEMAND (BOD)- The amount of oxygen required by aerobic microorganisms to decompose the organic matter in a sample of water, such as that polluted by sewage. It is used a measure of the degree of water pollution.

BUILDING DRAIN – The lowest piping in a household drainage system which received wastewater inside the walls of the building and conveys the wastewater three (3) feet beyond the building wall to the building sewer.

BUILDING SEWER – The portion of the wastewater drainage system which extends from the end of the building drain and conveys wastewater to the wastewater treatment system or sewer.

CLEANOUT – An opening providing access to sewage system components, including building drain, building sewer, distribution box, and septic tank.

COMMISSIONER – The Commissioner of Health of the County of Westchester.

CURTAIN DRAIN – A subsurface drain designed and constructed to control ground water intrusion into the wastewater absorption area.

DECOMMISSIONING – The act of filling, sealing and plugging water wells in accordance with the requirements of these Rules and Regulations such that the well will neither pose a health or safety hazard nor serve as a conduit for contaminant migration to or within the aquifer.

DEPARTMENT – Westchester County Department of Health.

DESIGN PROFESSIONAL – A person licensed and currently registered in the State of New York as an Engineer (PE) or Architect (RA) and authorized by the State Education Law in accordance with Article 145 or 147, respectively, and acting within the scope of his or her practice to design the systems described in these Rules and Regulations.

DISTRIBUTION DEVICE - A device used to uniformly distribute settled wastewater to the absorption or filtration area.

DISTRIBUTION LINE (DISTRIBUTOR)- The perforated pipe used to distribute settled wastewater in the absorption or filtration area.

DIVERSION DITCH/BERM- A designed and constructed ditch/berm to control surface water intrusion into the wastewater absorption area on sloped sites.

DRINKING WATER – Water whose physical, chemical, radiological and biological quality is or is intended to be satisfactory for human consumption, food preparation or culinary purposes (i.e. conforms with Part 5 of the New York State Sanitary Code titled Drinking Water Supplies.)

EFFECTIVE GRAIN SIZE- A measure of the diameter of soil particles, when compared to a theoretical material having an equal transmission constant. It is the dimensions of that mesh screen which will permit ten (10) percent of the sample to pass and will retain ninety (90) percent.

ENHANCED TREATMENT - The biological and physical treatment of wastewater to reduce the amount of biological oxygen demand (BOD) and the total suspended solids (TSS) of wastewater effluent prior to distribution to an absorption area.

ENHANCED TREATMENT UNIT (ETU)- Pre-manufactured structures that provide enhanced treatment of wastewater prior to discharge to a subsurface soil absorption area.

GAS BAFFLE - A device on the outlet of septic tank which deflects gas bubbles away from the outlet and reduces the carryover of solid particles from the septic tank.

GREYWATER – All sewage or wastewater from a house except waste from flush toilets and urinals.

GROUND WATER – Subsurface water occupying the saturation zone from which wells and springs area fed (i.e. water below the ground water table.)

GROUT – A material that has a low permeability, such as neat cement, bentonite slurry, bentonite chips, bentonite pellets, granular bentonite, or other materials that have equivalent sealing properties.

HEAVY EQUIPMENT – All equipment which would result in the compaction of the design absorption area at a depth equivalent to the design depth of the distribution lines. Examples include backhoes, bulldozers, excavators, dump trucks, etc.

INFILTRATION – The flow or movement of water into the interstices or pores of a soil through the soil interface.

INVERT - The floor, bottom, or lowest point of the inside cross section of a pipe or opening/slot/channel (i.e. flow opening between compartments in a multi-compartment septic tank.)

LARGE AGGREGATE – Washed gravel or crushed stone $\frac{3}{4}$ to $2\frac{1}{2}$ inches in diameter. Number 3 and 3A stone or gravel meets this size requirement and Number 3 is preferred.

LICENSED SEPTIC SYSTEM CONTRACTOR – A septic system contractor who possesses a valid license issued by the Westchester County Commissioner of Health pursuant to the provisions outlined in Article VIII, Section 873.722 of the Westchester County Sanitary Code.

MAJOR EXPANSION OF AN EXISTING RESIDENTIAL BUILDING OR STRUCTURE – Any renovation or expansion of an existing residential building or structure resulting in a gross floor area of 100% or more, an increase of greater than 1000 square feet of habitable space within any five (5) year period; or resulting in an increase in the total number of bedrooms in such building or structure.

NSF – National Sanitation Foundation International, formerly known as the National Sanitation Foundation.

PEA GRAVEL – Washed gravel or washed crushed stone $\frac{1}{8}$ or $\frac{1}{4}$ inch diameter. Number 1B stone or gravel meets this requirement.

PERCOLATION – The movement of water through the pores of a soil or other porous medium following infiltration through the soil interface.

PERMABILITY – A measure of the rate of movement of liquid through soil.

REMEDIATION – The installation or replacement of an OWTS within an area not previously approved by the Department to correct an OWTS failure, or impending failure, resulting in, or that may result in, the discharge of domestic sewage or other waterborne offensive material on to the surface of the ground, into a storm sewer, or into a watercourse or water body; alteration or modification of an OWTS to correct a continuing OWTS failure or where OWTS repairs have not been satisfactory..

REPAIR – The replacement in kind and in situ of broken, damaged, or worn OWTS components of an existing OWTS to correct an OWTS failure, or impending failure, resulting in, or that may result in, the discharge of domestic sewage or other waterborne offensive material on to the surface of the ground, into a storm sewer, or into a watercourse or water body. Repair shall not apply to maintenance or servicing of OWTS components such as evacuation of a septic tank or servicing of an enhanced treatment unit or aerobic treatment unit

RESIDENTIAL ADDITION – Any renovation or expansion to an existing residential building or structure.

SCUM – The wastewater material which is less dense than water and floats on top of the water (i.e. especially in septic tanks.)

SEWAGE – The combination of human and household waste with water which is discharged to the home plumbing system, including the waste from a flush toilet, bath, shower, sink, lavatory, dishwasher or laundry machine, or the water carried waste from any other fixture, equipment or machine.

SLUDGE – The wastewater material which is denser than water and settles to the bottom in relatively quiescent area (i.e. especially in septic tanks.)

STABILIZED RATE OF PERCOLATION – The rate corresponding to two (2) consecutive equal or near equal percolation test results found after presoaking and a minimum of three (3) consecutive runs.

UL – Underwriters Laboratories.

USABLE SOIL – Unless otherwise stated, soil with a percolation rate of one (1) to sixty (60) minutes per inch with a compatible soil classification.

USDA – United States Department of Agriculture.

USFDA – United States Food and Drug Administration.

WASTEWATER – Any water discharged from a house through a plumbing fixture to include, but not be limited to, sewage and any water or wastewater from a device (i.e. water softener brine) which is produced at the house or property.

WATERCOURSE – A visible path through which surface water travels on a regular basis. Drainage areas which contain water only during and immediately following precipitation or snow-melt shall not be considered a watercourse.

WATERSHED – An area of drainage for a body of water that serves as a source of drinking water and for which watershed rules and regulations have been adopted by the State Commissioner of Health.

WATER WELL – Any excavation for the purpose of obtaining groundwater for drinking, culinary and/or food processing purposes, with installed components (including well casing, screen, grout, adaptors, et al.).

WATER WELL DRILLING – The construction or reconstruction of water wells, the establishment or repair of a connection through the well casing and the repair of water wells including repairs which require the opening of the well casing.

WELL CASING – The watertight, non-porous material used to maintain a well opening and provide access to the interior of the well.

WELL HEAD AREA – The area surrounding a well which includes the cone of influence.

WELL YIELD – A sustainable quantity of water per unit of time that may flow from or be pumped continuously from a well and is usually expressed as gallons per minute.

WETLAND – An area of marshes or swamps which have been designated as such by the State Department of Environmental Conservation or other State or local agencies having jurisdiction.