DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF WATER RESOURCES
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REGISTER NOTICE

Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems

PROPOSED

STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

THE REGULATIONS GOVERNING THE DESIGN, INSTALLATION AND OPERATION OF

ON-SITE WASTEWATER TREATMENT AND DISPOSAL SYSTEMS

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FORWARD

The Department of Natural Resources and Environmental Control (the Department) finds that a substantial portion of the State's population lives where centralized water supplies or wastewater treatment services are limited. It is the intent of the Department to aid and assist the public in the installation of on-site wastewater treatment and disposal systems, where possible, by utilizing the best information, techniques and soil evaluations for the most suitable system that site and soil conditions permit.

Statewide regulations governing the installation and operation of septic tank wastewater treatment and disposal systems have existed since 1968. Inappropriate installations and poor operation and maintenance practices resulted in disposal system malfunctions. Inadequately renovated wastewater contaminated the State's ground water and presented a threat to the public health, safety, and welfare. Corrective measures required the replacement of water supply and wastewater systems at a very high cost which was sometimes borne by the general public. After years of working under the Regulations which were first implemented in the 1960's, numerous deficiencies were found to be present within the same. Given this, the Department concluded that significant revisions to its regulations governing the site evaluation, siting density, design, installation and operation of on-site wastewater treatment and disposal systems were required.

In considering these findings, the Department determined that the adoption of effective on-site wastewater treatment and disposal regulations was the proper course of action. Through a process that included considerable staff research, public meetings and presentations, public workshops, a public hearing and a hearing officer's report along with four draft versions of this Regulation were prepared, reviewed and revised. This final version is the result of those various activities, and incorporates, as best as possible, all valid concerns into its provisions.

The purpose of this Regulation, is to prevent the problems listed above. They are based on the best information available and include the establishment of a process for updating Regulations as information changes. They include what are considered to be the best engineered design standards for on-site systems, as determined by research and practical experience. These Regulations seek to require the use of on-site systems that will function according to their performance criteria without causing the State's ground water resources to violate U. S. Environmental Protection Agency Drinking Water Standards on an average annual basis. Wastewater management actions necessary to achieve those standards were recommended to the Department in Delaware's 1983 Comprehensive Committee's Final Report which has since been adopted as state policy.

The proper siting of systems is addressed by the establishment of various soil criteria which lead to the selection of the most suitable on-site wastewater treatment and disposal system for local conditions. System selection and sizing are determined using the results of the site specific soil evaluations and percolation tests. Density is addressed by the adoption of minimum lot sizes tied to appropriate treatment and disposal techniques, and in some cases, the use of scientific ground water and geological analyses that both assure renovation of degradable pollutants and dilution of wastes which are inadequately treated in the soil. Site evaluation and system selection, design, installation and pump-outs are required to be performed by individuals licensed under these regulations. Alternative system design criteria were established to enable proper waste treatment and disposal to occur in locations where conventional systems would be inappropriate. With the advent of mortgage companies requiring wastewater system inspection prior to loan approval, the Department took a pro-active approach to create a new licensee category (Class H System Inspector) and standardized format to perform the inspection so all inspections will be evaluated under the set of criterion. Finally, a specific variance procedure is established to provide an opportunity to

reconsider any provision of these Regulations, provided that proper public disclosure and adequate consideration of the consequences are provided.

In developing these Regulations, the Department operated under the philosophy that where soil and site conditions permit, the least complex, easy to maintain and most economical system should be used. Although it has not been possible to include directly every method of on-site treatment and disposal, the Department's policy is to encourage development of systems, processes and techniques which may benefit significant numbers of people within Delaware. It is expected that these Regulations will be reviewed and revised periodically and that standards for other alternative systems will be prepared as more experience and research data become available. The Regulations contain provisions that enable that process to occur.

SECTION 1.00000 - AUTHORITY AND SCOPE

1.01000 These Regulations are adopted by the Secretary of the Department of Natural Resources and Environmental Control under and pursuant to the authority set forth in 7 Del. C., Chapter 60.

1.02000 These Regulations shall apply to all aspects of:

1.02010 The planning, design, construction, operation, maintenance, rehabilitation, replacement, inspection and modification of individual and community on-site wastewater treatment and disposal systems within the boundaries of the State of Delaware; and

1.02020 The planning, design, construction and operation and maintenance of on-site wastewater holding tanks within the boundaries of the State of Delaware; and

1.02030 The licensing of percolation testers, on-site wastewater treatment and disposal system designers, site evaluators, on-site wastewater treatment and disposal system contractors, system inspectors and liquid waste haulers within the boundaries of the State of Delaware.

1.03000 These Regulations shall supersede and replace Water Pollution Control Regulations #2 Governing The Installation and Operation of Septic Tank Sewage Disposal Systems, the Guidelines for Septic Tank Systems, and Part II of Section 9 of the Regulations Governing the Control of Water Pollution. With respect to the other provisions of the Regulations Governing the Control of Water Pollution these Regulations shall supersede such Regulations only to the extent of any inconsistency. These Regulations shall apply throughout the State of Delaware.

1.04000 The Department has the authority to establish and collect fees for the defraying of expenses incurred by the Department for facilities and services needed to provide for the administration of its programs. The authority is contained within Amendment 4701(a), 6026(a), 7 Del C., Chapter 60, which also contains the schedule of fees.

SECTION 2.00000 - DEFINITIONS

2.01000 Words and Phrases

The following words and phrases, when used in these Regulations have the meaning ascribed to them as follows, unless the text clearly indicates otherwise:

2.01010 Absorption Facility: System of open-jointed or perforated piping, alternative distribution units, or other seepage systems for receiving the flow from septic tanks or other treatment facilities and designed to distribute effluent for oxidation and absorption by the soil within the zone of aeration.

2.01015 Aggregate-free Chambers: A buried structure used to create an enclosed unobstructed soil bottom absorption area and side-wall absorption area for infiltration and treatment of wastewater which can be use to replace the filter aggregate and distribution pipe in an absorption facility.

2.01020 Alteration: Any physical change in the design capacity of an existing system or any part thereof.

2.01030 Alternating System: Two or more disposal fields, equal in size with dosing provided alternatively to each field.

2.01040 Alternative Treatment and Disposal System: A wastewater treatment or disposal system not specified in these regulations which has been proven to provide at least an equivalent level of treatment as the conventional systems included in these regulations.

2.01050 Applicant: The owner or legally authorized agent of the owner as evidenced by sufficient written documentation.

2.01060 Authorization to Use Existing System Permit: A written document issued by the Department which states that an on-site wastewater treatment and disposal system appears adequate to serve the purpose for which a particular application is made.

2.01065 Aquifer: A part of a formation, a formation, or a group of formations that contains sufficient saturated permeable material to yield economically useful quantities of water to wells or springs.

2.01070 Backfill: Soil which is clean and free of foreign debris, placed over the disposal area and fill extensions.

2.01075 Blackwater: Waste carried off by toilets, urinals, and kitchen drains.

2.01080 Building Sewer: Piping which carries wastewater from a building to the first component of the treatment and disposal system.

2.01090 Cesspool: A covered pit with a porous lining into which wastewater is discharged and allowed to seep or leach into the surrounding soils with or without an absorption facility.

2.01100 Commercial Facility: Any structure or building, or any portion therefore, other than a residential dwelling.

2.01110 Community System: An on-site wastewater treatment and disposal system which will serve more than three (3) lots or parcels or more than three (3) condominium units or more than three (3) units of a planned unit development.

2.01120 Completed Application: One in which the application form is properly completed in full, is signed by the applicant, is accompanied by all required exhibits, detailed plans and specifications, and required fee.

2.01123Confined Aquifer: An aquifer bounded above and below by impermeable beds or by beds of distinctly lower permeability than that of the aquifer itself and containing ground water. An aquifer containing ground water which is at a pressure greater than atmospheric pressure and from which water in a well will rise to a level above the top of the aquifer.

2.01126Confining Layer: A body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

2.01130Construction Permit: A permit issued by the Department for the construction, alteration, repair or replacement of an on-site wastewater treatment and disposal system.

2.01132Construction Report: A report prepared by the contractor and submitted to the Department within 10 calendar days after the absorption facility has been completely installed.

2.01136Conventional On-Site Wastewater Treatment and Disposal Systems: Gravity, low pressure pipe, pressure-dosed, sand-lined and elevated sand mound.

2.01150Department: The Department of Natural Resources and Environmental Control of the State of Delaware (DNREC)

2.01160Developer: A person, persons, partnership, firm, corporation, or cooperative enterpriseundertaking or participating in the development of a subdivision, manufactured home community, or multi-unit housing project.

2.01170Director: The Director of the Division of Water Resources for the State of Delaware or his/her authorized representative.

2.01180Disposal Area: The entire area used for the absorption facility.

2.01190Distribution Box: A box for distributing wastewater equally to separate distribution laterals of the absorption facility.

2.01200Distribution System: Piping or other devices used in the distribution of wastewater within the absorption facility. (Also referred to as distribution laterals)

2.01220Dosing: The pumped or regulated flow of wastewater to the absorption facility.

2.01230Dosing Chamber: A receptacle for retaining wastewater until pumped or regulated to the absorption facility.

2.01235Down Gradient: An area that has a lower potentiometric surface (hydraulic head) than a comparative reference point.

2.01240Dwelling: Any structure or building, or any portion thereof which is used, intended, or designed tobe occupied for human living purposes including but not limited to, houses, houseboats, boathouses, mobile homes, manufactured homes, travel trailers, hotels, motels, apartments, and condominiums.

2.01245Easement: An interest in land owned by another that entitles its holder to a specific limited use or enjoyment.

2.01247Effluent Filter: A device placed in the outlet compartment of a septic tank which conforms to ANSI/NSF Standard 46 for the purpose of removing particulate matter before the effluent enters the absorption facility.

2.01250Effluent Line: The pipe beginning at the treatment unit or septic tank and terminating at the absorption facility.

2.01255Elevated Sand Mound: An on-site wastewater treatment and disposal system which maintains a 36 inch separation distance above the limiting zone which is pressurized into suitable fill material constructed above existing grade.

2.01260Emergency Repair: Repair of a broken system component where immediate action is necessary to protect public health.

2.01270Escarpment: Any naturally occurring slope greater than thirty (30) percent which extends vertically six (6) feet or more as measured from toe to top, and which is characterized by a long cliff or steep slope which separates two (2) or more comparatively level or gently sloping surfaces, and may intercept one (1) or more layers than limit soil depth.

2.01280Existing On-Site Wastewater Treatment and Disposal System: Any installed on-site wastewater treatment and disposal system constructed in conformance with the rules, laws and local ordinances in effect at the time of construction, or which would have conformed satisfactorily with system design provided for in Department Regulations.

2.01290Feasibility Study: A site/soil investigative report identifying the suitability of a parcel of land for on-site wastewater treatment and disposal systems. The report includes information pertinent to the Department and other local government agencies in the determination of certain land use decisions.

2.01300Fill: Soil material which has been transported to and placed over the original soil or bedrock and is characterized by a lack of distinct horizons or color patterns as found in naturally developed, undisturbed soils.

2.01310Filter Aggregate: Washed gravel or crushed stone ranging in size from $^{3}/_{4}$" to 2 $^{1}/_{2}$" in any dimension and clean and free of fine materials (dust) or meeting grading specifications in Section 6.01042.

2.01315Filter Fabric: Any material approved by the Department which is permeable but does not allow soil particles to pass through for the purpose of protecting the filter aggregate or aggregate free chambers within the absorption facility.

2.01317Full Depth Gravity: A gravity fed on-site wastewater treatment and disposal system which maintains a 36 inch separation distance above the limiting zone where the trench or bed is installed 24 inches into the natural soil.

2.01320Governmental Unit: The state or any county, municipality, or any part thereof.

2.01330GPD: Gallons per day.

2.01340Grade: The inclination or slope of a conduit or ground or plane surface.

2.01344Gravity Capping Fill: A gravity fed on-site wastewater treatment and disposal system which maintains 36 inches separation distance above the limiting zone where the trench or bed is installed between 12 and 23 inches into the natural soil below a soil cap of a specified depth and texture.

2.01347Greywater: The untreated wastewater that has not come into contact with toilet waste. Greywater includes wastewater from bathtubs, showers, bathroom wash basins, clothes washing machines, laundry tubs and other wastewater which does not present a threat from contamination by unhealthy processing, manufacturing or operating wastes. It does not include wastewater from kitchen sinks or dishwashers.

2.01350Grease Trap: A watertight tank for the collection and retention of grease that is accessible for periodic removal.

2.01360Groundwater: Any water naturally found under the surface of the earth.

2.01370Holding Tank: A watertight receptacle used to store wastewater prior to being removed by a licensed waste hauler.

2.01375Hydraulic Conductivity: A specific mathematical coefficient (quantitative) that relates the rate of water movement to the hydraulic gradient. A term of Darcy's law Q = KAi where K represents hydraulic conductivity and is the current standard for measuring a soils ability to transmit water.

2.01380Impervious Strata and Formation: An underground or surface layer of soil or rock which will not allow water to pass through it at a rate permissible for subsurface disposal and having a percolation rate slower than one hundred twenty (120) minutes per inch.

2.01390Invert: The floor, bottom or lowest portion of the internal cross section of a closed conduit or structure.

2.01400Isolation Distance: The horizontal distance between a system component and selected site features or structures.

2.01410Large System: Any on-site wastewater treatment and disposal system with a projected wastewater design flow rate greater than two thousand five hundred (2,500) gallons per day.

2.01415Lift Pump Station: A receptacle for pumping wastewater to a system component to overcome slope differentials for the use of gravity distribution.

2.01420Limiting Zone: Any horizon or condition in the soil profile or underlying strata which includes:

(a)The presence of seasonal or perennial saturation as evidenced by redoximorphic features or direct measurement of observation wells; or

(b) Rock with open joints, fractures or solution channels, masses of loose rock fragments, or loose weathered rock, including gravel, with insufficient fine soil to fill the voids between the fragments; or

(c) Geologic stratum or soil zone in which the permeability of the stratum or zone effectively limits the movement of water

2.01430Lot: A portion of a subdivision or parcel of land.

2.01433Low Pressure Pipe Capping Fill: A pressurized on-site wastewater treatment and disposal system which is installed as trenches and maintains 18 inch separation distance above the limiting zone. The trenches are installed between 9-17 inches into natural soil below a soil cap of a specified depth and texture.

2.01435Low Pressure Pipe Full Depth: A pressurized on-site wastewater treatment and disposal system which is installed as trenches and maintains 18 inch separation distance above the limiting zone. The trenches are installed 18 inches into natural soil.

2.01440Malfunctioning System: A system which is not adequately renovating or hydraulically eliminating the wastewater it is receiving as evidenced by, but not limited to, the following conditions:

(a) Failure of a system to accept wastewater discharge or the backup of wastewater into the structure served by the system.

(b) Direct discharge of wastewater to the surface of the ground, surface water, or groundwater without adequate renovation.

2.01450Manifold: A pipe with numerous branches to convey effluent between a large pipe and several smaller pipes, or to permit choice of diverting flow from one of several sources or to one of several discharge points.

2.01460Manufactured Home: A home built entirely in the factory under a federal building code administered by the Department of Housing and Urban Development (HUD). Manufactured homes may be single or multi-section and are transported to the site and installed.

2.01470Mineral Soil: A soil that is saturated with water less than 30 days (cumulative) per year in normal years and contains less than 20 percent (by weight) organic carbon; or is saturated for greater than 30 days or more cumulative in normal years, and has an organic carbon content (by weight) of less than 18 percent if the mineral fraction contains 60 percent or more clay; or less than 12 percent if the mineral fraction contains no clay.

2.01475Monitor Well: A well installed for the sole purpose of the determination of subsurface conditions and collecting groundwater samples.

2.01480Mottling: Soil irregularly marked with spots of different colors that vary in number and size which may indicate poor aeration, lack of drainage and the upper extent of the seasonal high water table.

2.01495Observation well: A well used for the sole purpose of determining groundwater levels.

2.01500 On-Site Wastewater Treatment and Disposal System: Conventional or alternative, wastewater treatment and disposal systems installed or proposed to be installed on land of the owner or on other land to which the owner has the legal right to install the system.

2.01505On-Site System Advisory Board (OSSAB): A panel of licensee's representing the on-site industry, asked to serve by the Secretary, on all matters pertaining to the issuance and revocation of all on-site licenses.

2.01510Owner: The person who has a vested legal or equitable title to real or personal property, including an on-site wastewater treatment and disposal system.

2.01530Percolation rate: The rate of water movement through a soil. Percolation rate is usually measured and assigned on the basis of elapsed time per unit volumetric water level drop. The most commonly used unit for expressing percolation rate is minutes per inch (mpi).

2.01540Permeability: The property of a soil horizon that enables the soil to transmit gases, liquid, or other substances.

2.01550Permit: The written document approved by the Department which authorizes the installation of a system or any part thereof, which may also require operation and maintenance of the system.

2.01560Permittee: Any individual, partnership, corporation, association, institution, cooperative enterprise, agency, municipality, commission, political subdivision or duly established entity to which a permit is issued.

2.01565Piezometer: A small diameter non-pumping well with a short screen that is used to measure the elevation of the water table or potentiometric surface.

2.01570Platy Structure: Soil aggregates that are developed predominantly along the horizontal axes, laminated and flaky.

2.015~~80~~ 75Pollution or Water Pollution: Any alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such

waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof.

2.01581Potentiometric Surface: A surface that represents the level to which water will rise in tightly cased wells.

2.01582Pressure Dosed Capping Fill: A pressurized on-site wastewater treatment and disposal system which maintains a 36 inch separation distance above the limiting zone where the trench or bed is installed between 12 and 23 inches into the natural soil below a soil cap of a specified depth and texture.

2.01587Pressure Dosed Full Depth: A pressurized on-site wastewater treatment and disposal system which maintains a 36 inch separation distance above the limiting zone where the trench or bed is installed 24 inches into the natural soil.

2.01590Pressurized Distribution: A network of piping with orifices designed to evenly distribute wastewater under pressure through the entire absorption facility.

2.01595Primary Treatment: A wastewater treatment process that takes place in a tank and allows those substances in wastewater that readily settle or float to be separated from the water being treated.

2.01600Professional Engineer: A person registered by the Delaware Association of Professional Engineers to practice professional engineering in the State of Delaware.

2.01610Professional Geologist: A person registered by the Delaware State Board of Registration of Geologists to practice professional geology in the State of Delaware.

2.01620Project Site: The total area within the property lines of an individual lot or within the division lines of a parcel or subdivision.

2.01630Public Health Hazard: A condition whereby there are sufficient types and amounts of biological, chemical or physical, including radiological, agents relating to water or sewage which are likely to cause human illness, disorders or disability. These include, but are not limited to, pathogens, viruses, bacteria, parasites, toxic chemicals, and radioactive isotopes.

2.01635Redoximorphic Features: Characteristic soil patterns formed by the reduction, translocation and oxidation of iron and manganese oxides. The occurrence of these features may be indicative of poor drainage, or lack of aeration associated with the upper most extent of the seasonal high water table.

2.01640Repair: Any modification to an existing on-site wastewater treatment and disposal system necessary to fix a problem or malfunction.

2.01650Replacement System: An on-site wastewater treatment and disposal system to replace the existing on-site wastewater treatment and disposal system or a portion thereof.

2.01660Sand: Individual mineral particles in a soil that range in diameter from the upper limit of silt (0.05 millimeters) to 2.0 millimeters.

2.01680Sand Lined System: A type of seepage trench or seepage bed soil absorption facility constructed in ~~the~~ sandy fill material below the natural soil surface and may require pressurization. The fill material is used to replace a natural impermeable or slowly permeable soil layer or to completely remove an existing absorption facility.

2.01685Sandy Fill: Materials that consist of medium sand, sandy loam, loamy sand/sandy loam mixtures (see sieve requirements in Section 6.01041).

2.01700Scarifying: Scraping or loosening the bottom and sidewall soil surfaces in the preparation of percolation test holes, seepage trenches, beds, or similar excavations.

2.01710Scum: A mass of sewage solids floating at the surface of effluent and buoyed up by entrained gas, grease or other substances.

2.01720Seasonal High Water Table: The highest zone of soil or rock that is seasonally or permanently saturated by a perched or shallow water table. A planar surface below which all pores in rock or soil (whether primary or secondary) is seasonally or permanently saturated.

2.01725Secondary Treatment: A combination of unit processes that will consistently remove 85% or more of the organic and suspended material in domestic wastewater and produce an effluent of sufficient quality to satisfy the following requirements; monthly average effluent BOD_5 and TSS concentrations of 30 mg/L; daily maximum effluent BOD_5 and TSS concentrations of 45 mg/L.

2.01730Secretary: Secretary of the Department of Natural Resources and Environmental Control or a duly authorized designee.

2.01750Seepage Bed: An absorption facility consisting of an area from which the entire earth contents have been removed and replaced with a network of perforated pipe, filter aggregate or aggregate-free chambers and covered with suitable backfill material.

2.01755Seepage Pit: ~~Synonymous with "cesspool" except it is usually~~ A covered pit with a porous lining into which wastewater is discharged and allowed to seep or leach into the surrounding soil and is preceded by a septic tank~~. where a cesspool is not.~~

2.01760Seepage Trench: A soil absorption facility consisting of ditches with vertical sides and flat bottoms partially filled with filter aggregate and containing perforated pipe or aggregate-free chambers and covered with suitable backfill material.

2.01770Septage: The liquid and solid contents of a septic tank.

2.01780Septic Tank: A watertight receptacle which receives the discharge of wastewater from a structure or part thereof and is designed and constructed so as to permit settling of solids from the liquid, digestion of the organic matter by detention, and discharge of the liquid portion into an absorption facility.

2.01810Single Family Dwelling: A residence intended for single family residential use.

2.01820Siphon: A hydraulically operated device designed to rapidly discharge the contents of a dosing tank between predetermined hydraulic levels.

2.01830Site Evaluation: The practice of investigating, evaluating and reporting basic soil and site conditions which apply to the on-site wastewater treatment and disposal system type and design criteria.

2.01840Slope: Deviation of a plane surface from the horizontal. It is usually expressed as a ratio or percentage of number of units of vertical rise or fall per unit of horizontal distance.

2.01860Soil Horizon: A layer of soil or soil material approximately parallel to the land surface and differing from adjacent genetically related layers in physical, chemical, and biological properties or characteristics such as color, structure, texture, consistence and pH.

2.01870Soil Profile: A vertical cross-section of a soil that shows the various soil horizons. Soil drainage or moisture status are soil characteristics that can be inferred from the soil profile.

2.01880Soil Structure: The combination or arrangement of primary soil particles into secondary compound particles or clusters, the principle forms of which are: platy (laminated); prismatic (prisms with rounded tops); blocky (angular or subangular); granular and columnar.

2.01890Soil Texture: The grain sizes that comprise a soil consisting of three textural classes; sand, silt and clay. Field methods for judging the texture of a soil consist of forming a cast of soil, both dry and moist, in the hand and pressing a ball of moist soil between thumb and finger.

(a)The major textural classifications are observed and can be determined in the field as follows:

(1) Sand: Individual grains can be seen and felt readily. Squeezed in the hand when dry, this soil will fall apart when the pressure is released. Squeezed when moist, it will form a cast that will hold its shape when the pressure is released, but will crumblewhen touched.

(2) Sandy Loam: Consists largely of sand, but has enough silt and clay present to give it a small amount of stability. Individual sand grains can be readily seen and felt. Squeezed in the hand when dry, this soil will readily fall apart when the pressure is released. Squeezed when moist, it forms a cast that will not only hold its shape when the pressure is released, but will withstand careful handling without breaking. The stability of the moist cast differentiates this soil from sand.

(3)Loam: Consists of an even mixture of sand and of silt and a small amount of clay. It is easily crumbled when dry and has a slightly gritty yet fairly smooth feel. It is slightly plastic. Squeezed when moist, it forms a cast that will not only hold its shape when the pressure is released, but will withstand careful handling without breaking. The stability of the moist cast differentiates this soil from sand.

(4) Silt Loam: Consists of a moderate amount of fine grades of sand, a small amount of clay, and a large quantity of silt particles. Lumps in a dry, undisturbed state appear quite cloddy, but they can be pulverized readily; the soil then feels soft and floury. When wet, silt loam runs together in puddles. Either dry or moist, casts can be handled freely without breaking. When a ball of moist soil is pressed between thumb and finger, it will not press out into a smooth, unbroken ribbon, but will have a ribbon appearance.

(5) Clay Loam: Consists of an even mixture of sand, silt, and clay, which breaks into clods or lumps when dry. When a ball of moist soil is pressed between the thumb and finger, it will form a thin ribbon that will readily break, barely sustaining its own weight. The moist soil is plastic and will form a cast that will withstand considerable handling.

(6) Silty Clay Loam: Consists of a moderate amount of clay, a large amount of silt, and a small amount of sand. It breaks into moderately hard clods or lumps when dry. When moist, a thin ribbon or one-eighth (1/8) inch wire can be formed between thumb and finger that will sustain its weight and will withstand gentle movement.

(7) Silty Clay: Consists of even amounts of silt and clay and very small amounts of sand. It breaks into hard clods or lumps when dry. When moist, a thin ribbon or one-eighth (1/8) inch or less sized wire formed between thumb and finger withstand considerable movement and deformation.

(8) Clay: Consists of large amounts of clay and moderate to small amounts of sand. It breaks into very hard clods or lumps when dry. When moist, a thin, long ribbon or one-sixteenth (1/l6) inch wire can be molded with ease. Fingerprints will show on the soil, and a dull to bright polish is made on the soil by a shovel.

(9) Silt: Consists largely of silt with very small amounts of clay. The soil feels very silky or floury. When pressed between thumb and finger, it will readily pulverize without forming a ribbon.

(10) Loamy Sand: Is predominately composed of sand, but has enough clay so that it can be formed into a weakly developed ball with careful handling.

(11) Sandy Clay Loam: The predominant particle size found within this soil textural class is sand, although it contains relatively high levels of clay with lesser amounts of silt. When moist, it will form a thin ribbon that does not readily break.

(12) Sandy Clay: Consists of relatively even amounts of sand and clay with very small amounts of silt. When moist, a thin ribbon can readily be formed between thumb and finger without considerable deformation or movement.

(b) These and other soil textural characteristics are defined as shown in the United States Department of Agricultural Textural Classification Chart which is hereby adopted as part of these Regulations (see Exhibit B). This textural classification chart is based on the Standard Pipette Analysis as defined in the United States Department of Agriculture, Soil Conservation Service Soil Survey Investigations Report No. 1.

(c) Throughout these Regulations where soil textural classes and other terminology describing soils are utilized, definition and interpretation shall be in accordance with the latest edition of Soil Survey Manual (Handbook 18), Field Book for Describing and Sampling Soils, and Field Indicators of Hydric Soils in the Mid-Atlantic States as published by either the U.S. Department of Agriculture or the U.S. Environmental Protection Agency.

2.01910 Solum: The upper part of the soil profile (A, E and B horizons) above the parent material in which the processes of soil formation are active.

2.01915 Spare Area: An area set aside for construction of a second absorption facility to be used in the event the original absorption facility malfunctions or is expanded.

2.01930 Subdivision: Any tract or parcel of land which has been divided into two or more lots for which development is intended.

2.01940 System: Refers to an on-site wastewater treatment and disposal system.

2.01945 System Inspector: A person licensed by the Department to inspect, investigate, collect data and make determinations regarding the present operational condition of an on-site wastewater treatment and disposal system.

2.01950Test Pit: An excavation used to examine a soil profile in order to assess soil permeability and depth to a seasonal high water table using soil texture, structure, and redoximorphic features as a basis for assessing site suitability.

2.01960Topography: Ground surface variations or contours of the earth's surface, both natural and anthropogenic.

2.01965Unconfined Aquifer: An aquifer in which no relatively impermeable layer exists between the water table and the ground surface and an aquifer in which the water is at atmospheric pressure.

2.01970Undisturbed Soil: Soil or soil profile unaltered by filling, removal, or other man-made changes with the exception of agricultural activities.

2.01975Upgradient: An area that has a higher potentiometric surface (hydraulic head) than a comparative reference point.

2.01980Wastewater: Water-carried waste from septic tanks, water closets, residences, buildings, industrial establishments, or other places, together with such groundwater infiltration, subsurface water, and mixtures of industrial wastes or other wastes as may be present.

2.01990Wastewater Utility: Any person who engages in the business of providing wastewater disposal and related services to the public for a fee, charge, or other remuneration in the State of Delaware.

2.02000Watercourse: Any ocean, bay, lake, pond, stream, river or defined ditch that will permit drainage into any surface water body, excluding ephemeral watercourses as defined below.

a)Ephemeral – A watercourse which flows briefly, only in direct response to precipitation in the immediate vicinity, and whose invert is above the seasonal high water table.

2.02010Water Table: The surface of an unconfined aquifer where the groundwater pore water pressure is equal to atmospheric pressure.

2.02020Waters of the State: Public waters, including lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the ocean within the territorial limits of the State, and all other bodies of surface or underground water, natural or artificial, inland or coastal, fresh or salt, within the jurisdiction of the State of Delaware.

2.02023Well: Any excavation that is drilled, cored, bored, washed, driven, dug, jetted, or otherwise constructed when the intended use of such excavation is for the location, testing, acquisition, use; for extracting water from or for the artificial recharge of subsurface fluids; and where the depth isgreater than the diameter or width. For the purpose of this regulation this definition does not include geotechnical test, soil, telephone and construction piling borings, fence posts, test pits, or horizontal closed loop heat pump circulation systems constructed within twenty (20) feet of the ground surface.

2.02030Zone of Aeration: A subsurface zone containing water under pressure less than that of the atmosphere, including water held by capillary and containing air or gases generally under atmospheric pressure. This zone is limited above by the land surface and below by the surface of the zone of saturation, i.e., the water table.

SECTION 3.00000 - GENERAL STANDARDS, PROHIBITIONS AND PROVISIONS

3.01000 Each and every owner of real property is jointly and severally responsible for:

(a) Disposing of wastewater in conformance with all applicable Regulations; and

(b) Connecting all plumbing fixtures on that property, from which wastewater is or may be discharged, to a central wastewater system or on-site wastewater treatment and disposal system approved by the Department; and

(c) Maintaining, repairing, and/or replacing the system as necessary to assure proper operation of the system

3.02000 No person shall construct, install, modify, rehabilitate, or replace an on-site wastewater treatment and disposal system or construct or place any dwelling, building, mobile home, manufactured home or other structure capable of discharging wastewater on-site unless such person has a valid license and permit issued by the Department pursuant to these Regulations.

3.03000 No permit may be issued by the Department under these Regulations unless the county or municipality having land use jurisdiction has first approved the activity through zoning procedures provided by law.

3.04000 Any county may assume responsibility and authority for administering its own regulatory program for on-site wastewater treatment and disposal systems pursuant to 7 Del. C., Chapter 60, Section 6003(d), if the delegated program establishes standards no less stringent than the standards established in these Regulations.

3.05000 Administrative and judicial review and the enforcement under these Regulations shall be in accordance with the provisions of 7 Del. C., Chapter 60.

3.06000 If any part of these Regulations, or the application of any part thereof, is held invalid or unconstitutional, the application of such part to other persons or circumstances, and the remainder of these Regulations, shall not be affected thereby and shall be deemed valid and effective.

3.07000 These Regulations, being necessary for the health and welfare of the State and its inhabitants, shall be liberally construed in order to preserve the land, surface water and ground water resources of the State.

3.08000 At the sole discretion of the Department, if the proposed operation of a system may cause pollution of public waters or create a public health hazard, system installation or use shall not be authorized.

3.09000 All wastewater shall be treated and disposed of in a manner approved by the Department.

3.10000 No person shall dispose of wastewater at any location not authorized by the Department under applicable laws and regulations for such disposal.

3.11000 Discharge of untreated or partially treated wastewater or septic tank effluent directly or indirectly onto the ground surface or into surface waters of the State, unless authorized by a permit issued by the Department, constitutes a public health hazard and is prohibited.

3.12000 No cooling water, air conditioning water, groundwater, oil, water softener brine or roof drainage shall be discharged into any system without specific authorization of the Department. Water softener brine shall be discharged in a manner that does not allow surface discharge (curtain drain).

3.13000 Except where specifically allowed within these Regulations, no person shall connect a dwelling or commercial facility to a system if the total projected wastewater flow would be greater than that allowed under the original system construction permit.

3.14000 Each system shall have adequate capacity to properly treat and dispose of the maximum projected daily wastewater flow. The quantity of wastewater shall be determined from these Regulations or other information the Department determines to be valid that may show different flows.

3.15000 A permit to install a new system can be issued only if each site has received an approved site evaluation and is free of encumbrances (e.g., easements, deed restrictions, etc.) which could prevent the installation or operation of the system from being in conformance with these Regulations.

3.16000 A recorded utility easement is required whenever a system crosses a property line separating property under different ownership. The easement must accommodate that part of the system, including setbacks, which lies beyond the property line, and must allow entry to install, maintain and repair the system.

3.17000 Whenever real property is recorded as two separate lots under common ownership and an on-site wastewater treatment and disposal system crosses the common boundary of the recorded lots, the owner shall execute and record, in the appropriate county office of Recorder of Deeds, an affidavit which notifies prospective purchasers of this fact on a form approved by the Department.

3.18000 Except as provided in these Regulations, the spare area shall be kept vacant, free of vehicular traffic and soil modifications.

3.19000 All systems shall be operated and maintained so as not to create a public health hazard or cause water pollution.

3.20000 Exhibits A through Z are incorporated into these Regulations by reference.

3.21000No person shall transfer any portion of real property if the transfer would create a lot boundary which would cross an existing system or any part thereof including required setbacks and isolation distances unless, a utility easement is granted to the owner of the existing system and recorded in the appropriate county office of Recorder of Deeds.

3.22000The Department shall have the power to enter, at reasonable times, upon any private or public property for the purpose of inspecting and investigating conditions relative to the enforcement of these Regulations.

3.23000No person shall transfer any portion of real property after the issuance of a permit pursuant to these Regulations if the transfer would result in the use of the permitted on-site system on a lot which does not comply with these Regulations and the terms of the permit, including density, set back and isolation distance requirements.

SECTION 4.00000 - LICENSES

4.01000The Department shall administer a program for the licensing of percolation testers, system designers, site evaluators, system contractors and liquid waste haulers. The licensing program shall provide the issuance of licenses as follows;

(a)Class A - Percolation Tester: The Class A license authorizes the performance of percolation tests and other types of infiltrometer testing.

(b) Class B - Designer: The Class B license authorizes the design of conventional on-site wastewater treatment and disposal systems which utilize gravity distribution systems for seepage beds and seepage trenches and lift pump stations as provided for in these Regulations.

(c)Class C - Designer: The Class C license authorizes the design of conventional and alternative on-site wastewater treatment and disposal systems and all pressure distribution systems.

(d)Class D - Site Evaluator: The Class D license authorizes the performance of site soil evaluations, percolation and/or permeability tests or hydraulic conductivity tests.

(e)Class E - System Contractor: The Class E license authorizes the construction, repair and installation of on-site wastewater treatment and disposal systems.

(f) Class F - Liquid Waste Hauler: The Class F license authorizes the removal or disposal of the solid and liquid contents of septic tanks, cesspools, seepage pits, holding tanks or other wastewater treatment or disposal facilities as specified and required under these Regulations.

(g)Class GB - Designer: The Class GB license authorizes the design of combined well and conventional on-site wastewater treatment and disposal systems which utilize gravity distribution systems for bed and trench designs.

(h)Class GC - Designer: The Class GC license authorizes the design of combined well and conventional and alternative on-site wastewater treatment and disposal systems and all pressure distribution systems.

(i)Class H – System Inspector: The Class H license authorizes the inspection, investigation and data collection to make determinations regarding the present operational condition of on-site wastewater treatment and disposal systems.

4.02000It shall be necessary to have the Class A, Class B, Class C, Class D, Class E, Class F, Class GB, ~~and~~ Class GC and Class H licenses in order to engage in the specified activities under Section 4.01000 of these Regulations except the Class H license will become effective June 1, 2005.

4.03000Any person seeking a license under this Section shall submit a complete application to the Department, on a standard form provided by the Department, references and pay the non-refundable application fee, if required. All applicants for a Class A, B, E, F, ~~and/or~~ GB and/or H license will be required to pass an examination prepared and administered by the Department to test the competency and knowledge of the applicant regarding pertinent subject matter and the application and use of these Regulations. (GB and GC licenses shall not be available until Section 3.04 of the Regulations Governing the Construction and Use of Wells is amended.

4.03050In the event an applicant fails to receive a passing grade on the examination, he/she shall be so notified by the Board within 30 days. The applicant may re-apply for a subsequent examination only after completion of a training course approved by the On-Site System Advisory Board (OSSAB). The examination may be taken no more than twice in a twelve (12) month time period.

4.04000With respect to Class C licenses the following shall constitute the Department's requirements:

(a) Registration as a Professional Engineer with the Delaware Association of Professional Engineers; and

(b) A complete qualifications statement on approved Department forms which verify the individual's knowledge and competency in the field of on-site wastewater treatment and disposal system engineering and design.

4.05000With respect to Class D licenses the following shall constitute the Department's requirements:

(a) A completed qualifications statement on appropriate Department forms which verify the individual's knowledge and competency in the field of site evaluations for on-site wastewater treatment and disposal systems; and

(b) Registration as a Professional Soil Scientist or Soil Classifier with the American Registry of Certified Professionals in Agronomy, Crops and Soils (ARCPACS); or

NOTE: If not ARCPACS certified, a field practicum shall be performed to assess whether competency exists for soils in Delaware. This field practicum shall be administered by the soil scientist(s) on the On-Site System Advisory/Site Interpretations Boards and/or from DNREC.

(c) Six (6) years of professional experience in soil classifications, mapping and interpretations with nine (9) semester hours in soil science and six (6) semester hours in geological sciences from an accredited college or university; or

(d) Four (4) years of professional experience in soils classifications, mapping and interpretations and an undergraduate degree from an accredited college or university with nine (9) semester hours in soil science and six (6) semester hours in geological sciences; or

(e)Two (2) years of professional experience in soils classifications, mapping and interpretations and a graduate degree from an accredited college or university, with thirty (30) semester hours or the equivalent in biological, physical and earth sciences with fifteen (15) of such semester hours in soil science.

4.06000With respect to Class E licenses the following shall constitute the Department's requirements:

(a)A completed qualifications statement, on appropriate Department forms, which verify the individual's knowledge and competency of the application and requirements of these Regulations; and

(b)A minimum of two (2) years of experience ~~under the guidance of an experienced supervisor~~ in the construction of on-site wastewater treatment and disposal systems

~~(c)Show proof of insurance for a minimum of $300,000 for general liability and $100,000 per occurrence~~

4.06050With respect to Class GB licenses the following shall constitute the Department's requirements:

(a)A complete qualifications statement on approved Department forms which verify the individual's knowledge and competency in the field of gravity on-site wastewater treatment and disposal systems; and

(b)A complete qualifications statement on approved Department forms which verify the individual's knowledge and competency in the placement of wells and the Regulations Governing the Construction and Use of Wells

4.06100With respect to Class GC licenses the following shall constitute the Department's requirements:

(a)Registration as a Professional Engineer with the Delaware Association of Professional Engineers; and

(b)A complete qualifications statement on approved Department forms which verify the individual's knowledge and competency in the field of engineering and the design of on-site wastewater treatment and disposal systems

(c)A complete qualifications statement on approved Department forms which verify the individual's knowledge and competency in the placement of wells and the Regulations Governing the Construction and Use of Wells

4.06200With respect to Class H licenses the following shall constitute the Department's requirements:

(a)Furnishes certification of training completed under the National Association of Waste Transporters (NAWT) certification, Pennsylvania Septage Management Association (PSMA) certification, Delaware Technical & Community College certification program or as approved by the Board.

4.06250Responsibilities of Licensees

4.06260Any Class D licensed site evaluator may be required to notify the Department orally or in writing at least thirty-six (36) hours, excluding Saturdays, Sundays and state holidays, prior to conducting the site evaluation. This is at the sole discretion of the Department.

4.06270All Class A, B, C, D, E, F, GB, ~~and~~ GC and H licensee's are responsible for correct and complete information submitted to the Department as it pertains to current Regulations.

4.06300All Class E licensed system contractors shall:

(a)Initiate work only on systems for which a construction permit has been granted; and

(b)Comply with all applicable regulations and requirements; and

(c)Be responsible for the work carried out by their employees; and

(d)Submit to the Department within ten (10) days of completion of a system, a Construction Report on forms provided by the Department, signed by the licensed contractor; and

(e)Notify the Department 24 hours prior to construction start up to receive an authorization number, except newly licensed contractors must notify the Department 48 hours prior to initial six (6) construction start ups to receive an authorization number; and

(f)Be the sole contact person to the Department regarding inspection call-ins, consequential changes or problems. An individual employed by the licensee may be the contact person for inspection call-ins provided that person is a Class E licensee or has been designated as a contact person in writing to the Department by the licensee prior to calling; and

(g)Submit proof of insurance annually

4.06400All Class F licensed liquid waste haulers shall:

~~(a)Display the name, address and permit number of the licensee in standard block letters no less than three (3) inches high on both sides of each vehicle used for hauling purposes; and~~

~~(b)Equip every vehicle used for hauling purposes with a watertight tank or body and be maintained in a clean and sanitary condition. Liquid wastes shall not be transported in an open body vehicle unless contained within suitable receptacles. All pumps and hose lines shall be free of leaks; and~~

~~(c)Assure all receptacles used for transporting liquid or solid wastes are watertight, equipped with tight fitting lids and are cleaned daily; and~~

~~(d)Obtain prior approval in writing from the Department for every site at which a hauler plans to discharge a specified amount of waste material collected. No waste material shall be discharged on a site without such prior approval. Written approval will be based upon the applicant having satisfied the requirements of all applicable regulations adopted by the Department. Waste material collected by the hauler shall not be discharged into ditches, watercourses, lakes, ponds, tidewater or at any point where it can pollute any watercourse, water supply source, bathing area, or shellfish growing area. It shall not be deposited within 300 feet of any highway, except as provided in subpart (e) thereunder; and~~

~~(e)Discharge liquid wastes into approved wastewater treatment facilities unless otherwise authorized by the Department, provided such facilities have sufficient capacity and capability to handle such liquid wastes; and~~

~~(f)Fit all truck pumping and discharge hoses with automatic shutoff valves; and~~

(~~g~~ a) Remove all wastewater from the appropriate tanks in accordance with the guidelines as set forth by the Department; and

(~~h~~ b) May repair, add or replace septic tank and/or holding tank risers, ~~and~~ baffles, lids, distribution box lids and effluent filters ~~on or within septic tanks~~

4.06430 All Class H System Inspectors shall perform:

(a) All inspections of on-site wastewater treatment and disposal systems shall be submitted to the Department on forms approved by the Department (See Exhibit A for the inspection form example and guidelines). These forms shall be submitted within seventy two (72) hours of inspection completion.

4.06450 Any person who engages in the practice of professional engineering or professional geology in the specified activities under this Section shall be duly registered in conformance with the requirements of the laws of the State of Delaware.

4.06460 The Department may issue temporary Class A, B, or E licenses to property owners who wish to conduct their own percolation testing, system design, or system installation on their own property and for their own use. Certification of the intended use will be required. The applicant shall submit an application on Department forms along with any required fee and shall demonstrate his competency in those fields by successfully completing a test conducted by the Department. The term of the temporary Class A, B, or Elicense shall expire upon completion of work conducted by the applicant for which the permit was issued.

4.07000 In exercising exclusive licensing authority under this section, the Department shall seek the views of an On-Site Systems Advisory Board regarding licensing matters. The Board shall consist of ~~six (6)~~ eight (8) members designated by the Secretary. The Board shall, if possible, have one (1) member who is a representative of the Department, one (l) member who is a Professional Engineer, one (1) member who is a Professional Geologist, one (1) member who is a representative of the USDA, one (1) member who is a Class D site evaluator, ~~and~~ one (1) member who is a Class E contractor, one (1) member who is a Class F Liquid Waste Hauler and one (1) member who is a Class H System Inspector. The members of the Board shall serve at the discretion of the Secretary. The Board shall advise the Department on matters relating to issuance of Class A, Class B, Class C, Class D, Class E, Class F, Class GB, ~~and~~ Class GC and Class H licenses.

4.07100 Upon adoption of these Regulations, the applicant for a license renewal shall submit with the renewal application proof that he/she has attended and/or satisfactorily completed a minimum of ten (10) hours of continuing education training relating to the wastewater industry. This is to include siting, design, construction, operation and/or maintenance of on-site wastewater treatment and disposal systems. Class D site evaluators not ARCPAC certified must attend at least three (3) hours of soil related curriculum. Any training must be sponsored by recognized governmental, educational or industrial groups which include equipment manufacturers and be approved by the OSSAB. The number of hours of continuing education for first year licensee's will be decided by the OSSAB and be based upon license issuance date.

4.07500 The Secretary may suspend or revoke the license of a Class A, B, C, D, E, F, GB, ~~or~~ GC or H licensee after considering the recommendations of the On-Site Systems Advisory Board and demonstration that the licensee has practiced fraud or deception; that reasonable care, judgment, or the application or their knowledge or ability was

not used in performance of their duties; or that the licensee is incompetent or unable to perform their duties properly or;

(a)Violated any provision of these Regulations;

(b)Violated any lawful order or rule rendered or adopted by the Department;

(c)Obtained his/her license or any order, ruling, or authorization by means of fraud, misrepresentation, or concealment of material facts;

(d)Failure to obtain the necessary hours of continuing education training required by these Regulations;

(e)Been found guilty of misconduct in the pursuit of his/her profession

4.08000Any person whose application for a license has been denied or person whose license has been suspended or revoked shall be notified in writing and provided reasons for the decision. Within twenty (20) days of notification, the person shall notify the Secretary, in writing, if an appeal pursuant to 7 Del. C., Chapter 60, Section 6008 is to be requested. If no appeal request is received within the designated period the decision shall become final.

4.09000Licenses issued pursuant to this Section are not transferable and shall expire on December 31st of each year. A license may be renewed yearly without examination for an ensuing year provided the licensee makes application for renewal by November 30th of each year, shows proof of the number of hours of continuing education training and pays any applicable renewal fees adopted by the Department. If the licensee fails to renew the license he/she may reapply, without examination, within the first year. If more than a year passes the licensee must reapply for the license and take all necessary examinations. A reminder will be sent to the licensee to renew his/her license by the Department. The reminder will be sent to the address on file for the licensee. It is the licensee's responsibility to renew the license yearly and notify the Department of any changes.

SECTION 5.00000 - SITE EVALUATIONS AND PERMITS

5.01000 Site Evaluation Procedures

5.01010 A site evaluation is the first step in the process of obtaining a construction permit for an on-site wastewater treatment and disposal system. Any person applying for a permit to install a new or replacement on-site wastewater treatment and disposal system shall first obtain a site evaluation report prepared by a Class D site evaluator. The Department shall conduct site evaluations only for Home Rehabilitation Loan Programs (HRLP), block grant households, State Revolving Fund (SRF) sites and other qualifying income programs with similar criteria.

5.01020 Site evaluations performed for the purpose of siting large/community systems refer to the necessary criteria in Section 5.12000.

5.01025 Each report shall be completed in full and be accompanied, at a minimum, by approval page(s) (excluding sites not suitable for conventional on-site wastewater treatment and disposal systems (OWTDS)), report page(s), site drawing, soil profile notes, zoning verification form and the appropriate fee. The site evaluation report shall contain specific site conditions or limitations including, but not limited to, isolation and separation distances, slopes, existing wells, cuts and fills, and unstable landforms.

5.01028 The Class D site evaluator shall specify on the approval page the type of on-site wastewater treatment and disposal system that may be constructed in the acceptable on-site disposal area as indicated on the site drawing. Any other on-site wastewater treatment and disposal options available in the evaluated area shall be specified by the Class D site evaluator. The evaluator shall either assign a percolation rate or have the appropriate hydraulic conductivity or percolation test conducted in the proposed disposal area prior to submittal.

5.01030 A site drawing drawn to scale showing the information referenced in Section 5.01080. All site drawings are required to show a reference point such as a numbered utility pole, telephone or electrical box, building(s), property corners or fixed survey marker. A minimum of two reference points shall be noted on the site drawing when no land survey boundary stakes or markers are readily identifiable in the field, or if the site drawing is not based on a survey conducted by a licensed land surveyor. However, if the site drawing is based on a survey conducted by a licensed land surveyor, the property corner stakes or markers will suffice for identification of the parcel. Site drawing(s) shall be based on an even number scale, not to exceed 1 inch equals 100 feet. Any site drawing exceeding the dimensions of 8.5 inches X 11 inches must be submitted in duplicate.

5.01035 Showing the location of all on-site and adjacent wells within 150 feet of the approved soils area is the responsibility of the Class D site evaluator. The following procedure shall be used in all cases when on-site or adjacent well(s) cannot be located. For instances where the on-site or adjacent well(s) are below ground and the homeowner or adjacent property owner states that the well is located in a certain area, this information shall suffice for verification of well location. Any well(s) that can not be verified must be researched through the Water Supply Section of the Department. The search attempts to locate any well(s) that are near the affected parcel. If, after this search is completed, the well location(s) cannot be identified the Class D site evaluator can state “records were researched under this property owner’s name and no information was found”. The Department then sends a letter to the adjacent well owners notifying them of the need to locate their well(s) due to the future installation of an on-site wastewater treatment and disposal system. If no response is rendered within fifteen (15) days of receipt then the new system is to be designed to maximize the isolation distance from the property line.

5.01040 A site evaluation prescription shall follow an approach that includes consideration of topography, available area, slope gradient and uniformity, soil profile (thickness and depth of each horizon, color, percolation, absorption rate, redoximorphic features, texture (see Exhibit B), and zones of saturation), drinking water supplies, bodies of water,

and shellfish growing areas. All suitable soils within the evaluated area shall be delineated regardless of isolation distances, encumbrances and easement requirements as well as any of the above conditions which may exist.

5.01045 All soil borings, holes and/or pits shall be flagged, identified and adequately shown on the site drawing.

5.01060 In describing the soils and soil profile, the site evaluator shall adhere to the procedures and techniques provided in the latest edition of the Soil Survey Manual, USDA Agricultural Handbook No. 18, as published by the U.S. Department of Agriculture.

5.01080 The report shall contain, at a minimum, a site drawing and observations of the following site characteristics, if present:

(a) Parcel size, location map of project site, configuration and approximate dimensions

(b) Slope - percent and direction

(c)Surface streams, springs or other bodies of water and their definition (i.e. shellfish, intermittent, ephemeral, etc.)

(d) Existing wells within 150 feet of approved soils area

(e) Escarpments

(f) Cuts and fills

(g) Unstable landforms

(h) A representative number of soil profile descriptions in the evaluated area(s) and shall identify the soil series or classification to the subgroup level (i.e. Sassafras or Typic Hapludult). The geographic coordinates of each representative soil boring, a minimum of two (2), must be determined by a global positioning system. The coordinates should be reported in the following format – Latitude DD.ddddd & Longitude DD.ddddd – (5 decimal places are required for accuracy).

(i) Zones of saturation (as indicated by redoximorphic features)

(j) Approved soils area(s)

(k) Encumbrances

(l) Central wastewater or water systems availability

(m) Any other applicable information such as hydric soils (if any recorded state or federal wetlands) or refer to Statewide Wetland Mapping Project (SWMP)

(n) Any overhead utilities

(o)Existing dwellings

5.01100 The application/construction permit report may be submitted with the site evaluation, in an emergency situation, when there is a public health risk associated with a malfunctioning system. The permit shall not be approved until

the site evaluation is reviewed and complies with these Regulations. Site evaluations needed to replace the malfunctioning system shall be given a priority review.

5.01105 Once received, the report shall be reviewed for compliance with current Regulations by a DNREC Environmental Scientist with a soil science background. If the report is in non-compliance, the Class D site evaluator shall be notified. The Class D site evaluator shall contact the Department to rectify the discrepancy. The Department shall not modify any site evaluation report unless requested by the Class D site evaluator. The corrections shall be submitted to the Department from the evaluator and a corrected copy to the owner, etc. The review process, which may include a field check, shall take place within ten (10) working days of receipt. (NOTE: If approval cannot be issued within ten (10) working days, the property owner or authorized agent shall be notified of the delay and a tentative date of approval or denial shall be given). Once approved, the report shall be mailed to the property owner or his/her authorized agent. A percentage of randomly chosen site evaluations submitted shall be field verified by DNREC staff. Site evaluations' requiring test pits should be reported to the Department prior to conducting the site evaluation.

5.01125 Approval of a site evaluation indicates only that the site evaluation was conducted in compliance with these Regulations. It is not an indication of the correctness or quality of the site evaluation nor an indication that a permit can be issued.

5.01140 The approved site evaluation report shall indicate the type of the initial and type of replacement system for which the site is approved.

5.01170 Technical regulation changes shall not invalidate an approved site evaluation but may require the use of a different type of system.

5.01172 The approved site evaluation shall be valid for five (5) years from the date of the Department's approval or the adoption of this Regulation revision unless a subdivision base plan restricting well and on-site wastewater treatment and disposal system locations has been approved by the Department and recorded in the local Recorder of Deeds Office. After the five (5) year period, a site evaluation as outlined in Section 5.01080, shall be submitted to the Department for approval. This site evaluation will be reviewed as outlined in Sections 5.01100 and 5.01105.

5.01176 Supplemental soil information submitted after the original site evaluation has been approved shall include a revised approval page, report page, soil profile notes, and revised site drawing locating supplemental borings/test pits. In all cases, the new report shall be approved provided all criteria for approval are met. If the purpose of supplemental work is to change the type of system previously prescribed, another review fee shall be required. Likewise, any borings/test pits conducted greater than 100 ft. from the previously approved area, with or without a system change, shall require a review fee. On larger parcels, the area evaluated shall be delineated on the site drawing.

5.01180 The Department shall issue a notice of its intention to deny a site evaluation when appropriate. Alternative technologies for on-site wastewater treatment and disposal systems, if appropriate, may be included in the letter. The applicant still maintains his/her right to appeal the decision of the Secretary, within twenty (20) days of receipt, in accordance with 7 Del. C., Chapter 60, Section 6008.

5.01190 A property owner or agent has the option to use observation wells and/or piezometers to demonstrate that redoximorphic features are not an indication of zones of saturation. The following procedures for the use of observation wells/piezometers to determine the depth and duration of zones of saturation shall be implemented.

5.01200 Observation Wells/Piezometers

5.01210 Determining the zones of saturation using observation wells and/or piezometers follow these procedures:

(a) The property owner or authorized agent shall notify the Department, in writing, of the intent to use observation wells and/or piezometers to determine the zones of saturation.

(b) At least three (3) observation wells and/or piezometers shall be installed and monitored at a site. If, in the judgment of the Department, more than three (3) are needed, the property owner or agent shall be notified in writing within ten (10) days of receipt of the letter of intent.

(c) The design illustrated in Exhibit Y shall be used when constructing observation wells and/or piezometers. At least two (2) wells/piezometers shall extend to a depth of six (6) feet, at a minimum, below ground surface. However, with layered mottled soil over permeable unmottled soil, at least one (1) well/piezometer shall terminate within the mottled layer. Site conditions may, in some cases, require monitoring at greater depths. It shall be the responsibility of the Class D site evaluator to determine the depth of the observation wells and/or piezometers for each site and, if in doubt, they shall request the guidance of the Department.

(d) All observation wells are required to be permitted in accordance with the current Regulations Governing the Construction and Use of Wells.

(e) Observation wells and/or piezometers shall be installed by or under the direct on-site supervision of a well driller licensed by the State of Delaware in accordance with the current Regulations Governing the Construction and Use of Wells.

(f) Monitoring of water levels shall be done by an individual who is licensed by the Division of Water Resources. The property owner/agent or any relative shall not, at anytime, be allowed to monitor the water levels of these wells.

(g) The preferred monitoring is from December 1st through May 15th of the following year to verify the depth and duration of the zones of saturation during years of near normal precipitation for fall, winter and spring seasons. However, the Class D site evaluator may, at his/her discretion, allow clients to install wells at any time he/she deems appropriate. Depending on when peaks are observed, the State may or may not accept the monitoring for that season. A near normal monitoring period is defined as a period that has plus or minus one standard deviation of the long term mean annual precipitation. (Long term refers to 30 or more years). Also, the mean monthly precipitation during a normal period must be plus or minus one standard deviation of the long term monthly precipitation for 8 of the 12 months. For the most part, normal years can be calculated from the mean annual precipitation.

(i) The Department shall field check the monitoring periodically during the time of expected saturated soil conditions at their discretion.

(ii) The Department may, at any time during the observation period, verify the observed water depth by conducting a soil boring next to, and of equal depth with, any of the observation wells/piezometers. If the water level in the fresh boring, after twenty four (24) hours, presents a discrepancy with the water level observed in the well/piezometer, then at the discretion of the Department, the data may be declared invalid. If the data is declared invalid, then the Department will notify the owner in writing of the invalid data within ten (10) days of determination.

5.01220 When monitoring determines that the site is suitable, the Department will request that a new site evaluation be submitted. The monitoring information must be incorporated into the new site evaluation. An approved site evaluation report shall be issued indicating the appropriate system type(s).

5.01230 Observation wells and/or piezometers are required to be abandoned in accordance with the current Regulations Governing the Construction and Use of Wells.

5.01300 Site Interpretation Advisory Council

5.01310 The purpose of the Site Interpretation Advisory Council (Council) is to act as an objective peer group in the review of discrepancies between the Department and Class D site evaluators regarding questions of interpretation of soil and site information for the purpose of siting on-site wastewater treatment and disposal systems.

5.01320 The Council shall restrict its charge to those items normally and commonly addressed when conducting a site evaluation as discussed below. The Council specifically excludes instances regarding the engineering design and/ or installation of on-site wastewater treatment and disposal systems except when it is directly applied to the soil science practice.

(a) The description and interpretation of soil morphology in regard to the proper functioning of on-site wastewater treatment and disposal systems utilizing the soil as part of the treatment process.

(b) The characterization of lithologic and hydrologic limiting layers and geomorphology pertinent to the proper siting and functioning of on-site wastewater treatment and disposal systems.

(c) The recognition and documentation of site limitations for the placement of on-site wastewater treatment and disposal systems (i.e. existing wells and on-site wastewater treatment and disposal systems) in accordance with standard practice in Delaware.

5.01330 The Site Interpretation Advisory Council shall be appointed by the Secretary and consist of the following members:

(a) Four (4) non-governmental Class D site evaluators actively practicing in the State of Delaware for two (2) or more years with one (1) acting as an alternate.

(b) One (1) employee of the Department with soils and on-site wastewater industry expertise.

(c) One (1) soil scientist designated by the State Conservationist through the State Soil Scientist, NRCS, USDA.

(d) A Manager of the Ground Water Discharges Section (GWDS), DNREC, shall serve as a liaison to the Council without voting privileges.

(e) All members shall serve three (3) year terms. Procedures shall be established by the Council to stagger terms so as to provide continuity.

5.01340 Documentation and testimony regarding a review shall be submitted to the Council. After the initial review by the Council, a determination shall be made as to whether sufficient information has been submitted to render an informed decision. The Council may request additional information from the applicant before proceeding with the review. There shall be no cost to the Council for any information submitted.

5.01350 Within thirty (30) days from receipt of the documentation, the Council shall render a decision, based on a simple majority vote, regarding which system(s), if any, are suitable under the Delaware Regulations.

5.01360 A site visit shall be conducted by at least four (4) members of the Council. The applicant is responsible for all costs that may be incurred. Council members shall not be reimbursed for any expenses.

5.01370 Any decision rendered by the Council shall be considered by the Secretary and may be a deciding factor in his/her decision. The applicant still maintains his/her right to appeal the decision of the Secretary in accordance with 7 Del. C., Chapter 60, Section 6008.

5.01380 The Council shall designate one of its members representing the private sector to serve as chairperson for a period of one year. The chairperson, or his/her designee, serving as the principal contact person between the Council and a Manager of the Ground Water Discharges Section (GWDS), shall perform the following duties:

(a) Call and preside at all Council meetings. (A GWDS Manager may also call a meeting, but is not entitled to preside at a Council meeting.)

(b) Upon receipt of a request, poll the Council members and communicate the results to the GWDS Manager calling a Council meeting when appropriate. (This function may also be performed by the GWDS Manager, when necessary.)

(c) Prepare a letter communicating the Council's decision in each case. (The letter shall be sent within fifteen (15) working days after the Council's decision to the GWDS Manager for signature and returned for mailing within three (3) working days.)

5.01390 The following services shall be furnished by the DNREC to facilitate the operation of this Council:

(a) A Manager of the Ground Water Discharges Section shall represent the Section's position at all Council meetings.

(b) All submittals for consideration shall be circulated to the Council under the direction of the GWDS Manager within ten (10) working days.

(c) A GWDS Manager, at the request of the Council chairperson, shall reserve space in the DNREC facilities for Council meetings.

(d) The DNREC shall provide clerical services for record keeping. Records of the Council meetings shall be furnished to all Council members within fifteen (15) working days following the meetings.

(e) The clerical person shall prepare and mail the decisions of the Council upon receipt from the chairperson.

5.01400 The Council shall restrict reviews to those submittals directly affected by the expertise of the NRCS soil scientist's decision, using one of the following two (2) methods:

(a) A submittal from the Secretary, DNREC; or

(b) A submittal from a Class D site evaluator.

5.01410 All submittals shall be circulated to the Council membership. A majority vote of the Council is required for any submittal to be accepted for Council review.

5.02000 Permit Application Procedures - General Requirements

5.02010 No person shall cause or allow construction, alteration, or repair of a system, or any part thereof, without a permit. An exception may be allowed for certain emergency repairs as set forth in these Regulations.

5.02015 Permit applications must be designed in accordance with the prescribed system type and design considerations as specified on an approved site evaluation or Soils Investigative Report for that parcel.

5.02020 Applications for permits shall be made by the owner of the property or the owner's legally authorized agent on forms approved by the Department.

5.02030 An application is complete only when the form is completed in full, signed by the owner or the owner's legally authorized agent, accompanied by all required exhibits (provided an approved site evaluation report is on file) and fee. Also, a form from the appropriate governmental unit having jurisdiction and a statement from the local governmental unit approving the activity by zoning. Incomplete applications will not be processed and may be returned.

5.02050 The Department shall deny the permit if:

(a) The application contains false information;

(b) The proposed system would not comply with these Regulations;

(c) The proposed system, if constructed, would violate a Department moratorium;

(d) A central wastewater system which can serve the proposed wastewater flow is both legally and physically available as described in Sections 5.02060 and 5.02070 of these Regulations;

(e) Construction of an on-site wastewater treatment and disposal system is prohibited by codes, ordinances or county or municipal regulations having jurisdiction

5.02055 The completed application shall include, at a minimum, the following site information;

(a) Parcel and/or lot dimensions and size with a location map of project site;

(b) Slope - in absorption facility and replacement areas (percent and direction);

(c) Existing wells within 150 feet of the proposed system;

(d) Any and all watercourses or bodies of water;

(e) Distances of the on-site well(s) and on-site wastewater treatment and disposal systems from the nearest two fixed points of reference. Points of reference as defined in Section 5.01030;

(f) Soil boring and test pit locations along with limits of approved area as indicated on the approved site evaluation;

(g) Any other information required to satisfy these Regulations

5.02060 A central wastewater system shall be deemed physically available if its nearest connection point from the property to be served is:

(a) For a single family dwelling, or other establishment with a maximum projected daily wastewater flow of not more than five hundred (500) gallons within two hundred (200) feet;

(b) For a proposed subdivision or group of two (2) to five (5) single family dwellings, or equivalent projected daily wastewater flow, not further than two hundred (200) feet multiplied by the number of dwellings or dwelling equivalents.

(c) For proposed subdivision or other developments with more than five (5) single family dwellings, or equivalents, the determination of central wastewater availability shall be in the sole discretion of the Department.

However, a central wastewater system shall not be considered available by the Department if topographic or manmade features make connection physically impractical.

5.02070 A central wastewater system shall be deemed legally available if the system is not under a Department connection permit moratorium and the wastewater system owner is willing or obligated to provide sewer service.

5.02075 When a central wastewater system is deemed both physically and legally available, as outlined in Sections 5.02060 and 5.02070, the connection must occur within a timeframe as set forth by the wastewater system owner. The existing on-site wastewater treatment and disposal system must be abandoned in accordance with Section 5.06000.

5.02080 A permit shall be issued only to the owner or easement holder of the land on which the system is to be installed.

5.02090 The Department shall either issue or deny the permit within twenty (20) working days after receipt of the completed application. However, if conditions prevent the Department from acting to either issue or deny the permit within twenty (20) working days, the applicant shall be notified. The Department shall either issue or return the permit within thirty (30) working days after the mailing date of such notification.

5.02100 All permits issued for on-site wastewater treatment and disposal systems pursuant to these Regulations shall be effective for two (2) years from the date of issuance. If the system has been started the Department may issue a limited time period extension. A one year extension will, if requested, be granted by the Department upon demonstration by the applicant that no changes have occurred in system design, siting, or regulations applicable to the permit since the permit was issued and written certification to such factual findings is provided and all appropriate fees are paid.

5.02105 If any portion of the approved disposal area is disturbed during site construction activities, through grubbing, tree removal or other activities utilizing heavy equipment, a Class E system contractor must submit a certification document, if necessary, prepared by a Class D site evaluator on a form provided by the Department which states whether the area is suitable for installation or not. If not suitable, additional soil borings or test pits shall be performed within the disturbed area(s) to substantiate the initial site evaluation.

5.03000 Permit Denial Review

5.03010 The Department shall make a decision on the application which it determines will best implement the purposes of 7 Del. C., Chapter 60 and these Regulations. Providing of the requisite information in the application procedure by the applicant shall not be construed as a mandatory prerequisite for the issuance of the permit by the Department.

5.03020Permit denials for systems and denial reviews may be appealed to the Environmental Appeals Board in accordance with 7 Del. C., Chapter 60, Section 6008.

5.03030If the Department intends to deny a permit for a parcel of ten (10) acres or larger in size, the Department shall:

(a)Provide the applicant with a Notice of Intent to Deny;

(b)Specify reasons for the intended denial; and

(c)Offer an appeals process in accordance with 7 Del. C., Chapter 60, Section 6008.

5.04000Inspections

5.04001 Construction Inspections

5.04005The Class E contractor shall contact the Department 24 hours prior to system construction to obtain a startup number to authorize the construction.

5.04006Changes to a permit which result in only a relocation of the system can be done by submitting a pre-inspection as-built, which requires a minimal check against the site evaluation to ensure the system is still located within approved soils and that all required isolation distances are met. These "as-builts" are to be submitted to the Department by the Class E contractor prior to installation. The Class E contractor must obtain permission from the designer prior to submittal.

5.04010When construction, alteration or repair of a system is complete, except for backfill (cover), or as required by permit, the Class E contractor shall notify the Department. The inspector shall inspect the installation to determine if it complies with these Regulations and the terms and conditions of the permit, unless the inspection is waived by the Department in accordance with Section 5.04020.

5.04013It is the responsibility of the Class E contractor to confirm the results of the pre-cover inspection prior to backfilling the system.

5.04017An inspector shall be either:

(a)An employee of the Ground Water Discharges Section;

(b)A Class C designer or his/her designee. The Class C designer must submit a list of authorized personnel, on company letterhead, to the Department for review and approval.

(c) Any person officially authorized by the Department to perform inspections of on-site wastewater treatment and disposal systems.

5.04020The Department may waive the pre-cover inspection, provided:

(a)The installation is an ~~gravity fed~~ on-site wastewater treatment and disposal system installed by a licensed person pursuant to these Regulations; and

(b)After system completion the installer provides a construction report which certifies in writing that the system complies with the Department's Regulations. If any changes were made to the system the contractor must provide a detailed “as-built” plan (drawn to scale).

5.04021Failure to comply with Departmental Regulations and the conditions of the permit will result in verbal notification to the Class E contractor. Failure to correct deficiencies within ten (10) calendar days (weather permitting) will result in written notification of such to both the Class E contractor and permittee. Additional inspections may be required by the Department.

5.04023Once a system has received a satisfactory pre-cover inspection or authorization to cover without a Departmental inspection, the system may be covered as specified in the approved permit. Backfilling must be completed within ten (10) calendar days of a satisfactory pre-cover inspection, weather permitting.

5.04027Systems requiring earthen caps and all mound systems shall require a final cover inspection pursuant to Section 5.04010 or 5.04020. Capping of systems must be completed within ten (10) calendar days of a satisfactory pre-cover inspection or authorization to cover without Departmental inspection, weather permitting.

5.04033Inspections performed by Class C designers shall conform to guidelines established by the Department.

5.04037 In situations where the Class C designer is not comfortable approving a system, he/she is to contact the Department immediately.

5.04040 Existing System Inspections

5.04045 An existing system inspector shall be either:

(a) An employee of the Ground Water Discharges Section; or

(b) A Class H system inspector; or

(c) Any person officially authorized by the Department to perform inspections of on-site wastewater treatment and disposal systems.

5.05000Certificate of Satisfactory Completion

5.05010The Department shall issue a Certificate of Satisfactory Completion, if, upon inspection of the installation, the system complies with the Department's Regulations, the conditions of the permit, and a construction report is submitted to the Department.

5.05030A system shall be backfilled (covered) when:

(a)The Class E contractor is notified by the Department that inspection has been waived; or

(b)The inspection has been done and authorization has been granted to cover the system

5.05040Corrections necessary to meet requirements for satisfactory completion shall be made within seven (7) calendar days after written notification by the Department, unless otherwise required.

5.05060A Certificate of Satisfactory Completion shall be valid for a period of two (2) years from the date of issuance. After the two (2) year period, the Regulations for Authorization to Use an Existing System Permit or Alteration Permit apply.

5.05070Denial of a Certificate of Satisfactory Completion may be appealed in accordance with 7 Del. C., Chapter 60, Section 6008.

5.05080If the system has been placed into operation without the required Certificate of Satisfactory Completion, a Notice of Non-Compliance shall be issued to the owner and must be corrected within ten (10) calendar days or system must be abandoned in accordance with Section 5.06020.

5.06000Abandonment of Systems

5.06005General Requirements

(a)All systems shall be abandoned by a Class E contractor or other governmental appointee.

(b)Within ten (10) calendar days of abandonment, the Class E contractor shall submit a System Abandonment Report on a form provided by the Department (see Exhibit Z). The report shall be filled out completely and signed by the contractor.

5.06010The system shall be properly abandoned when:

(a) A central wastewater system becomes available and the building sewer has been connected thereto; or

(b)The source of wastewater has been permanently eliminated; or

(c)The system has been operated in violation of these Regulations, until a repair permit and Certificate of Satisfactory Completion are subsequently issued; or

(d) The system has been constructed, installed, altered, or repaired without a required permit authorizing same, unless, and until a permit is subsequently issued

5.06020Procedures for Abandonment:

(a) The septic tank, cesspool or other treatment unit shall be pumped by a Class F liquid waste hauler to remove all of the contents;

(b)The septic tank, cesspool or other treatment unit shall be removed or filled with sand, bank run gravel, or other material approved by the Department;

(c)The system building sewer shall be permanently capped

5.07000Authorization to Use an Existing System Permit

5.07010Application for an Authorization to Use an Existing System Permit shall be made on forms provided by the Department and shall be accepted only when the forms are complete.

5.07020No person shall place into service, change the use of or increase the projected daily wastewater flow above design standards into an existing system without first obtaining an Authorization to Use an Existing System Permit or Alteration, Repair or Replacement Permit as appropriate.

5.07030An Authorization to Use an Existing System Permit is not required:

(a) Where there is a replacement of a manufactured home with similar units in manufactured home communities with on-site wastewater treatment and disposal systems when an annual inspection has taken place by the Department or an authorized designee certifying that the existing system(s) is/are not malfunctioning.

(b) For use of a previously unused system for which a Certificate of Satisfactory Completion has been issued within one (l) year of the date that such system is placed into service, provided the projected daily wastewater flow does not exceed the design flow.

5.07040For changes in the use of an existing system where no increase in wastewater flow above design standards is projected, or where the design flow is not exceeded an Authorization to Use an Existing System Permit shall be issued if:

(a)The existing system is not malfunctioning; and

(b)All isolation distances from the existing system can be maintained; and

(c) The proposed use would not create a public health hazard; and

(d)If the Department has no record of an existing on-site wastewater treatment and disposal system, no connection to that system shall be permitted until an inspection has been performed provided the following are uncovered and left uncovered prior to the inspection:

(i)Septic tank

(ii)Distribution box

(iii)Corners of each trench or the bed (additional area may be required upon inspection)

5.07050If the conditions of Section 5.07040 cannot be met, an Authorization to Use an Existing System Permit shall be withheld until such time as alterations and/or repairs to the system are made.

5.07060For changes in the use of a system where projected daily wastewater flows would be increased above design criteria an Alteration, Repair or Replacement permit must be obtained.

5.07070The Department may allow a manufactured home to use an existing system serving another dwelling, in order to provide temporary housing for a family member suffering hardship, by issuing an Authorization to Use an Existing System Permit, if:

(a) The Department receives satisfactory evidence which indicates the family member is suffering physical or mental impairment, infirmity, or is otherwise disabled and is in need of temporary housing; and

(b)The system is not malfunctioning; and

(c)The application is for a manufactured home; and

(d) Evidence is provided that a hardship manufactured home placement is allowed on the subject property by the governmental agency that regulates zoning, land use planning, and/or building; and

(e)A full system replacement area is available according to an approved site evaluation

5.07080An Authorization to Use an Existing System Permit issued for personal hardship shall remain in effect for a specified period, not to exceed cessation of the hardship. The Department shall impose conditions in the Authorization to Use an Existing System Permit that are necessary to ensure protection of public health. If the system fails and additional replacement area is no longer available, the manufactured home must be removed from the property.

5.08000Alteration of Existing Systems:

5.08010No person shall alter or increase the design capacity of an existing system without first obtaining an Alteration Permit.

5.08020No person shall increase the projected daily wastewater flow into an existing system beyond the design capacity of the system until an Alteration Permit is obtained.

5.08030The Department may issue an Alteration Permit if:

(a)The existing system is not malfunctioning; and

(b)An approved site evaluation report has been obtained; and

(c)The proposed installation will be in compliance with these Regulations

5.08040Upon completion of installation of that part of a system for which an Alteration Permit has been issued, the permittee shall obtain a Certificate of Satisfactory Completion from the Department.

5.09000Repair and Replacement of Existing Systems

5.09010Steps to repair a malfunctioning system shall be initiated immediately and continued until system repair is completed. However, if, at the sole discretion of the Department, it is determined that adverse soil conditions exist due to climatic conditions that would likely preclude a successful repair, the Department may allow a delay in commencing repairs until the soil conditions improve. If this allowance is made, a compliance date and interim system maintenance requirements shall be specified in system construction deficiencies to the system owner.

5.09020No person shall repair a malfunctioning system without first obtaining a Repair Permit. Emergency repairs of broken system components, as specifically defined in these Regulations (see Section 2.01260), may be made without first obtaining a permit provided a permit is applied for within three (3) working days after the emergency repairs are begun. Such a delayed application submittal does not relieve any person from complying with subsequent requirements or conditions of approval as may be imposed by the Department.

5.09030Upon completion of installation of that part of a system for which a Repair Permit has been issued, the permittee shall obtain a Certificate of Satisfactory Completion from the Department.

5.09040The following criteria for a Repair or Replacement Permit shall apply:

(a) If the site characteristics and standards described in these Regulations can be met, then the repair installation shall conform to them.

(b) If the site characteristics or standards described in these Regulations cannot be met, the Department may allow a reasonable repair or replacement installation in order to eliminate a public health hazard. Reasonable repairs or replacements may require the installation of an alternative system in order to eliminate a public health hazard. In such cases the Department shall use its best professional judgment in approving repairs or replacements that will reasonably enable the system to function properly.

5.09050 Malfunctioning systems that cannot be repaired shall be abandoned in accordance with these Regulations.

5.10000 Alternative Wastewater Treatment and Disposal Systems

5.10010 Alternative technology on-site wastewater treatment and disposal systems may be appropriate for areas where site constraints limit the suitability for conventional system types. The Department shall consider applications for alternative wastewater treatment and disposal systems on a case-by-case basis. It is the policy of the Department to pursue a program of experimentation for the purpose of obtaining sufficient data for the development of alternative wastewater treatment and disposal systems, which may benefit the people of Delaware. For the purposes of this section, applications for community systems that employ advanced treatment units which are in conformance with standard engineering practice as determined by the Department shall not be considered alternative.

5.10015 Applications for alternative wastewater treatment and disposal systems shall provide documentation of the capabilities of the proposed system. Such documentation shall be in the form of proven data of long term usage of facilities similar to those specified in these Regulations, or short term documentation from controlled projects from reliable sources such as Universities or the National Sanitation Foundation. The Department shall approve only treatment and disposal system applications that provide thorough documentation of proven technology. Alternative wastewater treatment and disposal systems shall provide, at a minimum, an equivalent level of treatment and disposal as a conventional wastewater system. Alternative wastewater products will require the same documentation as above however, these will not require a Class C designer to incorporate into a design.

5.10020 No person shall construct an alternative on-site wastewater treatment and disposal system without obtaining a permit from the Department.

5.10030 Applications for alternative systems shall be made to the Department. The application shall be complete, signed by the owner and accompanied by the required fee. The application shall include detailed system design specifications, plans and any additional information requested by the Department.

5.10035 Applications for alternative wastewater treatment and disposal systems shall include, but not be limited to, the following:

(a) Volume and rate of wastewater flow

(b) Characteristics of the wastewater

(c) The degree and extent of treatment expected

(d) Design criteria, specifications, and drawings including a description of the system, its capabilities, operation and maintenance requirements, unique technical features and system advantages for treatment systems

(e) Construction materials

(f)Operational and maintenance details along with their requirements

(g)The seal of a Professional Engineer having a Class C license may be required

(h)Any other information required by the Department

5.10040Sites may be considered for Alternative System Permits where:

(a) Soils, climate, ground water, or topographical conditions are indicating the seasonal high water table or a limiting condition is encountered deeper than ten (10) inches below the soil surface or observation well data determines the seasonal high water table is deeper than ten (10) inches; and

(b)A specific acceptable backup alternative is available in the event of system failure; and

(c)Installation of a particular system is necessary to provide a sufficient sampling data base; and

(d)Zoning, planning, and building requirements allow system installation; and

(e)The system will be used on a continuous basis during the life of the project

5.10050The permit shall:

(a)Specify method and manner of system installation, operation and maintenance;

(b)Specify method, manner and duration of system testing and monitoring, at the Department's discretion;

(c)Identify when and where the system is to be inspected;

(d)Require system construction and use within two (2) years of permit issuance

5.10060 Inspection of all installed systems shall be performed by a Class C designer and the Department. Upon completion of each phase requiring inspection by the permit, the Class E contractor shall notify the Department and the Class C designer.

5.10070The Department may inspect construction at any time to determine whether it complies with permit conditions and requirements.

5.10080After system installation is complete and the Department has determined that it complies with permit conditions, a Certificate of Satisfactory Completion shall be issued.

5.10090If the Department finds the operation of the system is unsatisfactory, the owner, upon written notification by the Department shall promptly repair or modify the system, replace it with another acceptable system, or abandon the system.

5.10100The system will be monitored by the Department and/or the Department's designee in accordance with a schedule contained in the permit.

5.10110Should any additional guidelines be developed by the Department, the permitee would be responsible for meeting these guidelines.

5.11000Community Systems

5.11010Without first applying for and obtaining a construction permit, no person shall install a community on-site wastewater treatment and disposal system.

5.11015A community on-site wastewater treatment and disposal system shall be required when any of the following conditions exist:

(a)~~Lot size is less than two (2) acres and more than 55% of the subdivision or planned unit development contains soil interpretative units identified as being suitable for on-site wastewater treatment and disposal systems that require pressurization~~ Proposed number of dwelling units is two hundred (200); or

(b)Where overall density of the subdivision or planned unit development is more than one dwelling unit per ½ acre.

5.11020 Applications for permits to construct community on-site wastewater treatment and disposal systems shall provide documentation which addresses ownership, transfer of ownership, maintenance, repairs, operation, performance and funding of the on-site wastewater treatment and disposal system through the design life of the system. This documentation shall be in the form of a Binding Agreement between the applicant for the construction permit, the "permittee", and an operator or owner/operator. The Binding Agreement must:

a) Identify an Operator or Operator and Owner (Operator) that will assume the operation, management, maintenance and repairs of the community on-site wastewater and disposal system, "the wastewater system", upon satisfactory completion of the construction, by providing:

1) Full name and business address of the Operator;

2) A description of the Operator's experience, training and education in the wastewater treatment and disposal industry, together with any supporting data regarding the Operator's qualifications in the industry;

3) Proof of the Operator's financial solvency by providing a business financial statement (including balance sheet) that is not more than six (6) months old, and a statement of financial encumbrances;

4) A list of licensed wastewater treatment facility operators employed by the Operator

b) Identify the terms and conditions under which the Operator shall assume operational responsibility or ownership of the wastewater system.

c) Provide a detailed description of the wastewater system.

d) Disclose any existing encumbrances, liens or other indebtedness to the title of the wastewater system.

e) Provide an operating budget with sufficient funds for the proper operation and maintenance of the wastewater system, including the accumulation of funds necessary to provide for repair or replacement of mechanical components of the wastewater system based on manufacturer recommendation. The operating budget shall include the establishment of an escrow account to be used exclusively for repair and replacement of failed or failing components of the wastewater system. The escrow account may not be used

for phasing construction or the expansion of the wastewater system to accommodate additional residential units.

1. The value of the escrow account shall be equivalent to 25% of the cost of all mechanical equipment (e.g., pumps, flow meters, aerators, blowers, gear boxes, etc.) plus 50% of the cost of construction of the wastewater treatment and disposal system (e.g., infiltration beds, trenches, etc.).

2. Funds shall be deposited into the escrow account as residential units are connected to the wastewater system. The amount of funds deposited shall be equivalent to the percentage of units connected to the wastewater system (i.e., at 50% of build-out, the balance of the escrow account shall equal 50% of the amount established in 1, above).

3. The escrow account shall be transferred to either the owner/operator or an established Homeowners Association upon satisfactory completion of construction of the wastewater system.

4. The owner of the wastewater system shall notify the Department, in writing, of intent to access funds from the escrow account. The escrow funds may not be used without prior approval of the Department. When escrow funds are used for the repair and/or replacement of mechanical equipment, the owner must submit a plan for the reestablishment of the escrow fund balance through the use of user fees or other sources.

5. The escrow account established for a community or a development can only be used for the community or development for which it was established. Accounts for non-contiguous communities or developments may not be co-mingled.

6. If the community wastewater system for which the escrow account was established is abandoned, and the community development connects to a regional or municipal wastewater treatment facility, the escrow account may be reduced to cover 25% of the replacement cost of all mechanical equipment associated with the transmission and conveyance sewer lines. If the transmission and conveyance sewer lines are all gravity lines, with no lift stations, pumps, or other mechanical equipment, the escrow account may be terminated and the funds returned to the wastewater system owner.

f) Be approved by the Department and fully executed before a construction permit is issued by the Department.

g) The Department shall have the right to inspect and review the financial records of the owner of the wastewater system, to include the operating budget, escrow account, and financial statements.

5.11021 ~~An application for a permit to construct a community system~~ Prior to initiation of construction of any part or component of the community system the permittee shall provide the Department with an executed performance bond, irrevocable letter of credit, or other security, as approved by the Department, for every wastewater system they are constructing. The performance bond shall be made payable to the Department and the obligation of the performance bond shall be conditioned upon the fulfillment of all requirements related to the construction permit. Terms of the performance bond shall be:

a) The amount shall be equivalent to 50% of the construction cost of the wastewater system (excluding the conveyance system and its appurtenances), but in no case shall it be less than $25,000 nor more than $100,000 for any single community system.

b) A performance bond is not required for any local, municipal, county, state, federal government agency, non-

profit association representing property owners, political subdivision, or utility that is regulated by the Public Service Commission.

c) Liability under the performance bond shall run to the State for a continuous period. The Department shall release the bond only after the wastewater system has been constructed in accordance with approved plans and has been turned over to an established homeowners association, their designee, or exempted trustee identified in Section 5.11021(b) above, provided the requirements of Section 5.11021(g) are met.

d) The performance bond shall be executed by the permittee through a corporate surety licensed to do business in the State of Delaware. In lieu of a performance bond, the permittee may elect to provide an original irrevocable letter of credit equal to the required sum of the performance bond.

e) The obligation of the permittee under the performance bond shall become due and payable for the purposes of properly fulfilling the requirements of the permit when the Department has:

1. Notified the permittee that the conditions of the permit have not been fulfilled and specified the specific deficiencies in the fulfillment of the permit conditions;

2. Given the permittee a reasonable opportunity to correct the deficiencies and to fulfill all the conditions of the permit; and

3. Determined that, at the end of a reasonable length of time, some or all of the deficiencies specified under Section 5.11021(e)(1) above remain uncorrected.

f) The Department has the authority to designate a new Operator in the event that the provisions of Section 5.11021(e) have been implemented. Upon formal transfer of ownership of a community wastewater system to an entity identified in 5.11021(b), the performance bond requirement shall cease, provided the Department has determined that the wastewater system has been constructed in accordance with approved plans and is operating properly.

g) Once the Department has verified that the wastewater system has been constructed in accordance with approved plans, the owner may apply for a permit to operate the system.

5.11022The permit application shall also include the following documents for legal review by the Department;

(a)A Purchase and Sale Agreement -- which specifies that the purchaser or a dwelling unit has an encumbrance on the title for wastewater treatment and disposal system operation fees, easements, and other assessments related to the community system.

(b)An Acknowledgment of Buyer -- which is appended to the Purchase and Sale Agreement and signed by the buyer after being furnished copies of appropriate agreements, covenants, restrictions, Articles of Incorporation and Bylaws of the Owners' Association, and indicates understanding that the buyer is obligated to pay assessments for maintaining the community system.

(c)The Articles of Incorporation -- which establishes the owner's association as a state-chartered, nonprofit corporation and gives the owners' association specific authority to operate, maintain, and repair the community system; to collect fees and special assessments; and to enforce any covenants, restrictions, or agreements.

(d)The Bylaws of the Owners' Association -- which govern the operation of the owners' association and specifically authorizes the Board of Directors to supervise the operation and maintenance of the community system, collect fees and special assessments, and to take appropriate action when the public health is imperiled by the malfunctioning of the community system.

(e)A Declaration of Covenants, Restrictions, and Easements -- which establishes, among many other limitations, the easements for the on-site sewage collection, treatment, and disposal system, and specifies responsibilities of the developers, their successors or assigns, and any owners' association regarding the community system. It further sets the fees and assessments for operation and maintenance of the community system.

5.11023For developments that do not contain homeowners' associations, the above list of documents may be modified, at the Department's discretion, to include only those documents that are applicable.

5.11025All community systems that are owned solely by one owner, partnership or corporation, who own the property that the system will be installed on must execute a Declaration of Covenants, Restrictions and Easements (DCR). The DCR must be notarized and recorded at the County's Office of the Recorder of Deeds after it has been approved by the Department. The recorded copy should then be returned to the Department. Community systems meeting this requirement shall be exempt from Sections 5.11020, 5.11021 and 5.11022.

5.11030The site criteria for approval of community systems shall be the same as required for large systems (see Section 5.12000).

5.11040Responsibility for operation and maintenance of community systems shall be vested in a governmental unit or a Council on behalf of the unit property owners pursuant to 25 Del. C., Chapter 22 or for subdivisions with an owners' association duly incorporated within the State with specific authority to operate, maintain, and repair the community system, to collect fees and special assessments and to enforce any covenants, restrictions or agreements (see Section 5.11021).

5.11050Unless otherwise required by permit, community systems shall be inspected, at least annually, by the responsible person.

5.11060A private wastewater utility corporation may be permitted subject to the following provisions:

(a)It must be duly incorporated within the State and remain in good standing.

(b) It must remain financially solvent on a continuous basis through a method of financing construction, maintenance, operation, and emergency work related to the community system to the exclusion of whatever other obligations the corporation may assume in other fields. A certification of compliance with this provision shall be provided to the Department annually.

(c) There must be a person as identified under Section 5.11040 to whom control and operation of the community system will pass in trusteeship in the event no persons are willing to serve as officers of the private utility corporation. Such person shall have the opportunity to review and comment on plans and specifications and perform inspections during construction. They shall also be notified of any future construction or major repairs.

(d) Funds collected for operation and maintenance of the system must be kept in an account to be used for the sole purpose of carrying out the functions of the community system.

(e)There shall be lien powers to assure the collection of delinquent debts.

5.12000Large Systems

5.12005 Unless otherwise authorized by the Department, all soils and siting criteria for large systems shall comply with the following requirements:

(a) A Soil Investigative Report (SIR) shall be filed with the Department's Large Systems Branch setting forth the proposed manner of compliance with these Regulations. The SIR shall contain the following:

1. Site plan drawn to scale not to exceed one (1) inch equals two hundred (200) feet

2. A topographic map with two (2) foot contour intervals unless the Department approves the use of an alternate scale

3. Location of all wells, watercourses, roads and on-site wastewater treatment and disposal systems within one hundred fifty (150) feet of the perimeter of the proposed disposal area

4. The proposed disposal area shall be mapped on a grid pattern of not more than seventy five (75) feet between observations using a combination of auger borings and test pits

5. A description of the hydrologic properties of the water table/surficial aquifer, including estimates of horizontal and vertical hydraulic conductivity, ground water flow direction, and water table elevations or depth to water table measurements. This information can be obtained from readily available published data.

6. A representative number of hydraulic conductivity tests (minimum single-ring) shall be conducted within the proposed disposal area (PDA), based upon soil variability. These tests must be performed within the most restrictive horizon per mapping unit within the PDA.

7. Determination of an appropriate design percolation rate based upon hydraulic conductivity tests, soil characteristics (textures, structure, etc.) and number of mapping units within the PDA (Certain site specific conditions may not warrant the testing, contact the Department to discuss)

8. Depth of the limiting zone and the results of the site and soil analysis provided on the appropriate forms (ie. Approval page)

9. Number of proposed lots, dwellings or expected gal/day flow and loading rate

10. The preliminary plan shall include a general site location map to identify the area

11. The location of any jurisdictional wetlands (State and/or Federal), if delineated

12. Identification of any limitation that could affect system performance and design consideration

13. The Department shall approve the SIR after any and all concerns have been addressed

(b) The applicant shall provide a Preliminary Groundwater Impact Assessment (PGIA). The PGIA shall assess the potential impact of the large system upon waters of the State and upon public health. The PGIA shall comply with current guidelines established by the Department.

(c) Performance of wet season testing (December – May) to more accurately quantify the fluctuations of the water table may be required on a case by case basis as warranted by site conditions. (This is recommended

during the planning stages of the project.) If rainfall is not normal (see definition in Section 5.01210 (g)) a second season of monitoring may be required. If timing does not allow for the testing prior to submittal, contact the Department.

(d) Ground-water mounding analysis may be required for proposed large on-site wastewater treatment and disposal system sites where a potential for significant water-table mounding is probable due to (1) low aquifer transmissivity (low hydraulic conductivity), (2) shallow depth to seasonal high water table, or (3) high wastewater loading rate. Slug test(s) may be necessary to obtain horizontal hydraulic conductivity values for the aquifer. A report documenting the ground-water model utilized to perform the analysis must be provided along with all aquifer parameters and design criteria needed to run the model. Only Certified Professional Geologists registered in the State of Delaware are qualified to perform the ground water mounding analysis.

5.12010 Prior to permit application submission, the SIR and PGIA must both be approved and a meeting with the Class D site evaluator, Class C designer, DNREC personnel and any other interested parties be held to discuss the project.

5.12015 Unless otherwise authorized by the Department, all treatment and design considerations for large systems shall comply with the following requirements:

~~(a)Prior to finalizing the soils investigation report, a meeting with the Class D site evaluator, Class C designer, DNREC personnel and any other interested parties shall be held to discuss the project.~~

(a)Permit applications must be designed in accordance with the prescribed system type and design considerations as specified in the SIR and PGIA for that parcel.

(b)All ~~soils investigation reports~~ permit application(s) for a large system (>2,500 GPD) ~~and permit application(s)~~ shall be submitted to the Large Wastewater Systems Branch for review and approval.

~~(c)The proposed disposal area shall be mapped on a seventy five (75) foot grid, at a minimum, using a combination of auger borings and test pits.~~

~~(d)A soils investigation report shall also contain a description of the hydrologic properties of the water table/ surficial aquifer, including estimates of horizontal and vertical hydraulic conductivity, ground water flow direction, and water table elevations or depth to water table measurements. This information can be obtained from readily available published data.~~

~~(e)A representative number of permeability tests shall be conducted within the proposed disposal area based upon soil variability.~~

~~(f)Proposed disposal areas wooded at the time of investigation shall be inspected by the Class D site evaluator after tree clearing and prior to disposal system installation. Written documentation of the conditions observed shall be submitted to the Department.~~

(~~g~~ c)Large system absorption facilities shall be designed with pressure distribution.

(~~h~~ d)The disposal system shall be divided into relatively equal areas. For effluent distribution each area is comprised of units as follows. The length to width ratio for seepage beds and elevated sand mounds shall be 4 : 1 or greater. Each unit shall receive no more than one thousand three hundred (1,300) gallons per day if seepage beds are utilized

and no more than two thousand six hundred (2,600) gallons per day if seepage trenches are utilized. The Department has sole discretion to deviate from this requirement if site constraints warrant such deviation.

(~~i~~ e) The replacement (repair) disposal area shall be divided into relatively equal units and sufficient replacement area must exist. Upgrading the initial system(s) will not suffice as replacement area.

(~~j~~ f)Effluent distribution shall alternate between the disposal area units. The absorption facilities shall be at least 10 feet apart.

(~~k~~ g)Each system shall have at least two (2) pumps or siphons.

(~~l~~ h)Large systems treating domestic wastes which utilize conventional septic tank treatment shall be required to install an effluent filter following the primary treatment.

(~~m~~ i)Large systems shall be designed with a means to measure wastewater flow. Flow data will be recorded and reported to the Department by the licensed operator in accordance with the permit requirements.

(~~n~~ j)Expected flows >20,000 GPD shall incorporate secondary wastewater treatment as approved by the Department.

(~~o~~ k)The Department may require additional information beyond the scope presented here on a case by case basis.

~~(p)The applicant shall provide a Preliminary Groundwater Impact Assessment (PGIA). The PGIA shall assess the potential impact of the large system upon waters of the State and upon public health. The PGIA shall comply with current guidelines established by the Department.~~

(~~q~~ l)Any on-site wastewater treatment and disposal system receiving over two thousand five hundred (2,500) GPD will require a licensed wastewater operator. The class of operator will be determined based on the Board of Certification for Licensed Wastewater Operators.

(m) Prior to installing the wastewater treatment and disposal system, a meeting with the Class D site evaluator, Class C designer, Class E System Contractor, DNREC personnel and any other interested parties shall be held to discuss the project.

5.12020Unless waived by the Department, groundwater monitoring is required at all sites utilizing large on-site wastewater treatment and disposal systems. Such monitoring shall continue as long as required by the Department. Upon completion of the PGIA review, the Department may require the submittal of a monitoring plan. If monitoring is required, a minimum of three (3) monitor wells, one up gradient and two down gradient from the proposed disposal areas must be installed and surveyed.

5.12030If, after review of the PGIA, the Department determines that there is a potential for significant adverse impact to the environment or public health, a more detailed Groundwater Impact Assessment (GIA) may be required.

5.13000Holding Tanks

5.13010The use of a holding tank is an unusual circumstance wherein all wastewater is permitted to be held in a watertight structure until it is pumped and transported by vehicle to a point of disposal. The use of a holding tank on a permanent basis is prohibited except as provided in these Regulations.

5.13015Permanent holding tanks are not permitted on unimproved lots.

5.13020No person shall install a holding tank without first obtaining a permit from the Department.

5.13025All holding tank permit applications and designs must be completed by a Class C designer.

5.13030Permits may be issued, by the Department, for the permanent use of holding tanks when all of the following conditions are met:

(a) The site is improved with a dwelling and has been evaluated for all means of on-site wastewater treatment and disposal, including alternative technologies, and has been deemed not suitable for an on-site wastewater treatment and disposal system; and

(b) No community or area-wide central wastewater system is available or expected to be available within five (5) years; and

(c)The same isolation distances as required for septic tanks can be met; and

(d)The owner(s) enter into a contract with a licensed liquid waste hauler to provide hauling services to the dwelling for the period it is utilized or until connection can be made to an approved wastewater facility. Should the owners change waste haulers, a new contract shall be submitted to the Department; and

(e)The property deed shall be amended with an Affidavit of Ownership at the time of permit issuance, which states that the dwelling is served by a permanent holding tank. The Affidavit of Ownership must be recorded at the Recorder of Deeds; and

(f) When the governmental unit or wastewater utility provides the hauling services directly, it shall conform to the requirements for liquid waste haulers; and

(g) Have a water meter installed to measure the in-flow of water into the building or house or a metering device measuring the flow to the tank

5.13040In an area under the control of a governmental unit, or a wastewater utility which has a recorded covenant with the owner that runs with the land, either of which is authorized to construct, operate, and maintain a community or area-wide central wastewater system, a holding tank may be installed for temporary use provided:

(a) The application for permit includes a copy of a legal commitment from the governmental unit or wastewater utility that within five (5) years from the date of application the governmental unit or wastewater utility will extend to the property covered by the application, a community or area-wide central wastewater system meeting the requirements of the Department; and

(b) The community or area-wide central wastewater system has received the necessary approvals for full operation (established sewer district) which includes the anticipated flow to the holding tank; and

(c)The proposed holding tank will comply with the requirements of these Regulations.

5.13050Temporary use of a holding tank may be approved when:

(a)Installation of an approved on-site system has been delayed by weather conditions; or

(b)The tank is to serve a temporary construction site (up to five (5) years)

5.13070Applications for holding tank installation shall contain plans and specifications in sufficient detail for each holding tank proposed to be installed and shall be submitted to the Department for review and approval. The application for a permit shall be made on forms provided by the Department and contain:

(a) A copy of a contract with a licensed liquid waste hauler shall contain, as a minimum, the following conditions:

(1)Duration of contract;

(2)Pumping schedule;

(3)Availability of equipment;

(4)Emergency response capability;

(5) Contents will be disposed of in a manner and at a facility or location approved by the Department;

(6) Evidence that the owner or operator of the proposed disposal facility will accept the pumping for treatment and disposal;

(7)Method of measuring wastewater use (water meter, wastewater meter, etc.)

(b)A record of pumping dates and the amounts pumped shall be maintained by both the property owner and the liquid waste hauler, and be made available to the Department along with in-flow meter readings as part of the annual renewal of the permit.

(c)The appropriate annual inspection fee

5.13080Each holding tank shall:

(a) In no case shall the tank have a capacity less than seven days average flow from the wastewater generating facility or 1,000 gallons, whichever is larger. When holding tanks are designed to serve the needs of a community system, the size shall be in conformance with standard engineering practice as determined by the Department and in accordance with an acceptable monitoring and pumping schedule.

(b)Comply with standards for septic tanks as prescribed in these Regulations (see Section 6.0700).

(c)Be located and designed to facilitate removal of contents by pumping.

(d) Be equipped with both an audible and visual alarm installed on an AC circuit and placed in a location, acceptable to the Department, to indicate when the contents of the tank are at seventy-five (75) percent of capacity.

(e) Have no vent at an elevation lower than the overflow level of the lowest fixture served.

(f) Be designed for anti-buoyancy if test hole examination or other observations indicate that seasonally high groundwater may float the tank when empty.

(g) Be constructed of the same materials approved for septic tanks. Holding tanks shall be watertight and structurally sound to withstand internal and external loads.

(h) Be equipped with an eighteen (18) inch diameter or square access opening. The access opening shall be extended to a minimum of six (6) inches above grade level.

(i) All tanks constructed on-site (i.e. cast-in-place, concrete block, etc.) shall be tested to assure watertight conditions. Alarms shall be tested for proper operation.

5.13090 Each holding tank installed under these Regulations shall be inspected annually. A fee shall be charged for each annual inspection and all required documentation shall be submitted also.

5.13100 No liquid waste from a holding tank shall be applied directly or indirectly onto the ground surface or into surface waters.

5.13120 Prior to purchase of a dwelling that is currently served by a holding tank or is proposed to be served by a holding tank, the prospective buyer must sign an Affidavit of Understanding of the terms and conditions associated with use of a holding tank. This Affidavit shall be submitted to the Department to be filed with the permit.

5.14000 Moratorium Areas

5.14010 As soon as the Department determines that construction of on-site wastewater treatment and disposal systems should be limited or prohibited in an area, it shall issue an order limiting or prohibiting such construction.

5.14020 The order shall be issued only after a public hearing which shall insure that twenty (20) days notice is given.

5.14030 The order shall contain a specific description of the moratorium area and shall be limited to the area immediately threatened with ground water or surface water contamination if construction in that area continues.

5.14040 In issuing an order under this Section the Department shall consider the factors contained in 7 Del. C., Chapter 60, Section 6001.

5.14050 The moratorium shall be limited to a period of five (5) years after which re-establishment of the moratorium may be considered.

SECTION 6.00000 -- DESIGN AND CONSTRUCTION

6.01000 General Requirements

6.01010 Location: All disposal systems shall be located according to the minimum horizontal isolation distances specified in these Regulations (see Exhibit T). All isolation distances for capped systems and elevated sand mounds shall be measured from the edge of the aggregate or aggregate-free chamber.

6.01015 All pressurized systems must be constructed in such a manner that the operating pressure can be checked at the end of the distal lateral (permanent tee, etc).

6.01018 All pressurized systems must utilize timers or other electrical on/off delay devices to insure dosing frequencies.

6.01020 Disposal System Sizing

6.01021 All disposal systems shall be sized based on the estimated wastewater flow and the results of percolation tests or the assigned percolation rate. Percolation rates shall be based on USDA soil textures and assigned by the Class D site evaluator. The table of percolation rates used by the Department (see Exhibit W) does not assign rates, it gives estimates based upon textures. Percolation rates of less than 20 minutes per inch (mpi) will not be allowed for designing any on-site wastewater treatment and disposal system, unless otherwise approved by the Department.

6.01022 The minimum disposal area required for trench systems with percolation rates less than 120 mpi shall be determined from the following equation:

$A = 0.33\ Q\ (t)^{0.5}$

Where

A = the minimum disposal area required in square feet

Q = wastewater application rate in gallons per day

t = the average percolation rate in minutes per inch (minimum rate is 20 mpi for design)

6.01023 The minimum disposal area required for seepage bed systems with percolation rates less than 120 mpi shall be determined from the following equation:

$A = 0.42\ Q\ (t)^{0.5}$

Where

A = the minimum disposal area required in square feet

Q = wastewater application rate in gallons per day

t = the average percolation rate in minutes per inch (minimum rate is 20 mpi for design)

6.01024 Where percolation rates are faster than 6 mpi, such as in soils with USDA textures of sands, and loamy sands, a pressurized distribution system is required; the minimum disposal area shall be determined from the following equation:

$A = 1.2\ Q$

Where:

A = the minimum disposal area required in square feet

Q = design flow rate in gallons per day

6.01025 The minimum disposal area required for low-pressure pipe systems with percolation rates less than 120 mpi shall be determined from the following equation:

$A = UQ$

Where:

A = the minimum disposal are required in square feet

Q = design flow rate in gallons per day

U = unit absorption area (see Exhibit X)

6.01030Excavation

6.01031Clearing and Grubbing: All vegetation shall be cut and removed from the grade surface at a distance of ten (10) feet beyond the perimeter of the disposal area. Trees and shrubs shall be cut and removed at grade level while roots may be left in place. All cut materials shall be removed from the disposal area.

6.01032Special care should be taken when clearing vegetation from an approved disposal area as disturbance of the soil surface may render the site unsuitable.

6.01033All unsuitable excavation materials shall be discarded and the excavation shall be kept dry and de-watered from surface drainage until backfilling is completed.

6.01034Excavation machinery shall be of such type and operated in such a manner that they will not compact or smear the trench or bed sidewall soils. If smearing does occur, the smeared surfaces shall be hand raked to expose an unsmeared soil interface. Trenchers are preferred for excavation of LPP trenches.

6.01035Excavations below the design depth shall be brought up to proper elevation with approved fill materials installed in accordance with these Regulations and the requirements for sand-lined systems. Additional aggregate may only be used when a minimum of three (3) feet of undisturbed soil can be maintained between the bottom of the aggregate and the limiting zone. In no case shall more than one (l) foot of additional aggregate be used.

6.01036The sides of the trenches or beds shall be practically plumb and scarified.

6.01037The bottom of the trench or bed area shall be practically level as determined by using a transit, or laser level, with a maximum grade tolerance of two (2) inches per one hundred (100) feet.

6.01038All trench or bed excavations shall be kept free of water and dry. Tamping of trench sides and bottoms is not permitted.

6.01040Materials

6.01041Sandy fill materials shall be medium sand, sandy loam, loamy sand/sandy loam mixture. The fill material shall have the following characteristics:

Sieve Size	Maximum Percentage Passing Sieve
3/8"	100%
No. 4	95-100%
No. 50	5-30%
No. 100	1-7%

6.01042Filter aggregate must come from a supplier approved by the Department. Storage and cleaning procedures must be approved by DNREC before supplier can be included on approved list. Random inspection of supply pits and supplier’s storage facilities shall be performed by the Department.

Sieve Size	Maximum Percentage Passing Sieve
2 ½"	100% minimum
2"	100% minimum
1 ½"	100% minimum
1"	100% minimum
½"	50% maximum
#4	10% maximum
#8	0% maximum

Note: The Class E contractor shall submit upon request a Certification of Materials for fill and aggregate used in systems. This certificate shall be obtained from the supplier.

6.01043 Grade boards or blocks may be used in pipe installation to assure a proper slope of less than two (2) inches per one hundred (100) feet for gravity distribution lines.

6.01044 Filter fabric shall be placed over the gravel with a two (2) inch overlap turned up on each side of the trench or bed.

6.01045 Aggregate-free chambers or any other similar devices may be used in the design, installation, and operation of on-site wastewater treatment and disposal systems in Delaware, but are subject to approval of the Department. The minimum disposal area required when using aggregate-free chambers shall be calculated by utilizing the most recent guidelines and Sections 6.01022 and 6.01023.

6.01050 Distribution Networks

6.01051 All systems requiring a total of more than 2,500 square feet of disposal area shall have a pressurized distribution system pursuant to these Regulations.

6.01052 All systems requiring more than 2,500 square feet of disposal area, with the exception of low pressure pipe systems, shall be divided into a minimum of two separate alternating systems of equal size with pressurized distribution provided alternatively to each system. The minimum separation between absorption facilities shall be ten (10) feet, which, with the exception of subsurface irrigation systems, will be determined on a case by case basis.

6.01054 All systems installed on lots where percolation rates are faster than six (6) mpi shall have pressure distribution systems.

6.01055 A minimum distance of four (4) feet and a maximum distance of six (6) feet shall separate adjacent laterals in a bed. Laterals shall be placed no farther than three (3) feet from the sidewalls of the bed. The length to width ratio for seepage beds and elevated sand mounds shall be 4 : 1 or greater and maximum bed width shall not exceed twenty five (25) feet, unless approved by the Department. A minimum distance of six (6) feet shall separate laterals in a trench disposal system.

6.01056 Gravity system distribution laterals may be connected in closed loop systems.

6.01057 The maximum allowable lateral length is one hundred (100) feet for gravity distribution systems and pressure distribution systems.

6.01058 Each trench or bed system shall contain at least two distribution laterals. Trenches shall be utilized in all distribution systems located on slopes in excess of two (2) percent, unless otherwise approved by the Department.

6.01059All distribution systems shall ensure equal distribution when designed on slopes.

6.01060Conventional Treatment and Disposal Systems

6.01061Gravity Trenches and Beds (see Exhibits K, L, M and N)

(a)A minimum of twelve (12) inches of filter aggregate shall be placed in the bed or trench. A minimum of six (6) inches of aggregate shall be placed under the distribution laterals. The remaining filter aggregate shall be placed so that a minimum depth of no less than two (2) inches exists above the crown of the distribution pipe.

(b)For trenches or beds with a minimum sidewall depth of twenty-four (24) inches, backfill shall be placed in accordance with permit requirements. Unless otherwise required by the Department, the construction sequence shall be as follows:

(1)The backfill material shall be at least twelve (12) inches in depth above the filter fabric and returned to the original grade.

(2) Backfill material shall be carefully deposited by methods which will not damage or disturb the distribution pipe or result in undue compaction of the backfill.

(3)Backfill over trenches or beds shall not be tamped.

(4) Material containing an excess of moisture shall be permitted to dry until the moisture content is within workable limits. The moisture content of the material being placed shall be within plus or minus 3% of optimum as determined by AASHTO Designation T- 99.

(5) Backfill material which is too dry for proper placement shall be wetted. All materials shall be free of stones larger than two (2) inches in diameter, debris, trash, wood or other similar materials.

(c)For trenches or beds with a minimum sidewall depth of twelve (12) inches but less than twenty-four (24) inches, a capping fill shall be placed over the disposal system. The cap shall be constructed pursuant to permit requirements (see Exhibits M and N). Unless otherwise required by the Department, the construction sequence shall be as follows:

(1) The texture of the soil used for the cap shall be of the same textural class or of one textural class finer, as the natural topsoil. All materials shall be free of stones larger than two (2) inches in diameter, debris, trash, wood or other similar materials. ~~The minimum gradient of 3 : 1 with 5 : 1 recommended by the Department.~~

(2) Construction of capping fills shall not occur when the natural soil has a moisture content which causes loss of soil structure and porosity when worked.

(3)The disposal area shall be scarified to destroy the vegetative mat.

(4)The system shall be installed as specified in the construction permit. There shall be a minimum of ten (10) feet of separation between the edge of the fill and the absorption facility.

(5) Suitable backfill shall be applied to the fill site and worked in so that the two (2)contact layers (native soil and fill) are mixed. Fill material shall be evenly graded to a final depth of sixteen (16) inches over the aggregate.

(6) The site shall be landscaped according to permit conditions and be protected from livestock, automotive traffic or other activity that could damage the system.

6.01062Sand Mounds (see Exhibit P)

(a)Sand mound absorption areas shall be plowed six (6) to eight (8) inches deep parallel to the contour after removing the vegetative mat. Plowing shall not be done on wet soils. No plowing instruments which compact the soil shall be used. Moldboard or chisel plows are recommended.

(b)Immediately after plowing, sandy fill shall be placed on the up-slope edges of the plowed mound absorption area and spread to a depth as specified in the permit. Only lightweight equipment such as small track type tractors shall be allowed.

(c)A twelve (12) inch bed of filter aggregate shall be placed over the sand fill. Six (6) inches of aggregate shall be placed under the distribution lateral. The remaining filter aggregate shall be placed to an additional six (6) inches in depth with at least two (2) inches over the crown of the distribution pipe.

(d)A minimum allowable distance of four (4) feet and a maximum distance of six (6) feet shall separate adjacent laterals in a elevated sand mound bed.

(e)The slope of the sand fill not directly beneath the filter aggregate shall be 3 : 1, with 5 : 1 recommended by the Department.

(f)Mound covering or berm soil shall be loamy sand or sandy loam.

(g)The mound berm shall extend at least twelve (12) inches above the twelve (12) inch filter aggregate layer plus at least six (6) inches of topsoil cover.

(h)The outside slopes of the mound cover or berm shall be approximately 3 : 1 with 5 : 1 recommended by the Department.

(i)Erosion control shall be provided over the complete mound in one of the following manners:

1)Grass shall be planted over the entire mound and stabilized with mulch; or

2)Sod entire mound; or

3)Other pre-authorized methods of erosion control

6.01063Low Pressure Pipe Systems (see Exhibits O & X)

(a)A trench width of twelve (12) inches shall be used.

(b)Trenches shall be no less than five (5) feet on center.

(c)There shall be six (6) inches of aggregate below the pipe and two (2) inches of aggregate above the pipe. There shall be a minimum of six (6) inches and a maximum of nine (9) inches of soil cover.

(d)Filter fabric shall be placed on top of the aggregate in the trench with a two (2) inch overlap turned up on each side of the trench.

(e)Check valves are required to eliminate the back siphoning of effluent from the laterals.

(f)Turn ups or cleanouts shall be finished below grade and protected by a four (4) inch diameter or greater Sch. 40 PVC sleeve with a cap and ferrule finished at grade.

(g)Timers or other electrical on/off delay devices shall be installed to insure dosing frequencies.

6.01070Site Restoration:

6.01071The finished grade of the backfill over seepage bed, trench and sand-lined absorption facilities shall be sloped to provide positive drainage.

6.01072The land adjacent to all absorption facilities shall be graded to prevent both the accumulation of surface water on the absorption facility and the flow of surface water across the absorption facility. The finished absorption facility and fill extensions shall be seeded and mulched to prevent erosion.

6.01073Trees shall not be planted within ten (10) feet of the perimeter of absorption facility. All trees and shrubs shall be located to prevent root intrusion into the absorption facility and other components of the system. Shallow rooted shrubs are permitted (ie, rhododendrons, azaleas, etc.).

6.01074All areas of disturbance due to the installation of the absorption facility shall be either sodded or seeded and mulched to establish a permanent grass cover.

6.01090Spare Area

6.01091Each site utilizing an on-site wastewater treatment and disposal system shall have sufficient area to accommodate a complete replacement system or an acceptable alternative approved by the Department which satisfies the requirements of these Regulations. This area shall be maintained so that it is free from encroachments by accessory buildings and additions to the main building. Encroachment shall include the ten (10) foot isolation distance to buildings as required by these Regulations. This requirement may be waived if the application for a permit includes a copy of a legal commitment from the governmental unit that states that within five years from the date of the application the governmental unit will extend to the property a community or area-wide central wastewater system meeting the requirements of the Department or an acceptable alternative is approved by the Department. The community or area-wide central wastewater system has received the necessary approvals for full operation which includes the anticipated flow to the on-site wastewater treatment and disposal system.

6.02000Artificially Drained Systems

6.02001Disposal systems shall not be constructed on sites where curtain drains, vertical drains, underdrains, or similar drainage methods are utilized to artificially lower the level of the water table to meet the requirements of these Regulations. Observation wells may be used to demonstrate the change in the hydrology of a particular property for the purpose of siting an on-site wastewater treatment and disposal system.

6.03000Soil Percolation Rate Determination

6.03003Percolation rates are assigned by State environmental scientists and Class D site evaluators based upon observed soil structure and textures during the site evaluation. The Department has established percolation rates based upon USDA soil textures (see Exhibit W).

6.03005Soil Percolation Test

6.03010The soil percolation test shall provide a measure of the rate at which water moves from an uncased bore hole into the surrounding soil under nearly constant head in both vertical and horizontal directions.

6.03015One soil percolation test shall consist of three (3) test holes.

6.03020The percolation test shall be performed only after a site evaluation has indicated that the soil may be suitable for an on-site wastewater treatment and disposal system. The percolation test shall be used to determine the rate at which wastewater effluent can be expected to seep into the soil. This rate shall be used in conjunction with a projected daily flow rate to determine the area required for proper treatment and disposal.

6.03030The depth of the percolation test holes shall not be determined until a site evaluation is completed and a limiting zone, if any, is identified. The depth of the percolation test holes shall be as follows:

(a)If the limiting zone occurs at least twenty (20) inches from the soil surface, the percolation test holes shall be within the soil horizon that is controlling the water movement vertically and/or horizontally to a depth of sixty (60) inches.

(b)If the limiting zone occurs at less than twenty (20) inches from the surface, the site is unsuitable for a conventional on-site wastewater treatment and disposal system. However, if replacing a failing or malfunctioning system, item (a) should be used without regard for the twenty (20) inch limiting condition. In situations where sand-lining through an impermeable or less permeable horizon within the top forty eight (48) inches, a percolation test should be performed within the soil zone which is controlling the water movement vertically and/or horizontally beneath the restrictive material to a depth of sixty (60) inches.

6.03040The following procedures shall be used for percolation tests:

(a)A minimum of three (3) test holes shall be dug within the proposed installation area of the absorption facility. Additional tests may be required in areas with varying soil characteristics or when warranted at the sole discretion of the Department due to the size of the required disposal area.

(b)Test holes with a horizontal diameter of six (6) inches shall be dug or bored. A post hole digger, auger or mechanical digger may be used to dig the holes.

(c)The bottom and sides of each test hole shall be scarified to remove any smeared soil surfaces that result from digging. Loose soil shall be removed from the hole. Two (2) inches of coarse sand or fine aggregate shall be placed in the bottom of the hole to prevent sealing of the hole bottom when water is added.

(d)The hole shall be filled with water to a minimum depth of twelve (12) inches above the aggregate or sand. This level shall be maintained for a period of at least four (4) hours.

(e)The water level shall then be adjusted to six (6) inches over the gravel or sand. The hole shall be allowed to stand undisturbed for thirty (30) minutes. The water level shall again be adjusted to six (6) inches over the aggregate and the hole allowed to sit undisturbed for another thirty (30) minutes.

(f)Where the drop in the water level is two (2) inches or more in thirty (30) minutes, the interval for readings during the percolation test shall be ten (10) minutes. Where the drop in the water level is less than two (2) inches in thirty (30) minutes, the interval for readings during the percolation test shall be thirty (30) minutes. The drop in water level shall be recorded after each reading and the water level shall be adjusted to six (6) inches above the gravel. Readings shall continue for a minimum of four (4) hours where the interval between readings is thirty

(30) minutes. Where the interval is ten (10) minutes due to fast percolation, the readings may be discontinued after one (l) hour. Where the drop between readings has not stabilized at the end of the minimum period, the reading shall continue until a steady rate is established. A steady rate is established when two (2) successive water level drops do not vary by more than one-sixteenth ($^1/_{16}$) of an inch. If any of the holes has a rate that is significantly different from the other holes, it shall be examined to see if this hole is in a soil that is different from the soil described in the site evaluation. If the hole is determined, by the licensed percolation tester, to be uncharacteristic of the site it shall be excluded from analysis but listed on the application.

(g)The percolation rate for the site shall be determined by taking the arithmetic average of all percolation tests conducted. Percolation rates slower than one hundred twenty (120) minutes per inch (mpi) are unacceptable and shall not be used to determine the arithmetic average percolation rate but shall be reported. On-site wastewater treatment and disposal systems shall not be placed on those portions of any sites that have percolation rates slower than one hundred twenty (120) mpi.

6.03045Additional Methodologies

6.03050At the discretion of the Department or Class D site evaluator, additional methodologies may be preferred as a substitute for the soil percolation test. Approved test methods are given in the current edition of Methods of Soil Analysis, ASA and the ASTM Standards.

6.04000Wastewater Design Flow Rates

6.04010The projected peak daily wastewater flow shall be used to determine the appropriate size and design of both, on-site and community, wastewater treatment and disposal systems.

6.04020Where actual calibrated metered flow data indicating peak daily flows over the most recent three (3) year period are available for a similar facility, such peak flow data may be substituted for the wastewater flows listed in this Section subject to the approval of the Department. When ranked in descending order the adjusted design daily flow shall be determined by taking the numerical average of the daily readings within the upper ten (10) percent of the daily readings.

6.04030The design wastewater flow from residential dwellings, including single family, multiple family, manufactured homes, and apartments served by individual on-site or community wastewater treatment and disposal systems shall be 120 gallons per day per bedroom. The minimum design flow for any commercial property shall be 120 gallons per day and residential dwelling shall be 240 gallons per day. Credit for water conservation devices will be accounted for according to current Department guidelines.

6.04040The design wastewater flow from other residential, commercial and/or institutional facilities served by individual on-site or community systems shall be as prescribed in Exhibit D.

6.04050Disposal systems shall be designed to receive all wastewater, except for water softener brine, from the building or structure served unless otherwise approved by the Department.

6.04060All restaurants or other establishments involved in food preparation activities shall install external grease traps as required by the Department.

6.04070Laundromat and car wash wastewater shall be pretreated as specified by the Department prior to discharge to any absorption facility under these Regulations.

6.04080Industrial wastewater shall not be discharged into a septic tank unless prior approval is obtained from the Department.

6.05000Isolation Distances

6.05010The minimum isolation distances set forth in Exhibit C shall be maintained when designing, locating, constructing, repairing, replacing, and installing individual on-site and community wastewater treatment and disposal systems.

6.05020The Department may require greater isolation distances for systems when conditions warrant for purposes of protecting environmental resources and the public health.

6.05030Isolation distances may be decreased by the Department based on a site specific geological and hydrogeological analysis performed pursuant to the requirements of these Regulations, provided that the Department is satisfied that such decrease will allow for protection of environmental resources and the public health.

6.05040 Existing on-site wastewater treatment and disposal systems which are repaired or replaced shall be subject to the requirements of this Section, provided however, that if it is impossible to comply with such requirements due to lot size limitations, the repaired or replaced system shall conform to the maximum extent practicable with the requirements of this Section as determined by the Department in its sole discretion.

6.06000Conventional On-Site Wastewater Treatment and Disposal Systems Criteria

6.06010**All Full Depth Gravity and Capping Fill Gravity Trench and Bed Treatment and Disposal Systems shall be designed in accordance with the following criteria (see Exhibits K, L, M or N).**

6.06011Landscape Position: Areas with good surface drainage which allow surface water to run off easily without ponding and which are not prone to flooding.

6.06012Slope: 0 - 15%. Bed systems can not be sited on slopes > 2%, unless otherwise approved by the Department. All systems must be constructed with level bottoms and shall incorporate construction procedures prohibiting equipment from entering the excavation. Trench systems on slopes in excess of 15% shall be permitted only if the design is prepared by a licensed Class C designer. Any such design shall incorporate construction procedures.

6.06017Depth to Limiting Zone: The limiting zone shall be a minimum of three (3) feet below the bottom of the trench ≥ 48 inches beneath the soil surface.

6.06018Percolation Rates:

(a)6 - 120 mpi: Gravity distribution systems may be allowed unless otherwise required by these Regulations. Construction of seepage trenches and beds in soils with percolation rates slower than 120 mpi shall not be permitted.

(b)Faster than 6 mpi: A pressurized distribution system is required for seepage trenches or beds. The trench or bed may be placed between twelve (12) and twenty four (24) inches in order to maintain thirty six (36) inch separation distance between rapidly permeable material and the limiting zone.

6.06030**All Low Pressure Pipe Treatment and Disposal Systems shall be designed in accordance with the following criteria (see Exhibits O & X).**

6.06031 Landscape Position: Areas with good surface drainage which allow surface water to run off easily without ponding and are not prone to flooding. Low pressure pipe treatment and disposal systems shall not be prescribed in coastal beach sands.

6.06034 The depth to the bottom excavation shall be nine (9) inches to eighteen (18) inches. Trench width shall be no larger than twelve (12) inches, unless otherwise approved by the Department.

6.06035 Depth to limiting zone: The limiting zone shall be a minimum of eighteen (18) inches below the bottom of the trench (i.e. a minimum of twenty seven (27) inches below existing grade for a nine (9) inch deep LPP trench system). Shallow disposal trenches (placed not less than nine (9) inches into the original soil profile) may be used with a capping fill to achieve the minimum separation distance specified above. The capping fill, if required, shall be placed in accordance with these Regulations (see Exhibit O). A capping fill cover is required for all LPP disposal systems with trench depths less than eighteen (18) inches.

6.06037 Additional criteria:

(a) Lateral lines of the LPP disposal system which are placed on lower landscape positions (i.e. concave slope) shall have an interceptor drain installed upslope of the uppermost lateral to intercept and divert subsurface waters away from the absorption facility as determined by a Class D site evaluator.

(b) There shall be no soil disturbance to the proposed disposal area except the minimum required for installation. The soils may be rendered unsuitable should unnecessary soil disturbance occur. Particular care should be taken when clearing wooded lots so as not to remove the surface soil material.

(c) LPP disposal systems shall be installed only with equipment approved by DNREC.

(d) LPP disposal systems shall not be allowed where sand lining is required or where soils have been filled or disturbed.

6.06040 **All Elevated Sand Mound Treatment and Disposal Systems shall be designed in accordance with the following criteria (see Exhibit P).**

6.06041 Landscape Position: Areas with good surface drainage which allow surface water to run off easily without ponding and are not prone to flooding.

6.06042 Slope:

(a) 0 – 6% for soils with percolation rates slower than 60 mpi.

(b) 0 – 12% for soils with percolation rates faster than 60 mpi.

6.06044 Depth to Limiting Zone: > 20 inches to evidence of a limiting zone.

6.06045 Percolation Rate: 0 - 120 mpi: Construction on soils with slower percolation rates is not permitted. A pressurized distribution system is required in all cases.

6.06050 **All Pressure-Dosed Full Depth and Capping Fill Treatment and Disposal Systems shall be designed in accordance with the following criteria (see Exhibits Q & R).**

6.06051Landscape Position: Areas with good surface drainage which allows surface water to run off easily without ponding and are not prone to flooding.

6.06052Slope: 0 – 15%. Bed systems can not be sited on slopes > 2%, unless otherwise approved by the Department. All designs must be constructed with level bottoms and shall incorporate construction procedures prohibiting equipment from entering the excavation. Slopes in excess of 15% shall be permitted only if the design is prepared by a licensed Class C designer. Any such design shall incorporate construction procedures.

6.06054Depth to Limiting Zone: > Forty eight (48) inches to evidence of a limiting zone.

6.06055Depth to Limiting Zone: Forty eight (48) inches or greater from original grade and three (3) feet below bottom of filter aggregate. (ie. a minimum of five (5) feet below existing grade for two (2) foot deep trench and bed systems).

6.06056Percolation Rate: 0 - 120 mpi. Construction on soils with slower percolation rates is not permitted. A pressurized distribution system is required in all cases.

6.06060**All Sand-lined Treatment and Disposal Systems shall be designed in accordance with the following criteria (see Exhibit S).**

6.06061Landscape Position: Areas with good surface drainage which allow surface water to run off easily without ponding and are not prone to flooding.

6.06062Slope: 0 – 15%. Slopes in excess of 15% shall only be allowed if the design is prepared by a Class C designer. Any such design shall incorporate construction procedures.

6.06065Depth to Limiting Zone: Forty eight (48) inches or greater from original grade and three (3) feet below bottom of filter aggregate. Sand lined systems shall not be used where there is less than one (l) foot of unsaturated soil between the limiting zone and the impermeable or slowly permeable soil zone. Sand lining will not be permitted into the water table, except in instances where it is necessary for replacement systems to function hydraulically.

6.06066Percolation Rate: 0 - 120 mpi. A pressurized distribution system may be required. The percolation test shall be taken in the permeable soil below the impermeable or less permeable soil zone. The bottom of the percolation test hole shall extend a minimum of six (6) inches below the slowly permeable soil zone but in no case shall it be less than six (6) inches above the underlying limiting zone. If the percolation tests are to be conducted at a depth too deep to obtain accurate percolation rates, a percolation rate based on USDA soil textures shall be assigned (see Exhibit W). Otherwise, hydraulic conductivity tests may be substituted.

6.06067Additional Criteria:

(a)Sand lined systems may be used where the site evaluation has shown that there is an impermeable or slowly permeable soil zone located over an acceptable soil. Use of this system requires removal of that zone within the disposal area and its replacement with a sandy fill as prescribed under Section 6.01041. The system shall be constructed in accordance with specifications for sand-lined seepage trenches and beds (see Exhibit S). Installation may require a Class D site evaluator on site to monitor depth of sand lining.

6.07000<u>Septic Tanks:</u>

6.07100The standard wastewater treatment system used for on-site wastewater treatment and disposal shall be the septic tank.

6.07200All septic tank treatment units shall be designed in accordance with the following requirements (see Exhibit G).

6.07201The location of septic tanks shall be in accordance with the minimum isolation distances set forth in these Regulations as prescribed in Exhibit C.

~~6.07202Minimum liquid volume capacity of a septic tank shall be one thousand (1,000) gallons.~~

6.07203The minimum liquid working capacity of septic tanks shall be:

(a)For flows ≤ 500 GPD the minimum liquid working capacity shall be one thousand (1,000) gallons

(b)For flows > 500 GPD but ≤ 15,000 GPD shall have a working capacity of 1.5 times the expected flow rate with a minimum liquid working capacity of one thousand five hundred (1,500) gallons

(c)For flows > 15,000 GPD shall be determined on a case by case basis at the sole discretion of the Department

6.07206If large flow surges are anticipated the septic tank shall be increased in size to accommodate the surges without causing sludge or scum to be discharged from the tank.

6.07208All tanks shall be watertight, non-corrosive, durable and structurally sound. Materials of construction for tanks shall be one of the following:

(a)Cast-in-place reinforced concrete

(b)Pre-cast reinforced concrete

(c) Or other suitable material approved as equal, by, and at the sole discretion of, the Department

6.07209All septic tanks shall be of multi-compartment design with a minimum of two (2) compartments. The first compartment of a two (2) compartment tank shall contain two-thirds ($^2/_3$) the liquid capacity of the total volume of the tank. Tanks shall be of rectangular design.

6.07210Pre-cast reinforced concrete tanks shall have a minimum wall thickness of two and one-half (2 ½) inches.

6.07211Cast-in-place reinforced concrete tanks shall have a minimum wall thickness of four (4) inches.

6.07212All inlet and outlet connections shall be sanitary tees or baffles constructed of cast-in-place concrete or PVC. Inlet openings may have a minimum diameter equivalent to the diameter of the house sewer but in no instance shall the diameter be less than three (3) inches. The outlet invert shall be two (2) inches below the inlet invert. The inlet and outlet baffles or sanitary tees shall extend at least twelve (12) inches below the liquid level, but to a level no deeper than 40% of the liquid depth. Baffles or sanitary tees are not necessary for any portion of the tank if it is to be used as a pumping chamber.

6.07213All pipe cutouts for inlet and outlet connections shall be sealed with a watertight concrete (95%) & bentonite (5%) grout mix or standard rubber gaskets.

6.07214Connections between multi-compartment tanks shall consist of either a four (4) inch diameter sanitary tee or two (2) or more openings equally spaced across the width of the tank. Such openings shall be six (6) inches wide. All

compartment connections shall extend to a level no deeper than 40% of the liquid depth as measured from the liquid level.

6.07215All inlet, outlet and inter-compartment connections shall be located to provide a minimum air space of one (1) inch between the top of the connection and the underside of the tank cover.

6.07216Each tank compartment shall be equipped with an access opening and cover. The opening shall be located to provide access to each tank compartment as well as providing access to the inlet and outlet connections for routine inspections. Access openings shall be at least eighteen (18) inches square or in diameter.

6.07217Each septic tank shall be constructed with a watertight access riser for each compartment and shall extend above grade. The riser and lid shall be made of concrete, masonry or an equivalent durable material approved by the Department. <u>If multiple concrete risers are needed then water tight gaskets or hydraulic cement must be placed between each riser.</u>

6.07219All above grade access covers shall be water tight and secure from vandalism.

6.07225All septic tanks shall be equipped with any outlet effluent filter approved by the Department. The maintenance of these filters is the responsibility of the property owner and must remain in service for the life of the septic tank. This unit must be maintained in accordance with the manufacturer's service instructions.

6.07300All installations of septic tank treatment units shall be in accordance with the following requirements:

6.07301Excavation: The excavation shall be large enough to allow safe, unencumbered working conditions but in no case shall the size of the excavation be less than two (2) feet beyond the perimeter of the tank. Excavations shall be kept dewatered from surface drainage until backfilling is complete.

6.07302Foundations: The tank shall be placed on firm, dry, granular, undisturbed soil that has been graded level. A gravel bedding shall be used on damp or fine grained soils. A gravel bed foundation shall consist of stone no larger than that which will pass through a $^{3}/_{4}$" sieve and shall be placed level to a minimum thickness of six (6) inches in the excavation. The gravel bed shall extend one (l) foot beyond the perimeter of the tank.

6.07303All tanks shall be placed on a level grade and at a depth that provides adequate gravity flow from the source. Where adequate flow from the source is maintained through the use of pumping equipment, the impact of pumping rates and potential surge flows shall be evaluated so as to maintain the treatment efficiency of the septic tank unit.

6.07304Previously excavated material from the tank excavation may be used for backfill provided the excavation material is dry and free of stones larger than four (4) inches in diameter, construction debris, concrete, wood and other similar materials. To equalize external pressure against the septic tank, backfill material shall be placed and compacted, extending a minimum of two (2) feet beyond the perimeter of the tank.

6.07305Backfill materials shall be placed in uniform layers not more than eight (8) inches thick and compacted to no less than 85% Modified Proctor Density. Tamping shall be done in a manner that will not produce undue stress or strain on the tank. All backfill shall be free of excessive moisture.

6.07400Testing: All tanks constructed on-site (i.e., cast-in place, concrete block, etc.) shall be tested to ensure watertight conditions and to check alignment and operation of inlet, inter-compartment and outlet connections prior to backfill. When tested, tanks shall be filled to overflowing with water to observe operation of all connections and fittings. All visible leaks in the tank observed by the installer shall be repaired prior to backfilling.

6.08000Grease Traps:

6.08010Grease traps shall be utilized for commercial and industrial wastewater sources at the sole discretion of the Department to assure the effectiveness of on-site wastewater treatment and disposal systems. Grease interceptors shall not be approved for new construction designs as replacement for the grease trap. Grease interceptors may be allowed for replacement systems when there are site limitations and low flow applications.

6.08020All grease traps shall be designed in accordance with the following requirements. The minimum size grease trap shall be 1,000 gallons (see Exhibits E & F).

6.08021The location of grease traps shall be in accordance with the minimum isolation distances set forth in these Regulations as prescribed in Exhibit C.

6.08022The sizing of grease traps shall be based on wastewater flow data and grease retention capacity. The grease retention capacity in pounds shall be equal to at least twice the peak flow capacity in gallons per minute. The flow capacity can be determined from the individual flows from fixtures discharging into the grease trap. Exhibit E contains the minimum flow rate fixture capacities which shall be used for grease trap designs when actual calibrated metered flow data indicating peak daily flows over a three (3) year period are not available.

6.08023All grease traps shall have multi-compartments.

6.08024All inlet and outlet connections shall be sanitary tees or baffles constructed of cast-in-place concrete or PVC. Inlet and outlet openings shall be a minimum of four (4) inches in diameter. The outlet invert shall be two (2) inches below the inlet invert. The inlet baffle or sanitary tee shall extend at least twenty four (24) inches below the liquid level. The bottom of the outlet baffle or sanitary tee shall be eight (8) inches above the tank bottom.

6.08025Connections between multi-compartment tanks shall consist of a four (4) inch diameter sanitary tee. The bottom of the sanitary tee shall be twelve (12) inches above the tank bottom.

6.08026The requirements of Section 6.07208, 6.07210, 6.07211, 6.07213, 6.07215, 6.07216, 6.07217 and 6.07219 shall apply to all grease traps approved in accordance with these Regulations.

6.08030All installations of grease traps shall be in accordance with the requirements of Section 6.07300 and testing shall be conducted in accordance with Section 6.07400 of these Regulations.

6.08031Grease traps must have access at grade.

6.09000Dosing and Diversion Systems

6.09010Effluent from on-site wastewater treatment and disposal systems shall be transmitted to the absorption facility by gravity or pressure distribution systems or lifted by a lift station (see Exhibit V) to overcome elevational differences between the septic tank and the absorption facility.

6.09020Gravity dosing and distribution systems may be used when the design wastewater flow requires less than 2,500 ft^2 of disposal area for seepage trenches or seepage beds and the percolation rate is equal to or slower than six (6) minutes per inch.

6.09030Gravity distribution systems shall conform to the following requirements:

6.09031All unperforated gravity transmission pipe up to the distribution box shall be Sch. 40 PVC or ANSI Class 22 thickness cast iron and shall be at least four (4) inches or greater in diameter unless lifted by a lift station to a surge tank or the distribution box in which case 1 ½ inch or 2 inch Sch. 40 PVC pipe would be permissible with a minimum of twenty (20) feet of four (4) inch diameter Sch. 40 PVC pipe prior to entering the distribution box.

6.09032All gravity transmission pipes shall be placed on a firm undisturbed or well compacted soil. All joints shall be watertight. A minimum grade of ~~1/4~~ 1/8 inch per foot shall be provided for gravity transmission piping. Clean backfill shall be placed around and over the pipe and hand tamped to provide compaction.

6.09033All gravity distribution laterals shall be thin walled or Sch. 40 PVC and shall be ~~at least~~ four (4) inches ~~or greater~~ in diameter. Perforated PVC pipe shall have $^{3}/_{8}$ to $^{3}/_{4}$ inch diameter holes a maximum of thirty (30) inches on center. Coiled and corrugated piping shall not be used. A grade of less than two (2) inches per one hundred (100) feet shall be provided for all gravity distribution laterals.

6.09034The design and construction of the gravity distribution system shall provide uniform application of the effluent. All distribution laterals shall be of equal length unless approved by the Department. The effluent shall be equally divided between laterals of the gravity distribution system by means of a distribution box.

6.09035 Stepped trenches shall be used on sloping ground.

6.09040All distribution boxes shall conform to the following requirements (see Exhibit H):

6.09041Location: Distribution boxes shall be used with all gravity systems. They shall be located in accordance with the minimum horizontal isolation distances set forth in Exhibit C. A minimum distance of three (3) feet shall separate the inlet face of the distribution box from the septic tank outlet.

6.09042Capacity: Distribution boxes shall be sized to accommodate the number of distribution laterals required for the distribution system.

6.09043An inlet baffle shall be installed in all distribution boxes. The baffle shall be perpendicular to the inlet pipe and situated six (6) inches from the end of the inlet. The baffle shall be constructed of the same material as the distribution box and shall be a twelve (12) inch square rising from the box floor, centered with the inlet connection, and permanently affixed. PVC tees may be incorporated as baffles when plastic distribution boxes are used.

6.09044The inverts of all outlets shall be of the same elevation and at least one (l) inch below the inlet invert.

6.09045Each inlet and outlet distribution lateral shall be connected separately to the distribution box. Unperforated distribution piping shall extend a minimum of five (5) feet from the distribution box.

6.09046The requirements of Sections 6.07208, 6.07210, 6.07211, 6.07213 and 6.07215 shall apply to all distribution boxes approved in accordance with these Regulations.

6.09047Distribution boxes shall be accessible either by means of a removable cover or access manhole which shall be located twelve (12) inches below grade unless another distance is approved by the Department.

6.09048All installations of distribution boxes shall be in accordance with the requirements of Section 6.07300.

6.09049All installed distribution boxes shall be tested to insure watertight conditions and leveled to insure an even distribution of flow to each lateral under operating conditions.

6.09050Pressure distribution systems shall be utilized with:

(a)Trench or bed systems receiving flows requiring more than 2,500 ft^2 of disposal area

(b)All sand mounds

(c)Certain sand-lined systems

(d)All absorption facilities located on soils where percolation rates are faster than six (6) minutes per inch

(e)All low pressure pipe systems

6.09060Pressure distribution systems shall conform to the following requirements:

6.09061All unperforated pressure transmission pipes shall be Sch. 40 or SDR 26 PVC pipe unless approved by the Department. The pipe shall be sized to provide a minimum flow rate of two (2) feet per second in the pipe.

6.09062All pressure transmission pipes shall be placed below the frost line. All joints shall be watertight and all pipes shall be placed on a firm undisturbed or well compacted soil. Clean backfill shall be placed around and over the pipe and hand tamped to provide compaction. Frost line minimums for each county are as follows:

Sussex – 24 inches**Kent** – 24 inches **New Castle** – 30 inches.

6.09063 All pressure distribution laterals shall be Sch. 40 and SDR 26 PVC pipe with diameters as determined by a Class C designer. Minimum hole diameters for perforated pressure distribution laterals shall be $^5/_{32}$ to $^1/_2$ inch maximum and spacing intervals as determined by a Class C designer and be placed on center along the length of the pipe. Maximum hole spacing shall be determined by percolation rates as follows:

Percolation Rate	Maximum Hole Spacing
20 - 25 MPI	Sixty (60) inches
30 - 60 MPI	Seventy two (72) inches
65 - 120 MPI	Ninety six (96) inches

NOTE: Balanced trench loading rates (gpd/ft^2) must be considered where slopes are encountered. This can be accomplished by varying the number of lateral perforations (and spacing) and perforation diameter.

6.09064All laterals shall be connected to manifolds with tees or sanitary tees constructed of PVC corresponding to the size of the connecting laterals.

6.09065Distribution of effluent from the pressure transmission pipe to the distribution laterals shall be by a central PVC manifold.

6.09066The dose volume shall be designed so that the estimated daily flow shall be discharged to the absorption facility in a minimum of equal three (3) doses. Dose volume shall be five (5) times the internal (liquid) capacity of the pressure transmission pipe, manifold, and laterals not flooded.

6.09067 The size of the dosing pumps or siphons shall be selected to maintain a minimum pressure of one (1) psi (2.31 feet of head) at the end of each distribution line. Pump characteristics and head calculations that include maximum static lift, pipe friction and orifice head requirements shall be submitted with permit applications.

6.09100 Dosing Chambers (see Exhibit I)

6.09101 Location: Dosing chambers shall be located in compliance with the minimum isolation distances of these Regulations (see Exhibit C).

6.09102 Size/capacity: If the design daily flow is ≤ 500 GPD, the dosing chamber shall have a minimum liquid capacity equal to the designed dose volume plus the design daily flow. If the design daily flow is > 500 GPD, the dosing chamber shall have minimum liquid capacity equal to two (2) times the designed dose volume.

6.09103 The requirements of Sections 6.07208, 6.07210, 6.07211, 6.07215, 6.07216 and 6.07219 shall apply to all dosing chambers approved in accordance with these Regulations.

6.09104 All inlet pipe connections shall be located above the high water level as predetermined by the pump or siphon installation.

6.09105 All pipe cutouts shall be sealed with a watertight concrete (95%) & bentonite (5%) grout mix or standard rubber gaskets.

6.09106 Dosing chambers shall be constructed with a ventilation port and a watertight access manhole. The ventilation port shall be extended at least six (6) inches above grade while the access manhole shall be extended to the finished grade, at a minimum, the Department recommends six (6) inches above grade. The vent shall be three (3) inches in diameter and the access manhole shall be sized for easy removal of pumps or siphons. In no case shall the manhole be less than twenty (20) inches square or in diameter. The vent shall be turned down and shall be fitted with insect and rodent proof, corrosion resistant screen.

6.09107 Pumps and siphons which are suitable for handling septic tank effluent shall be used to meet dosing requirements and shall be installed in accordance with the manufacturer's recommendations.

6.09108 Dosing chambers using pumps shall have an installed pump for which a replacement is readily available in the event of failure.

6.09109 Pumps and siphons shall be sized to discharge a flow rate equal to the combined flows from all discharge holes in the laterals when operating at designed level or head.

6.09110 Pumps and valves shall be equipped with suitable connections so that they may be removed for inspection or repair without entering the dosing chamber. A slide rail system or disconnect coupling accessible from outside the dosing chamber shall be utilized to allow removal and access to the pump and pump check valve for repairs and maintenance. A corrosion-proof lifting device shall be attached to the pumps and tied off at the access manhole.

6.09111 Check valves shall be required on all pressure distribution systems.

6.09112 An audible and visual high level warning device shall be installed for all siphons and pumps and shall be installed on a separate AC circuit from the pump.

6.09113 All pump electrical connections and alarm controls shall be corrosion resistant and waterproof.

6.09114 Elevations for pump controls and high water level sensor elevations shall be provided in the design.

6.09120Testing: All dosing chambers constructed on-site (i.e., cast-in-place, concrete block, etc.) shall be field tested to ensure watertight conditions. Pumps, siphons, alarm controls and related appurtenances shall also be field tested to ensure accuracy and proper operation in accordance with the manufacturer's recommendations. A minimum schedule for periodic testing and calibration of the dosing chambers, pumps, siphons, alarm controls and related appurtenances shall be established and incorporated into the permit. All installed pumps and siphons shall be accompanied by instruction manuals that include operation and maintenance procedures and pump characteristics.

6.09200Diversion Boxes and Diversion Valves.

6.09210Location: Diversion boxes or diversion valves for dual systems shall be located according to the requirements set forth in Exhibit C.

6.09220Capacity: Diversion boxes and valves shall be sized to accommodate the piping connected to them.

6.09230Diversion Valves: All pressure dosed dual systems shall use diversion valves.

6.09240All installation of diversion boxes shall be in accordance with the requirements of Section 6.07300.

6.09250Diversion boxes shall be pre-cast concrete or other approved products. Diversion valve systems shall be commercially available and diversion or gate valves shall be constructed of durable cast iron or plastic.

6.09260Diversion Box and Diversion Valve Specifications (see Exhibit J):

6.09261All diversion boxes and diversion valves shall be installed level with connecting piping to minimize stress.

6.09262Cast iron valves shall be free of dirt and rust. Plastic valves shall be clean and dry before installation.

6.09263Diversion boxes may be standard distribution boxes with selective flow diversion devices.

6.09264All inlet and outlet cutout connections shall be sealed watertight with grout or approved rubber gaskets.

6.09270Appurtenances: All buried valves shall be furnished with a suitable box constructed of durable material extended to grade with a tight fitting access cap.

6.09280Testing: Installed valves and gates shall be tested in the field prior to back fill. Pre-cast boxes shall be tested for watertight conditions.

6.10000<u>Building Sewers</u>

6.10010The minimum requirements contained in this Section shall apply to all conduits, pipes or sewers which transmit wastewater flows from building or house drains to a septic tank (or other treatment device) and from the septic tank (or other treatment device) to the distribution box or dosing tank. Collection systems servicing three (3) or more units (i.e., community systems) shall be in conformance with National Standards.

6.10020Building sewers shall comply with the following requirements:

6.10021Location: A minimum horizontal separation of ten (10) feet shall be provided between a house or building sewer and any water line. Suction lines from wells shall not cross under house or building sewers.

6.10022Size: Building sewers shall be sized to serve the expected flow from the connected fixtures. All building gravity sewer plumbing shall be at least as large as the internal building plumbing but in no case less than three (3) inches in diameter. Pressure building sewers transmitting wastewater to a septic tank (or other device) shall be a minimum of two (2) inches in diameter.

6.10023Foundation: All building sewers shall be laid on a firm compacted bed through its entire length. Building sewers placed in wet soil shall have a four (4) inch bedding of $^{3}/_{4}$" to 1-$^{1}/_{2}$" aggregate.

6.10024Materials: Building sewers shall be constructed of ANSI Class 22 thickness cast iron, Sch. 40 or Sch. 80 PVC, reinforced concrete, or Sch. 40 or Sch. 80 ABS pipe. Cast iron pipe or PVC pipe encased in six (6) inches of concrete shall be used for building sewers located < 3 feet below driveways, parking area, or other areas subject to vehicular traffic or similar loading. The cast iron pipe or encasement shall extend a minimum of two (2) feet beyond the edge of driveways, parking areas, or other areas subject to vehicular traffic or similar loading and shall be adequately bedded.

6.10025Joints: All pipe joints shall be watertight and protected against external and internal loads.

6.10026Grade: A building sewer shall be installed in a straight line to the maximum extent practicable with a uniform continuous grade not less than $^{1}/_{8}$ inch/foot, unless it can be demonstrated to the satisfaction of the Department that an alternative design can maintain adequate flow from the source and is approveable under the applicable local building code.

6.10027Cleanouts: Building sewer cleanouts shall be installed at minimum intervals of fifty (50) feet for three (3) inch diameter pipe and one hundred (100) feet for four (4) inch and larger diameter pipe. Cleanouts shall be provided at all changes in direction greater than 45^{o}. Wherever possible, bends should be limited to 45^{o}. Every house or building sewer shall have at least one (1) cleanout fitting to provide access to the plumbing. Cleanouts may be placed at greater distances provided National Standards are used to design the total collection system.

6.11000<u>Water Conservation Devices.</u>

6.11010Twenty five (25) percent reductions in design flow are allowed for water conservation. The absorption facility shall be enlarged to the original required size if the conservation devices are removed, become inoperative, or the system malfunctions.

6.11020Water saving plumbing devices are encouraged to lengthen the life of the absorption facility. However, only permanent water saving plumbing devices such as low flush toilets shall be considered in reducing the size of the absorption facility. Devices such as inserts in showers are considered temporary.

SECTION 7.00000 -- SITING DENSITY AND HYDROGEOLOGICAL REQUIREMENTS

7.01000 The minimum isolation distances and siting densities set forth in these Regulations shall bemaintained when designing, locating, constructing, repairing, replacing and installing holding tanks, commercial and individual on-site and community wastewater treatment and disposal systems.

7.02000 The following maximum siting densities shall be maintained:

7.02010 For residential dwellings, the maximum siting density shall be one (1) dwelling unit per one-half ($^1/_2$) acre.

(a) For single family residences, only the area within the property lines of the lot shall be considered.

(b) For multiple family dwellings or where more than one (1) dwelling is to be served by an on-site wastewater treatment and disposal system, the maximum siting density shall be based on the net pervious area (i.e., unpaved, without structures) available for groundwater recharge after total project completion. The following criteria shall be utilized in determining the maximum siting densities:

(i) For projects utilizing only a septic tank for treatment prior to discharge to the absorption facility, the maximum siting density shall be one (1) dwelling unit per one-half ($^1/_2$) acre of pervious area.

(ii) For projects utilizing advanced treatment systems, in conformance with standard engineering practice and providing higher degrees of nitrogen removal, the maximum siting density shall be determined based on the degree of nitrogen

removal prior to discharge to the absorption facility. The degree of nitrogen removal required will be determined in accordance with Exhibit U. The degree of nitrogen removal may be adjusted in accordance with a schedule for total project completion submitted by the applicant and approved by the Department. The owner of a treatment system which provides a higher degree of nitrogen removal shall post a performance bond or certified letter of credit in an amount equal to the total cost of the treatment system for the project. The performance bond shall be held by the Department until, such time as the treatment system demonstrates an acceptable level of compliance with the terms and conditions of a permit for a minimum period of one (1) year. Upon demonstration of a satisfactory level of compliance, the performance bond or certified letter of credit will be returned to the owner.

7.02020 For commercial facilities the maximum siting density shall be established by dividing the projected design flow by five hundred (500) gallons per day per one-half ($^1/_2$) acre and shall be based on the net pervious area (i.e., unpaved, without structures) available for groundwater recharge after total project completion. Campgrounds intended for overnight or transient use are evaluated as commercial facilities as opposed to manufactured home communities, which are evaluated as single family residential facilities.

7.02030 In establishing maximum siting densities the Department may consider impervious areas where it can be demonstrated that through the establishment of an acceptable stormwater management plan, all runoff will be recharged to the groundwater of the State within the boundaries of the project site. Stormwater management plans shall be based upon a ten (10) year - one (1) hour storm event as a minimum and provide recharge of the runoff within seventy two (72) hours of the storm event.

7.03000 If the deed or instrument, under which an owner acquired title to a lot or parcel, was of record prior to April 8, l984 and if such lot or parcel does not conform to the requirements of Section 7.02010, then the Department may approve a feasibility study and/or issue a construction permit for an on-site wastewater treatment and disposal system. This system is to serve a single family dwelling or for multiple systems to serve dwellings to be situated within an area which has been given final site plan approval prior to April 8, l984 for single or multi-family dwellings provided that:

(a) The number of dwelling units per net pervious area (i.e., unpaved, without structures) does not increase from those approved prior to April 8, l984 by the local governmental unit having jurisdiction; and

(b) At the time the permit is issued or feasibility study is approved, the lot or parcel complies with the requirements of Section 3.00000 through Section 6.00000 of these Regulations.

When it may be necessary to increase the net pervious area or reduce the number of dwelling units within a lot or parcel and thus create a new date of recordation or final site plan approval, the Department shall utilize the previous date of recordation or approval in determining conformance with these Regulations. The owner shall provide, prior to any action by the Department, all documentation determined by the Department to be necessary in establishing conformance with this section.

7.04000 For lots created by plats or deeds recorded after April 8, l984 and/or when the on-site wastewater treatment and disposal system will serve a commercial facility, the Department may approve a feasibility study and/or issue a construction permit for a new on-site wastewater treatment and disposal system if it is determined that all Regulations of the Department can be met.

7.05000 Isolation distances and siting densities may be modified by the Department based upon a site specific Groundwater Impact Assessment (GIA) provided that in the sole discretion of the Department such modification will allow for the protection of environmental resources and public health, safety and welfare. A site specific GIA may not be required when the proposed treatment prior to disposal will discharge no greater than five (5) milligrams per liter of total

nitrogen as an average of all samples collected within a calendar year and not exceed ten (10) milligrams per liter of total nitrogen during any one month while providing adequate disinfection at all times.

7.06000 The Department may require an applicant, owner or operator to perform a site specific Groundwater Impact Assessment (GIA) when a proposed or existing large system will likely or is likely causing unacceptable environmental impacts and/or risk to public health. The GIA should be performed by a Delaware Registered Professional Geologist and shall be based upon site specific investigations and testing. If information required in the GIA was previously submitted in a PGIA for the site, the required information need not be resubmitted. The applicant may reference the PGIA and state that the information was submitted in the report. The Department will provide general and site specific guidelines for preparing the GIA.

7.07000 The requirements of this Section are subject to waiver by the Department for a specific area upon petition by an appropriate governmental unit. Such petition shall provide reasonable evidence that development using individual on-site wastewater treatment and disposal systems will not cause unacceptable degradation of groundwater quality or surface water quality or it shall provide equally adequate evidence that degradation of groundwater or surface water quality will not occur as a result of such waiver.

SECTION 8.00000 -- MAINTENANCE

8.01000 The owner shall be responsible for maintaining and operating on-site wastewater treatment and disposal systems. Upon transfer of ownership, the new owner shall be responsible for proper operation and maintenance of the system and will be subject to all penalties for any violation of these Regulations.

8.02000 Each on-site wastewater treatment and disposal system shall be pumped by a licensed liquid waste hauler once every three years and alternative treatment systems shall be pumped according to manufacturer recommendations unless determined that the tank is less than one-third ($^1/_3$) full of sludge. The schedule shall be prescribed in accordance with current Department guidelines based on the size of the treatment unit and anticipated number of residents. The owner of the on-site wastewater treatment and disposal system shall maintain a record indicating the system has been pumped and provide such documentation to the Department upon request.

8.03000 Organic chemical septic tank cleaning agents shall not be used in individual or community on-site wastewater treatment and disposal systems.

8.04000 Grease traps shall be cleaned when seventy five (75) percent of the grease retention capacity has been reached.

8.05000 The sites of the initial and replacement absorption facilities shall not be covered by asphalt or concrete or subject to vehicular traffic or other activity which would adversely affect the soils. These sites shall be maintained so that they are free from encroachments by accessory buildings and additions to the main building.

8.06000 The Department may impose specific operation and maintenance requirements for on-site wastewater treatment and disposal systems to assure continuity of performance.

8.07000 For large systems which serve communities that experience a significant variation in flow on an annual basis, the Department may prescribe specific criteria in the permit for taking certain treatment units out of service during periods of low flow. The criteria will establish procedures for winterization and restart and the minimum levels of treatment which must be provided at all times and in no event shall it be less than the level of treatment provided by a conventional on-site wastewater treatment and disposal system.

8.08000 The Department shall impose, in any permit for large or community systems, standards for evaluating treatment system performance and compliance with these Regulations. The standards may be in the form of limitations on flow and pollutant concentrations and/or mass loadings. The standards shall reflect the utilization of best management and operational practices.

8.09000 Unless otherwise required by a permit, all community and large systems shall be inspected annually by the Department or its designee.

8.09500 Alternative systems shall be inspected by the Department or its designee once every three years and a fee may be required.

8.09600 The Department recommends alternative systems be inspected annually, at a minimum.

SECTION 9.00000 -- PRELIMINARY WASTEWATER TREATMENT & DISPOSAL REVIEW

9.01000 It is the policy of the Department to facilitate compliance with these Regulations through review of proposed development projects as early as possible in the development process to avoid unnecessary conflicts and expense. Any development project, which may or may not constitute a major subdivision, can submit a feasibility study to satisfy other local government approval processes. Any project that proposes to use individual on-site and/or community/large wastewater treatment and disposal systems must submit a letter of intent prior to initiating any preliminary soil investigations.

9.01010 The letter of intent must contain the following details:

(a) The name of the Developer and landowner

(b) The size of parcel and ~~number of proposed lots or projected flow rates~~ tax parcel number(s)

~~(c) Indication of type of system(s) – individual versus large/community~~

(~~d~~ c) Projected start date of site/soil investigative work

9.01015 If the proposed number of dwelling units is two hundred (200) or a large on-site wastewater treatment and disposal system(s) (LOWTDS) is proposed, proceed to the requirements of Section 5.12000, if not, proceed to Section 9.01020 . If a preliminary review is desired prior to the submission of a SIR, the site evaluator may submit a feasibility study in accordance with Section 9.01017.

9.01017 A feasibility study for a LOWTDS shall contain the following information:

(a) Site plan drawn to scale not to exceed one (1) inch equals two hundred (200) feet

(b) Illustrate topography on two (2) foot contour intervals unless the Department approves the use of an alternate scale due to extreme variations in the elevation on the site

(c) Conduct a soil suitability evaluation of the project site following the procedures prescribed in section 5.01000. The area of investigation should be concentrated within the proposed LOWTDS. The Site Evaluator must demonstrate the area proposed for the LOWTDS represents the best soils on the project site. The extent and nature of the soil evaluation shall be determined by the Class D site evaluator.

(d) Based on preliminary design criteria established by the Class D site evaluator, as a result of the soils evaluation, a preliminary engineering study prepared by a Class C engineer must be included which demonstrates the suitability of the evaluated area for the proposed number of lots. The engineering study must include, at a minimum, the proposed method of disposal, proposed treatment levels, and proposed design flow rates, along with preliminary calculations/layout to demonstrate there is sufficient area for both the initial and replacement system.

(e) The Department may ask for any additional information deemed necessary on a case-by-case basis to make a statement of feasibility.

9.01020 A feasibility study shall be filed with the Department setting forth the proposed manner of compliance with these Regulations. The feasibility study shall contain the following information:

(a)Site plan must be drawn to scale not to exceed one (1) inch equals two hundred (200) feet

(b)Illustrate topography by two (2) foot contour intervals unless the Department approves the use of an alternate scale due to extreme variations in elevation on the site

(c)Illustrate the approximate location of all wells, watercourses, roads and on-site wastewater treatment and disposal systems within one hundred fifty (150) feet of the perimeter of the property

(d)Conduct a soil suitability evaluation of the project site following procedures prescribed in Section 5.01000. The extent and nature of the soil evaluation shall be determined by a Class D site evaluator. The site evaluator shall coordinate the planning of the soils evaluation with the Department prior to initiating work

(e)Indicate the type of limiting zone, its depth, and list the results of the site and soils analysis on the appropriate forms

(f)Each soil interpretative unit identified for potential on-site wastewater treatment and disposal shall have at least one (1) percolation test conducted within it to establish representative percolation rates for each interpretative unit

(g)Lot numbers and approximate lot areas shall be provided

(h)A general site location map shall be included on the preliminary plan for reference identification of the area

(i)Proposed stormwater management areas

(j)Location of any jurisdictional wetlands, if delineated

(k)Any other information required by the Department on a case by case basis.

9.02000The Department shall conduct a general review of the preliminary plan and give the owner/developer a ~~soil investigation report~~ statement of preliminary subdivision feasibility which shall contain a statement of on-site wastewater treatment and disposal feasibility. This Section shall not be construed to relieve the applicant of the responsibility of obtaining individual site evaluations and permits from the Department for each lot prior to commencement of construction of any on-site wastewater treatment and disposal system.

~~9.03000 If, in the estimation of the Department, more than fifty five (55) percent of the proposed absorption facilities for the subdivision will require pressurized systems, due to limiting conditions, a community wastewater treatment and disposal system shall be utilized unless average lot density is greater than two (2) acres.~~

SECTION 10.00000 -- VARIANCES

10.01000 Rural Area Variances

10.01010 Variances for any provision of these Regulations may be granted by the Secretary in certain rural zones provided that:

(a) The owner executes and records in the appropriate County Office of the Recorder of Deeds an affidavit, on a form approved by the Department, which notifies prospective purchasers that the property is subject to a Rural Area Variance; and

(b) The parcel size is not less than ten (10) acres; and

(c) The permit is for an on-site wastewater treatment and disposal system designed to serve a single family dwelling; and

(d) The on-site wastewater treatment and disposal system will function in a satisfactory manner so as not to create a public health hazard; and

(e) Applications must be completed per Section 10.02030 to obtain final approval for the Rural Area Variance.

10.02000 Formal Variances

10.02010 Variances from any provisions contained in these Regulations may be granted after a public notice and hearing, if any. Notice shall be provided to all contiguous property owners. A public hearing will be held if a meritorious request is received within a reasonable time as stated in the advertisement. A public hearing request shall be deemed meritorious if it exhibits a familiarity with the application and a reasoned statement of the variance's probable impact.

10.02020 No variance may be granted unless the hearing officer finds, or in the case of an appeal to the Environmental Appeals Board, it is found that;

(a) The requirements of 7 Del. C., Chapter 60, Section 6011 have been satisfied; and

(b) Strict compliance with the provision of these Regulations is inappropriate for cause; or

(c) Special physical conditions render strict compliance unreasonable, burdensome, or impractical.

10.02030 Applications for Variances

10.02031 A separate application shall be made to the Department for each site considered for a variance.

10.02032 Each Rural Area Variance application shall include:

(a) A site evaluation report conducted by a Class D site evaluator, unless waived by the Department, to include the requirements of Section 10.01000; and

(b) Proof the parcel is a minimum of ten (10) acres (survey or statement from zoning office); and

(c)~~Wetland delineation and~~ Location of any jurisdictional wetlands, ~~determination~~ if delineated; and

(d) A proposed disposal location which is a minimum of one hundred (100) feet from all property boundaries (when soil conditions allow); and

(e) The location of all wells within one thousand (1,000) feet of the proposed absorption facility; and

(f) The property owner(s) shall provide a list of all property owners names and addresses within one thousand (1,000) feet of parcels property lines; and

(g)A percolation test conducted by a Class A percolation tester or an assigned percolation rate by the Class D site evaluator based upon USDA soil textures (see Exhibit W); and

(h)Submit soils report with appropriate site evaluation fee, if fee not paid already. Upon reviewing the soils report, the Department will determine the system type, design specifications and return this information to the owner, or designated agent.

10.02035Upon completion of Section 10.02032, the following criteria will be required:

(a)A completed permit application prepared by a licensed designer; and

(b)An affidavit of a Rural Area Variance (as part of the permit application); and

(c)Appropriate fee's for the permit application and Rural Area Variance, if not already paid; and

(d)The Department shall advertise the application for a Rural Area Variance in a local newspaper to include direct notification of adjacent property owners. The Department will not hold a public hearing unless a meritorious request is made to the Department.

10.03000Hardship Variances

10.03010The Secretary may grant variances from any provision of these Regulations in cases of extreme and unusual hardship.

10.03020The Department may consider the following factors in reviewing an application for a variance based on hardship:

(a)Advanced age or bad health of the applicant;

(b)Need of applicant to care for aged, incapacitated, or disabled relatives;

(c)Relative insignificance of the environmental impact of granting a variance

10.03030Hardship variances granted by the Secretary may contain conditions such as:

(a)Permits for the life of the applicant;

(b)Limiting the number of permanent residents using the system;

(c)Use of conventional on-site wastewater treatment and disposal systems for specified periods of time;

(d)Any other conditions which the Secretary finds in his/her sole discretion to be appropriate.

10.03040At the time of the application, the applicant must designate on the application that it is for a hardship variance.

10.03050Documentation of hardship must be provided before the application is referred to the Department for action.

10.03060Department personnel shall strive to aid and accommodate the needs of applicants for variances due to hardship.

10.04000Variance Hearings

10.04010The hearing officer shall hold a public hearing in conformance with 7 Del. C., Chapter 60, Section 6006.

10.04020The hearing shall be held in the county where the property is located.

10.05000Variance Appeals

10.05010Decisions of the Secretary to grant or deny a variance may be appealed to the Environmental Appeals Board.

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