

December 6, 2001

### System Design Preferences and Considerations for Private Sector Submittals

1. Conformance to Topography : Individual lines are to be installed on contour(Ref. Rule .1955(g). Minor variations in topo may be accommodated, but is dependent on depth of soil with usable characteristics and maintenance of required vertical separations along with limitations on maximum trench depth and minimum soil cover. The slope of sites proposed for “at grade”, shallow placed drainfield systems (Ref. Rule .1956 (1) is not to exceed 5 percent.
2. Use of Stepdowns : Use of stepdowns is to be avoided with any individual line segment for conventional gravel or innovative trench being a minimum of 50 feet.
3. Modes of Wastewater Distribution :
  - a. Gravity Distribution for Lines of Equal Length-When 4 or less lines are utilized, an approved distribution device such as flow dividers or distribution box may be utilized.
  - b. Lines of Varying Length or 5 or More Lines-Normally a pressurized distribution system will be necessary. Options include pressure manifold or LPP distribution. Pay particular attention to all regulatory design constraints. Additionally, layouts incorporating pressure manifolds for wastewater distribution are to be such that a manifold can be designed to provide for the same flow per linear foot of line for all lines supplied by the manifold. Note that for pressure manifolds a maximum tolerance of 105 % of the assigned LTAR must not be exceeded, the total square footage of lines comprising the system must not exceed the LTAR and minimum pump run time/dose is to be five minutes and preferably between seven and twelve minutes.
  - c. Mode of wastewater distribution is to be clearly indicated on submissions.
4. Layout/Line Configuration :
  - a. The standard approach is to attempt to achieve the best possible system configuration, utilizing the least complex technology and be practical to construct. If this entails modification of the proposed building envelope, design wastewater flow, etc., the developer / builder should be so informed and necessary modifications made in siting/use. To accommodate the ‘unforeseen’ constraints that invariably occur, it is considered prudent that layouts be based on the linear footage of line that would be calculated for a system and repair as described in Rules .1955, .1956, .1957(a) and/or Section IV. WCDES Regs., as applicable. The developer / builder should also be appraised of limitations imposed on location of appurtenances (i.e. swimming pools, detached garages, etc.) by proposed siting/use and system layout.
  - b. All regulatory setbacks and constraints on system location (i.e. setbacks from wells, foundation, foundation drain, cut banks, streams, etc.) must be adhered to. Take special note of the following setback requirements:
    - 1) Interceptor drains, foundation drains, and storm water diversions: Feature located upslope from system-10 feet, sideslope-15 feet, & downslope-25 feet.
    - 2) Private wells: Initial installation-100 feet & repair installation-50 feet. Note that the reduction to 50 feet for the initial installation is not considered applicable since location of site features are not fixed in planning stages of development. Additionally, wells are to be located a minimum of 50 feet from the structure and

a minimum of 10 feet from any property line. Adjoining wells are to be separated by a minimum of 50 feet.

- c. Number of lines stacked on a common slope is to be minimized and line lengths are to be maximized and maintained as equal as possible. Avoid decreasing line lengths from higher to lower elevations ( Ref. WCDES Regs. Sec. IV 8.).
4. Special Design Considerations :
    - a. Pre-treatment systems proposed-When proposed system design utilizes pre-treatment of effluent in order to meet regulatory provisions, the pre-treatment component must be part of the initial installation. This includes proposals that utilize pre-treatment to meet repair area requirements.
    - b. Sites having very limited available space may require installation of initial and repair system ( Ref. Rule .1955 (p). Note that the reference to 75 % of the total area needed is a minimum standard. Submissions are to normally be based on 100 % for each installation, rather than 75 %.
    - c. Sites utilizing off-site wastewater disposal areas are to be avoided.. If this is the approach utilized, the off-site areas are to be contiguous with the lot and all necessary easements, disclosure language on plats (including DOT approval if applicable), and design of supply lines, etc., along with Engineer's certification of pre-installed components, as applicable, are considered to be a necessary part of the subdivision submittal.
  6. Other Considerations :

It is imperative that the developer / builder understand that areas designated for installation and repair of wastewater disposal systems be protected from all land disturbing activities. This may necessitate clearly flagging or fencing these areas to prevent unauthorized activities.

Please note that the foregoing "System Design Preferences and Considerations for Private Sector Subdivision Submittals" is not intended to be totally inclusive for all proposals, nor can it be. This is a 'developing' document and will almost certainly change with time as new proposals and technology are encountered.