On-Site Wastewater Treatment System Regulations

Adopted by the Gunnison County, Colorado Board of Commissioners

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Amended:

Pursuant to C.R.S. §25-10-101, et seq. and the Colorado Department of Public Health and Environment, Water Quality Control Commission, On-site Wastewater Treatment System Regulation #43, 5 CCR-1002-43

This document describes the regulations for the use and permitting of on-site wastewater treatment systems in the unincorporated areas of Gunnison County. This regulation shall be used by anyone seeking a permit, designing a septic system, installing a septic system, altering or enlarging a septic system, or repairing a septic system.

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SECTION 1: INTRODUCTORY AND GENERAL PROVISIONS

A. Title

1. These *Regulations* may be cited as the "Gunnison County On-site Wastewater Treatment System Regulations."

B. Authority

1. These *Regulations* are promulgated pursuant to the On-site Wastewater Treatment System Act, C.R.S. §25-10-101, et seq.

C. Declaration

1. In order to preserve the environment and protect the public health and water quality; to eliminate and control causes of disease, infection, and aerosol contamination; and to reduce and control the pollution of the air, land and water, it is declared to be in the public interest to establish minimum standards and regulations for on-site wastewater treatment systems (OWTS) in unincorporated Gunnison County and to provide the authority for the administration and enforcement of such minimum standards and regulations.
2. The Board finds, determines and declares these Regulations and standards to be necessary for the preservation of the public health and welfare of the inhabitants of unincorporated Gunnison County.
3. This regulation will apply to on-site wastewater treatment systems as defined in C.R.S. §25-10-103 (12).

D. Purpose

1. The purpose of these *Regulations*, as authorized by the OWTS Act, C.R.S. §25-10-101, et seq., is to establish minimum standards for the location, design, construction, performance, installation, alteration and use of OWTS within the unincorporated areas of Gunnison County, and concerning the application for and issuance of permits, the inspection, testing, and supervision of installed systems; the use, maintenance, and cleaning of systems; the disposal of waste material and the issuance of cease and desist orders.

E. Intent

1. The intent of these Regulations is to protect the public health and water quality and preserve the environment; to eliminate and control causes of disease, infection, and aerosol contamination; and to reduce and control the pollution of air, land and water.

F. Scope

1. An OWTS with a design capacity less than or equal to 2,000 gpd shall comply with these Regulations and the OWTS Act. These Regulations

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shall govern all aspects of OWTS permits, performance, location, construction, alteration, installation, and use.

G. Applicability for Systems with a Design Capacity greater than 2,000 gpd.

1. An OWTS with design capacity greater than 2,000 gpd shall comply with CDPHE Regulation 43, site location and design approval in C.R.S. §25-8-702, and the discharge permit requirements in the Water Quality Control Act, C.R.S. §25-8-501, et seq.

   a. Applicable Commission regulations include, but are not limited to, the following:

      (1) Regulation 22 - Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works (5 CCR 1002-22).

      (2) Regulation 41 - The Basic Standards for Ground Water (5 CCR 1002-41).

      (3) Regulation 42 - Site-Specific Water Quality Classifications and Standards for Ground Water (5 CCR 1002-42).

      (4) Regulation 43- On-Site Wastewater Treatment System (5 CCR-1002-43).

      (5) Regulation 61 - Colorado Discharge Permit System Regulations (5 CCR 1002-61).

      (6) Regulation 62 - Regulations for Effluent Limitations (5 CCR 1002-62).

   b. For systems greater than 2,000 gpd, the Division is authorized to determine those parts of these *Regulations* identified as the prerogative of the local public health agencies.

   c. The requirements for maintenance and standards of performance for systems greater than 2,000 gpd shall be determined by the site application approval and discharge permit.

   d. In the interest of facilitating communication of Department concerns regarding a design being reviewed by the Division, the Department can provide comments to the Division for consideration during the Division's review of the proposed design and discharge permit application. Under such a coordinated process, the Division retains final authority for approval or denial of each domestic wastewater treatment works that is regulated under the site location approval and Colorado Discharge Permit System regulations. Prior to approval or denial of each OWTS domestic wastewater treatment works, the Division shall acknowledge and consider local OWTS regulations when they are more stringent and restrictive than in Regulation 43.

H. Effluent Discharged to Surface Waters.

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1. Any system that will discharge into surface waters shall be designed by a professional engineer. The discharge permit application shall be submitted for preliminary approval to the local board of health. Once approved by the local board of health, the application shall be submitted to the Water Quality Control Division for review in accordance with the Water Quality Control Act, C.R.S. §25-8-101, et seq., and all applicable regulations of the Water Quality Control Commission.

I. General Policies of the Gunnison County, Colorado Board of County Commissioners.

1. Land uses should not adversely affect water for present or future uses. The essence of Gunnison County's ability to survive and prosper historically has been, and will continue to be, its ability to have consistent, plentiful and clean water. It is the policy of the Board that land use and other activities carried out within the County should not adversely affect the availability or suitability of water for present or future uses in the County.

2. Protect high quality of water. Our environment, including the resource of water, is finite. It is the policy of the Board to protect water resources for the purpose of maintaining the high quality of the water-dependent environment in the County. A paramount concern in regulating OWTS is the ability of the environment to accommodate their installation and operation. The cumulative impact of OWTS within drainages and basins and in proximity to wetlands shall be considered.

3. Encourage development that optimizes central sewage treatment systems. It is the policy of the Board to encourage development that will optimize central sewage treatment systems; it is the policy of the Board to discourage the proliferation of OWTS. Use of central sewage treatment systems shall be required where and whenever feasible. Installation of OWTS shall be limited to areas in which central sewage treatment systems are not feasible and where OWTS are appropriate.

4. OWTS permits are integral with other county permits. These *Regulations* are an integral part of a comprehensive land use, sanitation, public works and public health, safety and welfare regulatory process in Gunnison County. While each application regarding an OWTS will be evaluated in the context of the site and land use it is proposed to service, the issuance of an OWTS Permit is not a guarantee of State of Colorado site location and design approval or that a County land use change permit, building permit, access permit or other required permit will be issued for a related project, nor is the issuance of any other required permit a guarantee of the issuance of an OWTS Permit. In all circumstances, where an OWTS permit is required, a building permit shall not be issued until the OWTS permit has been issued.

5. Encourage cooperation in creation and operation of central sewage treatment systems**.** The Board encourages cooperation among citizens

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and entities to create and operate central sewage treatment systems. No permit shall be issued to any person within a sanitation district or other district that provides or may provide sewer services unless a written document is submitted by such district to the County stating that central sewer service to the proposed building is not feasible.

6. Preference for review scheduling given to primary, year-round residences in certain areas. In areas that have been designated for systematic evaluation and special regulations, preference for review scheduling shall be given to primary, year-round residences.

7. Industrial or non-domestic commercial effluent shall be permitted by State or Federal agencies and not by Gunnison County. Wastewater facilities treating or intended to treat industrial or non-domestic commercial effluent shall be required to obtain an applicable state or federal permit, and shall not be permitted by a Gunnison County OWTS Permit. An OWTS Permit is available specifically for the treatment of domestic wastewater, exclusively, and is neither intended nor available for treatment of industrial or non-domestic commercial effluent.

8. Existing OWTS shall be repaired. When determined by the Department, each OWTS existing as of the effective date of these *Regulations* shall be repaired to eliminate any nuisance or hazard to public health, safety or welfare. Such repair shall not increase substantially the level of noncompliance with these *Regulations*.

9. New OWTS are not allowed to violate these Regulations. In no circumstances may an OWTS that did not exist as of the date these *Regulations* were adopted, be constructed, installed, maintained, altered, used or repaired in violation of these *Regulations* or the OWTS Act, C.R.S. §25-10-101, et seq., as either may be amended, unless a variance of the requirements has been granted pursuant to Section 3.M.

10. No expansion of existing OWTS in violation of these regulations. In no circumstances may an OWTS existing as of the effective date of these *Regulations* be expanded in violation of these *Regulations* or the OWTS Act, C.R.S. §25-10-101, et seq., as either may be amended, unless a variance of the requirements has been granted pursuant to Section 3.M..

J. Referenced Materials and Standards

1. The materials and standards referenced in these *Regulations* shall be considered part of the requirements of these *Regulations* to the prescribed extent of each such reference.

2. The materials and standards incorporated by reference cited herein include only those versions that were in effect as of April 10, 2017, and not later amendments to the incorporated materials and standards.

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SECTION 2: DEFINITIONS

The words and terms used in these *Regulations* shall the meanings set forth below unless the context requires otherwise.

ABSORPTION SYSTEM- A leaching field and adjacent soils or other system for the treatment of sewage in an On-site Wastewater Treatment System by means of absorption into the ground. Also see SOIL TREATMENT AREA.
ACCESSIBLE- Easily reached, attained or entered by the necessary equipment or maintenance provider.
APPLICANT- A person who submits an application for a permit for an On-site Wastewater Treatment System.
BASIL AREA- The effective surface area available to transmit the treated effluent from the filter media in a mound system into the in-situ receiving soils. The perimeter is measured at the interface of the imported fill material and in-situ soil. On sloping sites, only the area down-gradient from the up-slope edge of the distribution media may be included in this calculation.
BED- A below-grade soil treatment area with a level sub-base, consisting of a shallow excavation greater than three feet wide containing distribution media and more than one lateral.
BEDROCK- Continuous rock that underlies the soil or is exposed at the surface. Bedrock is generally considered impervious, but if fractured or deteriorated, it may allow effluent to pass through without adequate treatment.
BEDROOM- means a room with an egress window, a closet and affords privacy, and/or is intended for sleeping purposes.
BIOCHEMICAL OXYGEN DEMAND, FIVE-DAY (BOD_5)- Quantitative measure of the amount of oxygen consumed by bacteria while stabilizing, digesting, or treating biodegradable organic matter under aerobic conditions over a five-day incubation period; expressed in milligrams per liter (mg/L).
BIOCHEMICAL OXYGEN DEMAND, CARBONACEOUS FIVE DAY ($CBOD_5$)- Quantitative measure of the amount of oxygen consumed by bacteria while stabilizing, digesting, or treating the organic matter under aerobic conditions over a five-day incubation period while in the presence of a chemical inhibitor to block nitrification; expressed in milligrams per liter (mg/L).
BOARD- The Board of County Commissioners of Gunnison County, Colorado, including but not limited to its capacity as a County Board of Health.
BUILDING SEWER- Piping that conveys wastewater to the first system component or the sewer main.
CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND- See BIOCHEMICAL OXYGEN DEMAND, CARBONACEOUS.
CESSPOOL- An unlined or partially lined underground pit or underground perforated receptacle into which raw household wastewater is discharged and from which the liquid seeps into the surrounding soil. Cesspool does not include a septic tank.

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CHAMBER- An open, arch-shaped structure providing an open-bottom soil interface with permeable sidewalls used for distribution of effluent in a soil absorption system.
CISTERN- An underground, enclosed unpressurized reservoir or tank for storing water as part of a potable water supply system.
CLEANING- The act of removing septage or other wastes from a wastewater treatment system component or grease/waste from a grease interceptor.
COLORADO STATE PLUMBING CODE- Rules and Regulations of the Colorado State Plumbing Board (3 CCR 720-1).
COMMISSION- means the Water Quality Control Commission created by C.R.S. §25-8-201.
COMMUNITY DEVELOPMENT DEPARTMENT-The Gunnison County Community Development Department.
COMPETENT TECHNICIAN- A person who has the appropriate expertise and is able to conduct and interpret the results of soil profile test pit excavations, percolation tests, and site evaluations. This individual has also met the required competencies for a "Competent Technician" as defined in Section 5.H.
COMPONENT- A subsection of an on-site wastewater treatment system; a component may include multiple devices.
COMPOSTING TOILET- A self-contained waterless toilet designed to decompose non-water-carried human wastes through microbial action and to store the resulting matter for disposal.
CONSISTENCE- means the degree and kind of cohesion and adhesion that soil exhibits and/or the resistance of soil to deformation or rupture under an applied stress to an extent that the soil density would restrict permeability. Aspects of consistence are used to determine if the horizon will have permeability lower than that of the defined soil type. Additional insight to consistence can be found in the UDSA-NRCS *Field Book for Describing and Sampling Soils*; Version 3.0, Sept. 2012.
CREST- The highest point on the side of a dry gulch or cut bank.
CUT-BANK- A nearly vertical slope caused by erosion or construction that has exposed historic soil strata.
DEEP GRAVEL TRENCH- A soil treatment area for repairs only where the trenches utilize a depth of gravel greater than 6 inches below the distribution pipe and sidewall area is allowed according to a formula specified in this regulation.
DEFICIENCY- See MALFUNCTION.
DEPARTMENT- as used in these Regulations, means the Gunnison County Community Development Department.
DESIGN-

1. the process of selecting, sizing, locating, specifying, and configuring treatment train components that match site characteristics and facility use as well as creating the associated written documentation; and
2. Written documentation of size, location, specification and configuration of a system.

DESIGN CAPACITY- See FLOW, DESIGN.
DESIGN FLOW- See FLOW, DESIGN.

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DESIGNER, ON-SITE WASTEWATER TREATMENT SYSTEM- A practitioner who utilizes site evaluation and investigation information to select an appropriate OWTS and prepares a design document in conformance with this regulation.
DISTRIBUTION- The process of conveying wastewater or effluent to one or more components, devices, or throughout a soil treatment area.
DISTRIBUTION BOX- A watertight component that receives effluent from a septic tank or other treatment unit and distributes effluent via gravity in approximately equal portions to two or more distribution laterals in the soil treatment area.
DIVISION- The division of administration of the department of which the Water Quality Control Division is a part.
DOMESTIC WASTEWATER- See WASTEWATER, DOMESTIC.
DOMESTIC WASTEWATER TREATMENT WORKS- A system or facility for treating, neutralizing, stabilizing, or disposing of domestic wastewater which system or facility has a designed capacity to receive more than 2,000 gallons of domestic wastewater per day. The term "domestic wastewater treatment works" also includes appurtenances to such system or facility such as outfall sewers and pumping stations and to equipment related to such appurtenances. The term "domestic wastewater treatment works" does not include industrial wastewater treatment plants or complexes whose primary function is the treatment of industrial wastes, notwithstanding the fact that human wastes generated incidentally to the industrial process are treated therein. C.R.S. §25-8-103 (5).
DOSING- A high rate periodic discharge into a soil treatment area.
DOSING, DEMAND- Configuration in which a specific volume of effluent is delivered to a component based upon patterns of wastewater generation from the source.
DOSING, PRESSURE- A uniform application of wastewater throughout the intended portion of the soil treatment area through small diameter pipes and orifices, under pressure. For this definition, the term pressure indicates that the system is capable of creating upward movement of effluent out of the distribution system piping.
DOSING, TIMED- means a configuration in which a specific volume of effluent is delivered to a component based upon a prescribed interval, regardless of facility water use.
DOSING SIPHON- means a device used for demand dosing effluent; which stores a predetermined volume of water and discharges it at a rapid rate, from a tank at a given elevation to a component at a lower elevation, accomplished by means of atmospheric pressure and the suction created by the weight of the liquid in the conveying pipe.
DOSING TANK- A tank, compartment or basin that provides for storage of effluent from a septic tank or other treatment unit intended to be delivered to a soil treatment area at a high rate periodic discharge.
DRAINFIELD- See Soil treatment area.
DROP BOX- A device used for serial or sequential distribution of effluent by gravity flow to a lateral of a soil treatment area.
DRY GULCH- See GULCH, DRY.

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DRYWELL- An unlined or partially lined underground pit (regardless of geometry) into which drainage from roofs, basement floors, water softeners or other non-wastewater sources is discharged and from which the liquid seeps into the surrounding soil.
EFFECTIVE SIZE- The size of granular media such that 10 percent by weight of the media is finer than the size specified.
EFFLUENT- The liquid flowing out of a component or device of an On-site Wastewater Treatment System.
EFFLUENT FILTER- See EFFLUENT SCREEN.
EFFLUENT PIPE- means non-perforated pipe that conveys effluent from one On-site Wastewater Treatment System component to the next.
EFFLUENT SCREEN- A removable, cleanable (or disposable) device installed on the outlet piping of a septic tank for the purpose of retaining solids larger than a specific size and/or modulating effluent flow rate. An effluent screen may be a component of a pump installation. An effluent screen may also be installed following the septic tank but before higher level treatment components or a soil treatment area.
ENVIRONMENTAL HEALTH BOARD-The Board expressly identifies the Environmental Health Board to be the Gunnison County entity to administer these *Regulations* to the extents identified in Appendix B.
ENVIRONMENTAL HEATLH SPECIALIST- A person trained in physical, biological, or sanitary science to carry out educational and inspectional duties in the field of environmental health.
EVAPOTRANSPIRATION/ABSORPTION SYSTEM- An unlined on-site wastewater treatment component that uses evaporation, transpiration, and absorption for dispersal of effluent.
EVAPOTRANSPIRATION SYSTEM- An on-site wastewater treatment component with a continuous, impermeable liner that uses evapotranspiration and transpiration for dispersal of effluent.
EXPERIMENTAL SYSTEM- A design or type of system based upon improvements or development in the technology of sewage treatment that has not been fully tested.
FAILURE- means a condition existing within any component of an OWTS which prevents the system from functioning as intended, and which results in the discharge of untreated or partially treated wastewater onto the ground surface, into surface water or ground water, or which results in the back-up of sewage into the building sewer. Other conditions within an OWTS component that are deemed by the Department to be a threat to public health and/or safety may also be deemed a failure.
FIELD PERFORMANCE TESTING- Data gathering on a system in actual use that is being proposed for Division acceptance.
FLOODPLAIN (100-YEAR)- An area adjacent to a stream which is subject to flooding as the result of the occurrence of a one hundred (100) year flood, and is so adverse to past, current or foreseeable construction or land use as to constitute a significant hazard to public or environmental health and safety or to property or is designated by the Federal Emergency Management Agency

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(FEMA) or National Flood Insurance Program (NFIP). In the absence of FEMA/NFIP maps, a professional engineer shall certify the flood plain elevations.
FLOODWAY- The channel of a river or other watercourse and the adjacent land areas that shall be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot or as designated by the Federal Emergency Management Agency or National Flood Insurance Program. In the absence of FEMA/NFIP maps, a professional engineer shall certify the floodway elevation and location.
FLOW, DAILY- The measured volume of wastewater generated from a facility in a 24-hour period expressed as gallons per day.
FLOW, DESIGN- The estimated volume of wastewater per unit of time for which a component or system is designed. Design flow may be given in the estimated volume per unit such as person per unit time that shall be multiplied by the maximum number of units that a facility can accommodate over that time.
FLOW EQUALIZATION- A system configuration that includes sufficient effluent storage capacity to allow for regulated flow on a daily or multi-day basis to a subsequent component despite variable flow from the source.
FLOW EQUALIZER- An adjustment device to evenly distribute flow between outlets in a distribution box or other device that may be out of level.
GREASE INTERCEPTOR TANK- A watertight device located outside a facility designed to intercept, congeal, and retain or remove fats, oils, and grease from sources such as commercial food-service that will generate high levels of fats, oils and greases.
GROUND WATER- That part of the subsurface water that is at or below the saturated zone.
GROUND WATER SURFACE- The uppermost limit of an unconfined aquifer at atmospheric pressure.
GUIDELINES- Colorado State Board of Health Guidelines on Individual Sewage Disposal Systems, 5 CCR 1003-6 – predecessor of Regulation 43, *On-site Wastewater Treatment System Regulation*, 5 CCR 1002-43.
GULCH, DRY- A deep, narrow ravine marking the course of an intermittent or ephemeral stream.
HEALTH OFFICER- The chief administrative and executive officer of a local public health agency, or the appointed health officer of the local board of health. Health officer includes a director of a local public health agency.
HIGHER LEVEL TREATMENT- means designated treatment levels other than treatment level 1. (See Table 6-3)
HOLDING TANK- See VAULT.
INDIVIDUAL SEWAGE DISPOSAL SYSTEM- A term used for On-site Wastewater Treatment System in Colorado regulations from 1973 until 2013.
INFILTRATIVE SURFACE- means designated interface where effluent moves from distribution media or a distribution product into treatment media or original soil. In standard trench or bed systems this will be the interface of the distribution media or product and in-situ soil. Two separate infiltrative surfaces will exist in a mound system and an unlined sand filter, one at the interface of the distribution media and fill sand, the other at the interface of the fill sand and in-situ soil.

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INSPECTION PORT- An access point in a system component that enables inspection, operation and/or maintenance.
INVERT- means elevation of the bottom of the inside pipe wall or fitting.
LATERAL- A pipe, chamber or other conveyance used to carry and distribute effluent.
LEACH FIELD- See SOIL TREATMENT AREA.
LIMITING LAYER- A horizon or condition in the soil profile or underlying strata that limits the treatment capability of the soil or severely restricts the movement of fluids. This may include soils with low or high permeability, impervious or fractured bedrock, or a seasonal or current ground water surface.
LINER- An impermeable synthetic or natural material used to prevent or restrict infiltration and/or exfiltration. For the purposes of this regulation, the minimum thickness of a liner shall be 30 ml.
LINEAR LOADING RATE- The amount of effluent applied per linear foot along the contour (gpd/linear ft.).
LONG-TERM ACCEPTANCE RATE (LTAR)- Design parameter expressing the rate that effluent enters the infiltrative surface of the soil treatment area at equilibrium, measured in volume per area per time, e.g. gallons per square foot per day (gal/ ft^2 /day).
MALFUNCTION- The condition in which a component is not performing as designed or installed and is in need of repair in order to function as originally intended.
MANUFACTURED MEDIA- See MEDIA, OTHER MANUFACTURED.
MEDIA- Solid material that can be described by shape, dimensions, surface area, void space, and application.
MEDIA, ENHANCED MANUFACTURED- An accepted proprietary manufactured distribution product, wrapped in a specified fabric, and placed on a specified sandbase or media that does not mask the infiltrative surface of the in-situ soil.
MEDIA, OTHER MANUFACTURED- An accepted proprietary manufactured distribution product made of synthetic media for distribution of effluent that is placed directly on the in-situ soil.
MEDIA, TREATMENT- Non-or slowly-degradable media used for physical, chemical, and/or biological treatment in an On-site Wastewater Treatment System component.
MOUND- A soil treatment area whereby the infiltrative surface is at or above original grade at any point.
NITROGEN REDUCTION- A minimum 50 percent reduction of influent nitrogen strength which is the minimum objective of NSF/ANSI Standard 245 - Wastewater Treatment Systems - Nitrogen Reduction.
ON-SITE WASTEWATER TREATMENT SYSTEM or "OWTS" and, where the context so indicates, the term "SYSTEM"- An absorption system of any size or flow or a system or facility for treating, neutralizing, stabilizing, or dispersing sewage generated in the vicinity, which system is not a part of or connected to a sewage treatment works.
OWTS ACT- The On-site Wastewater Treatment System Act, C.R.S. §25-10-101, et seq.

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OWTS CLEANER-See SYSTEMS CLEANER
OWTS INSTALLER-See SYSTEMS CONTRACTOR
PERCOLATION TEST- A subsurface soil test at the depth of a proposed absorption system or similar component of an OWTS to determine the water absorption capability of the soil, the results of which are normally expressed as the rate at which one inch of water is absorbed. The rate is expressed in minutes per inch.
PERFORMANCE STANDARD- Minimum performance criteria for water quality and operation and maintenance established by the regulatory authority to ensure compliance with the public health and environmental goals of the state or public health agency.
PERMEABILITY- The property of a material which permits movement of water through the material.
PERMIT- A permit for the construction or alteration, installation, and use or for the repair of an On-site Wastewater Treatment System.
PERSON- An individual, partnership, firm, corporation, association, or other legal entity and also the state, any political subdivision thereof, or other governmental entity.
PRESSURE DISTRIBUTION- See DOSING, PRESSURE.
PRIVY- An above grade structure allowing for the disposal of excreta not transported by a sewer and which provides privacy and shelter and prevents access to the excreta by flies, rodents, or other vectors.
a. **PIT PRIVY** – privy over an unlined excavation.
b. **VAULT PRIVY** – privy over a vault.
PROFESSIONAL ENGINEER- An engineer licensed in accordance with C.R.S. §12-25-1.
PROFESSIONAL GEOLOGIST- A person who is a graduate of an institution of higher education which is accredited by a regional or national accrediting agency, with a minimum of thirty semester (forty-five quarter) hours of undergraduate or graduate work in a field of geology and whose post-baccalaureate training has been in the field of geology with a specific record of an additional five years of geological experience to include no more than two years of graduate work. C.R.S. §23-41-208 and §34-1-201.
PROPRIETARY PRODUCT- A manufactured component or other product that is produced by a private person. It may be protected by patent, trademark or copyright.
PUBLIC DOMAIN TECHNOLOGY- A system that is assembled on location from readily available components and is based on well-established design criteria and is not protected by patent, trademark or copyright.
RECORD DRAWING- Construction drawings provided to illustrate the progress or completion of the installation of an OWTS, or components of the OWTS; typically based on field inspections by the designer or local public health agency.
REDOXIMORPHIC- A soil property that results from the reduction and oxidation of iron and manganese compounds in the soil after saturation with water and subsequent desaturation.

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REMEDIATION SYSTEM- A treatment system, chemical/biological additive or physical process that is proposed to restore the soil treatment area of an OWTS to intended performance.
REPAIR- Restoration of functionality and/or treatment by reconstruction, relocation, or replacement of an on-site wastewater treatment system or any component thereof in order to allow the system to function as intended.
REPLACEMENT SYSTEM- See REPAIR.
RISER- A watertight vertical cylinder and lid allowing access to an OWTS component for inspection, cleaning, maintenance, or sampling.
ROCK-PLANT FILTER- A designed system which utilizes treatment media and various wetland plants to provide treatment of wastewater through biological, physical, and chemical processes. Also called a constructed wetland.
SAND FILTER- An engineer designed OWTS that utilizes a layer of specified sand as filter and treatment media and incorporates pressure distribution.
SAND FILTER, LINED- An engineer designed OWTS that has an impervious liner and under-drain below the specified sand media. Lined sand filters may be intermittent / single pass where the effluent is distributed over the sand bed a single time before distribution to a soil treatment area, or re-circulating where part of the effluent is returned to an earlier component for additional treatment before distribution to a soil treatment area.
SAND FILTER, UNLINED- An engineer designed OWTS that includes a layer of specified sand used as a treatment media without a liner between the sand and the existing soil on which it is placed.
SEEPAGE PIT- An excavation deeper than it is wide that receives septic tank effluent and from which the effluent seeps from a structural internal void into the surrounding soil through the bottom and openings in the side of the pit.
SEPTAGE- A liquid or semisolid that includes normal household wastes, human excreta, and animal or vegetable matter in suspension or solution generated from a residential septic tank system. Septage may include such material issued from a commercial establishment if the commercial establishment can demonstrate to the Division that the material meets the definition for septage set forth in this subsection. Septage does not include chemical toilet residuals.
SEPTIC TANK- A watertight, accessible, covered receptacle designed and constructed to receive sewage from a building sewer, settle solids from the liquid, digest organic matter, store digested solids through a period of retention, and allow the clarified liquids to discharge to other treatment units for final disposal.
SEQUENTIAL DISTRIBUTION- A distribution method in which effluent is loaded into one trench and fills it to a predetermined level before passing through a relief pipe or device to the succeeding trench. The effluent does not pass through the distribution media before it enters succeeding trenches.
SERIAL DISTRIBUTION- A distribution method in which effluent is loaded into one trench and fills it to a predetermined level before passing through a relief pipe or device to the succeeding trench. The effluent passes through the distribution media before entering succeeding trenches which may be connected to provide a single uninterrupted flow path.

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SEWAGE- A combination of liquid wastes that may include chemicals, house wastes, human excreta, animal or vegetable matter in suspension or solution, and other solids in suspension or solution, and that is discharged from a dwelling, building, or other establishment. See also Wastewater.
SEWAGE TREATMENT WORKS- Has the same meaning as "Domestic Wastewater Treatment Works" under C.R.S. §25-8-103.
SHALL- means “must” or “will”.
SITE EVALUATION- A comprehensive analysis of soil and site conditions for an OWTS.
SITE EVALUATOR- A practitioner who conducts preconstruction site evaluations, including visiting a site and performing soil analysis, a site survey, or other activities necessary to determine the suitability of a site for an OWTS.
SLIT TRENCH LATRINE- A temporary shallow trench for use as disposal of non-water-carried human waste.
SOIL-

1. Unconsolidated mineral and/or organic material on the immediate surface of the earth that serves as a medium for the growth of plants and can potentially treat wastewater effluent; or
2. Unconsolidated mineral or organic matter on the surface of the earth that has been subjected to and shows effects of:
   a) Pedogenic and environmental factors of climate (including water and temperature effects); and
   b) Macro and microorganisms, conditioned by relief, acting on parent material over a period of time.

SOIL EVALUATION- A percolation test, soil profile, or other subsurface soil analysis at the depth of a proposed soil treatment area or similar component or system to determine the water absorption capability of the soil, the results of which are normally expressed as the rate at which one inch of water is absorbed or as an application rate of gallons per square foot per day.
SOIL HORIZON- Layers in the soil column differentiated by changes in texture, color, redoximorphic features, bedrock, structure, consistence, and any other characteristic that affects water movement or treatment of effluent.
SOIL MORPHOLOGY-

1. Physical constitution of a soil profile as exhibited by the kinds, thickness, and arrangement of the horizons in the profile; and by the texture, structure, consistence, and porosity of each horizon; and
2. Visible characteristics of the soil or any of its parts.

SOIL PROFILE TEST PIT EXCAVATION- A trench or other excavation used for access to evaluate the soil horizons for properties influencing effluent movement, bedrock, evidence of seasonal high ground water, and other information to be used in locating and designing an On-site Wastewater Treatment System.
SOIL STRUCTURE- The naturally occurring combination or arrangement of primary soil particles into secondary units or peds; secondary units are characterized on the basis of type, size class, and grade (degree of distinctness).
SOIL TEXTURE- Proportion by weight of sand, silt, and clay in a soil.

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SOIL TREATMENT AREA- The physical location where final treatment and dispersal of effluent occurs. Soil treatment area includes drainfields, mounds and drip fields.
SOIL TREATMENT AREA, ALTERNATING- Final treatment and distribution component that is composed of two soil treatment areas that are independently dosed.
SOIL TREATMENT AREA, SEQUENCING- A soil treatment area having more than two sections that are dosed on a frequent rotating basis.
STATE WATERS- The meaning set forth under C.R.S. §25-8-103.
STRENGTH, WASTEWATER- The concentration of constituents of wastewater or effluent; usually expressed in mg/L.
SUITABLE SOIL- A soil which will effectively treat and filter effluent by removal of organisms and suspended solids, which meets long-term acceptance rate requirements as defined in Table 10-1, and has the required vertical thickness below the infiltrative surface and above a limiting layer.
SYSTEMS CLEANER- A person engaged in and who holds himself or herself out as a specialist in the cleaning and pumping of on-site wastewater treatment systems and removal of the residues deposited in the operation thereof.
SYSTEMS CONSTRACTOR- A person engaged in and who holds himself or herself out as a specialist in the installation, renovation, and repair of on-site wastewater treatment systems.
TOTAL SUSPENDED SOLIDS- Measure of all suspended solids in a liquid; typically expressed in mg/L.
TRANSFER OF TITLE- Change of ownership of a property.
TREATMENT LEVEL- Defined concentrations of pollutants to be achieved by a component or series of components of an OWTS.
TREATMENT MEDIA- See MEDIA, TREATMENT.
TREATMENT UNIT- A component or series of components where solids or pollutants are removed from wastewater or effluent from a preceding component.
TRENCH-

1. Below-grade soil treatment area consisting of a shallow excavation with a width of 3 feet or less containing distribution media and one lateral; and
2. Excavation for placement of piping or installation of electrical wire or conduit.

UNIFORMITY COEFFICIENT- A value which is the ratio of D60 to D10 where D60 is the soil diameter of which 60 percent of the soil weight is finer and D10 is the corresponding value at 10 percent finer. (soil having a uniformity coefficient smaller than four would be considered "uniform" for purposes of this regulation.)
VAULT- A watertight, covered receptacle, which is designed to receive and store excreta or wastes either from a building sewer or from a privy and is accessible for the periodic removal of its contents. If the vault is intended to serve a structure or structures that are projected to generate a domestic wastewater flow of two thousand gallons per day or more at full occupancy, the vault is a domestic wastewater treatment works. Vaults are on-site wastewater treatment systems.

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VISUAL AND TACTILE EVALUATION OF SOIL- Determining the properties of soil by standardized tests of appearance and manipulation in the hand.
VOLUME, EFFECTIVE- The amount of effluent contained in a tank under normal operating conditions; for a septic tank, effective volume is determined relative to the invert of the outlet. For a dosing tank, the effective volume under normal conditions is determined relative to the invert of the inlet and the control off level.
WASTEWATER, DOMESTIC- Combination of liquid wastes (sewage) which may include chemicals, household wastes, human excreta, animal or vegetable matter in suspension or solution, or other solids in suspension or solution which are discharged from a dwelling, building or other structure.
WASTEWATER, HIGH STRENGTH-

1. Wastewater from a structure having BOD 5 greater than 300 mg/L; and/or TSS greater than 200 mg/L; and/or fats, oils, and grease greater than 50 mg/L; or
2. Effluent from a septic tank or other pretreatment component (as defined by NSF/ANSI Standard 40 testing protocol) that has BOD 5 greater than 180 mg/L; and/or TSS greater than 80 mg/L; and/or fats, oils, and grease greater than 25 mg/L and is applied to an infiltrative surface.

WASTEWATER POND- A designed pond which receives exclusively domestic wastewater from a septic tank and which provides an additional degree of treatment.
WATER COURSE- A natural or artificial channel through which water flows.
WATER QUALITY CONTROL COMMISSION- See COMMISSION.
WATER QUALITY CONTROL DIVISION- See DIVISION.
WETLAND, CONSTRUCTED- See ROCK-PLANT FILTER.
WETLANDS- Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. Wetland areas do not include artificial wetlands intentionally created from non-wetland areas including: flood-irrigated agricultural and ranch lands and ranch ponds; irrigation and drainage ditches; grass-lined swales; canals; detention facilities; landscape amenities; and areas in which there are wastewater treatment systems are designed to meet the requirements of the Clean Water Act (33 U.S.C. Sec 1341), treated water distribution and storage facilities or treated water that otherwise meet the criteria in this definition. However, wetlands may include those artificial wetlands intentionally created from non-wetland areas created for the purpose of mitigating loss of wetlands, if permitted by Gunnison County.

Table 3-1 Abbreviations and Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
C.R.S.	Colorado Revised Statutes

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CBOD	Carbonaceous Biochemical Oxygen Demand
CSA	Canadian Standards Association
GPD	gallon per day
IAPMO	International Association of Plumbing and Mechanical Officials
ISDS	Individual Sewage Disposal System
LTAR	Long-term Acceptance Rate
mg/L	Milligrams per Liter
MPI	Minutes per inch
NAWT	National Association of Wastewater Technicians
NDDS	Non-pressurized Drip Dispersal System
NPCA	National Precast Concrete Association
NSF	National Sanitation Foundation
OWTS	On-site Wastewater Treatment System(s)
STA	Soil Treatment Area
TL	Treatment Level
TN	Total Nitrogen
TSS	Total Suspended Solids
UL	Underwriter's Laboratories

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SECTION 3: APPLICATION, PERMIT REQUIREMENTS, REVIEW PROCESS AND PROCEDURES

A. Application and Permit Requirements

1. No person shall construct, install, maintain, alter, repair, enlarge, relocate or use an on-site wastewater treatment system within unincorporated Gunnison County without first having obtained a permit pursuant to these Regulations for such construction, installation, maintenance, use, alteration, repair, enlargement or relocation.

2. Gunnison County shall not issue to any person a permit to construct or remodel a building until a permit for an on-site wastewater treatment system has been issued by the Department when such building construction or repair shall result in a use requiring treatment and disposal of sewage. Exceptions shall be made for a building or structure served by a central sewage treatment system.

   a. The issuance of a Certificate of Occupancy shall be withheld until final completion and approval of the OWTS has been granted by the Department.

   b. A Certificate of Occupancy shall be revoked for structures where adequate sanitary facilities are not maintained.

3. The Department shall provide, and the applicant shall complete, an application for a permit. The application shall, at a minimum, include the following:

   a. Owner name and contact information;

   b. Property address;

   c. Property legal description;

   d. Type of permit;

   e. Report from Site and Soil Evaluation (Section 5.E.);

   f. System design with a legible, accurate site plan which shows pertinent physical features on subject property, and on adjacent properties, as noted in Table 7-1; and

   g. Description of proposed and existing potable water source;

   h. Description of the existing and proposed land use on the site to be served by the OWTS;

   i. Other information, data, plans, specifications and tests as required by the Department;

   j. When specific evidence suggests undesirable soil conditions exist, additional hydrological, geological, engineering or other information provided by a professional engineer or geologist may be required to be submitted by the applicant. This requirement will not prejudice the right

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of the Department to develop its own information from its own source at its own expense.

4. Application Fees

   a. An application fee set forth by the Board shall be paid by each applicant for a permit, and is required to be paid at the time the application is submitted. The fee is not refundable. The fees may be adjusted from time to time by the Board.

   b. The Department shall collect a surcharge fee of twenty dollars for each permit issued for a new, repaired, or upgraded OWTS. The fee shall be transmitted to the state treasurer, who shall deposit that sum in the water quality control fund created

5. Application Term

   a. An application for an OWTS permit shall become void one year from the date of application unless an OWTS permit is issued or an extension is granted by the Department.

6. Permit Term

   a. An OWTS permit expires one year after the date of issuance unless an extension is granted by the Department.

   b. Any changes plans or specifications of the OWTS after the permit has been issued invalidates the permit unless the permittee receives written approval from the Department for such changes.

7. Repair Permit

   a. Application to repair and for emergency use of a malfunctioning system shall be made within two (2) business days by any owner or occupant after receiving notice from the Department that the system serving the property is not functioning in compliance with these Regulations or otherwise constitutes a nuisance or hazard to public health.

   b. The repair permit shall provide for a reasonable period of time within which the owner or occupant shall make repairs. By the end of that period, the Department shall have inspected the repairs and verified that the system is functioning properly. Concurrently with the issuance of a repair permit, the Department may issue an emergency use permit authorizing continued use of a malfunctioning system on an emergency basis for a period not to exceed the period stated in the repair permit. Such an emergency use permit may be extended, for good cause shown, in the event repairs may not be completed in the period stated in the repair permit through no fault of the owner or occupant and only if the owner or occupant will continue to make repairs to the system.

8. Expanded use of an OWTS

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a. A permit shall be required for the expanded use of an OWTS. The OWTS shall be replaced or modified to handle the increased design flow unless it is determined that the existing system is adequately designed and constructed for the higher design flow rate.

9. Minimum parcel size requirement

a. An OWTS shall not be permitted to be installed on a parcel of land less than one acre in size.

(1) Exceptions will be made for applications on lots of 7/10s of an acre (30,492 square feet) or greater, and served by a legal central public water supply within the Arrowhead subdivision, or other subdivisions that meet or exceed these requirements. Such applications shall be considered to meet the minimum parcel size.

(2) For repairs to, or the expanded use of an existing OWTS, the minimum parcel size requirement will not apply, provided that the parcel size shown in the original construction records has not been reduced and the proposed system complies with all other aspects of these Regulations.

10. No more than one OWTS shall be permitted for an undivided parcel.

11. The issuance of a permit and specifications of terms and conditions therein will not constitute assumption of liability, nor create a presumption that the Department or its employees may be liable for the failure or malfunctioning of any system. Permit issuance will not constitute a certification that the system, the equipment used in the system, or any component used for system operation will ensure continuous compliance with the provision of the OWTS Act, the regulations adopted thereunder, or any terms and conditions of a permit.

12. No OWTS permit shall be issued to any person when the subject property is located within a municipality or special district that provides public sewer service, except where such sewer service to the property is not feasible in the determination of the municipality or special district, or the permit is otherwise authorized by the municipality or special district.

a. In all events, as a condition of issuing a permit pursuant to these Regulations, the County shall have the right to require that, in the future, such permitted system be abandoned and the building or parcel be served by a central sewage treatment system consistent with Colorado Statutes.

B. Application Review

1. The Department shall review each complete application in order to determine if the proposed plan is in compliance with the requirements of the OWTS Act and these Regulations. Additionally, the Department will review the proposal for compliance with the Gunnison County Land Use Resolution and other applicable federal, state and county regulations.

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a. If the application is not complete, the Department shall inform the applicant of the deficiencies and shall take no further action on the application until the deficiencies are remedied.

b. If the application is complete, the Department shall certify it as complete, and if required, schedule the initial site inspection with the applicant, pursuant to Section 3.D.

2. The County shall notify each appropriate municipality that has adopted a watershed ordinance when an OWTS permit application has been submitted on lands within that municipality's watershed.

3. The Department may request, at the expense of the applicant, the professional analysis and recommendations of other review agencies, organizations, or technical consultants appropriate and necessary to complete the review, including other County offices and departments; municipal, state, or federal agencies having an interest in or authority over all or part of the proposal; and engineers, designers, and legal consultants.

a. Review agencies and departments that are sent a copy of the application will be requested to make comments within 30 days of the date of mailing by the Community Development Department, or as otherwise required by applicable state or federal law. In all events, the Community Development Department will wait to receive comments from review agencies and departments.

b. The applicant shall have the right to review the comments and recommendations received from the review agencies. The applicant may submit additional information and make changes in the development proposal to respond to the comments of the review agencies and departments.

C. Access to Site

1. Where it is necessary to make an inspection to enforce the provisions of these Regulations, the terms and conditions of any permit issued under these Regulations, or where the Department has reasonable cause to believe that there exists upon the premises a condition that is contrary to or in violation of these Regulations that threatens public health and water quality, authorized members of the Department may enter upon private property at reasonable times and upon reasonable notice for the purpose of determining whether operating OWTS are functioning in compliance with the OWTS Act, Regulation 43, with these Regulations and with the terms and conditions of any permit issued thereunder, as well as to inspect and conduct tests in evaluating any permit application.

2. The owner or occupant of the property having an OWTS shall permit authorized members of the Department access to the property to conduct required tests, take samples, monitor compliance, and make inspections.

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3. When entry is denied, the Department may apply to the District Court with jurisdiction to gain entry.

D. Site Inspection

1. Upon receipt of a complete application and after initial review of the application, the Department shall schedule a site inspection of the property. The site inspection shall be conducted for the purpose of verifying that the site conditions and the design submittal are in compliance with these *Regulations* and to review the suitability of the site and of the proposed location of the structure(s) and OWTS considering the land use in the area, the proposed use on the site and the size of the property.

   a. In preparation for the site inspection, the applicant shall stake and label each pertinent feature, including but not limited to the lot corners, proposed structure(s), driveway/parking area, proposed OWTS components, and well or cistern location.

E. Determination of Application for OWTS Permit

1. If the Department determines that the application and supporting design documents are in compliance with these *Regulations* or the OWTS Act, an OWTS permit shall be made ready to be issued to the applicant.

   a. The Department may condition any permit issued pursuant to these *Regulations* with site or system specific requirements and prohibitions.

2. If the Department determines that the application and design documents do not conform to the requirements of these Regulations or the OWTS Act, the application shall be denied.

   a. A determination to deny an OWTS application shall be in writing and shall include the specific reasons for the denial.

   b. Such written denial shall be sent by certified mail, return receipt requested, to the applicant at the address on the application. The process of denial shall be complete upon such mailing and does not require actual receipt.

3. It is the Department's goal to review a complete OWTS application, inspect the proposed site, and provide notification of the application determination within 15 working days after receipt.

   a. Due to access, weather, seasons or unforeseen circumstances, the determination of a complete application may take longer than 15 working days.

F. Changes in Plans or Specifications

1. Any change to the approved plans or specifications after the permit is issued shall be submitted to the Department for review and approval.

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a. Failure to obtain approval from the Department for any change to the approved plans or specifications will invalidate the OWTS permit.

G. Changes in Terms or Conditions

1. A permit shall become invalid if it is determined that material information contained in the application, design calculations or specifications, or site conditions are incorrect, false, or misleading.

H. Final Inspection-Non-Engineered (Conventional System)

1. It is the responsibility of the Gunnison County licensed system contractor to notify the Department when construction, installation, alteration, or repair has been sufficiently completed to allow inspection of the conventional system before the system is placed in use.
2. Inspection of the system by the Department shall be made within two (2) business days after being notified that the conventional system is ready for inspection.
3. Final inspection and approval of the conventional system shall be made by the Department before fill is placed to cover any part of the system to confirm that it was installed in accordance with the permit requirements.
4. The Department will determine if work has been performed in accordance with the permit requirements and will determine if the system complies with these *Regulations* and the OWTS Act.
5. A scaled record drawing showing all components of the OWTS including their location from known and findable points, dimensions, depths, sizes, manufacturer's names and models as available, and other information relative to locating and maintaining the OWTS components, shall be prepared and submitted to the Department.
6. After completion of the installation of the OWTS, the designer shall submit to the Department a letter stating that the system has been installed in conformance with the plans and specifications approved by the Department.

I. Final Inspection-Engineered System

1. It is the responsibility of the Gunnison County licensed system contractor to notify the professional engineer and the Department when construction, installation, alteration, or repair has been sufficiently completed to allow inspection of the engineered system before the system is placed in use. The Gunnison County licensed system contractor shall notify the professional engineer to make all specified inspections during the course of construction.
2. Final inspection and approval of all engineered OWTS shall be made by the professional engineer before fill is placed to cover any part of the system.

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3. Final inspection and approval of the engineered OWTS shall be made by the Department before fill is placed to cover any part of the system confirming that it was installed according to the permit requirements.

4. Engineered systems shall be inspected by or under the supervision of the professional engineer responsible for the design. If the professional engineer is not available, another Registered Professional Engineer may provide the inspections and will become the professional engineer of record and be responsible for the system.

5. A scaled record drawing showing all components of the OWTS including their location from known and findable points, dimensions, depths, sizes, manufacturers' names and models as available, and other information relative to locating and maintaining the OWTS components, shall be prepared and submitted to the Department.

6. The Department will determine if work has been performed in accordance with the permit requirements and will determine if the system complies with these *Regulations* and the OWTS Act.

7. At the completion of the installation of an engineered system, the engineer shall submit to the Department a letter stating that the system has been installed in conformance with the plans and specifications approved by the Department and the scaled record drawing of the system as required in Section 3.J.

J. Final approval of the permit shall include, but is not limited to:

1. Receipt of letter from the engineer certifying construction of the OWTS as per the approved design plan, if the OWTS was engineer designed;

2. Receipt of a record drawing which includes a scale drawing showing all components of the OWTS including their location from known and findable points, dimensions, depths, sizes, manufacturers' names and models as available, and other information relative to locating and maintaining the OWTS components;

3. Identification of Gunnison County licensed system contractor; and

4. Final inspection prior to backfilling the OWTS by the Department confirming that it was installed according to the permit requirements and regulations or variances to the regulations; and

   a. If the well is not installed at the time of final inspection then final approval of the OWTS permit shall be withheld until verification of the setback distance to system components can be made.

K. Product Development Permit

1. For products that have not received Division acceptance under Section 13.D., the manufacturer may apply to the Department for a product development permit. Requirements for proprietary treatment product acceptance are located in Section 13.D. of these *Regulations*.

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2. For products or types of systems which have not been otherwise accepted by the Division pursuant to Section 13.D., the Board may approve an application for product development permit only if the system has been designed by a professional engineer, and only if the application provides proof of the ability to install a replacement OWTS in compliance with all local requirements in a timely manner in the event of a failure or malfunction of the system installed.

3. Before a product development permit is issued, the Division shall determine that the product to be tested qualifies for testing under the product development evaluation based on information submitted to the Division.

   a. Applicant shall provide evidence of nationally accepted third-party testing of the product to be evaluated, or;

   b. Provide test data from multiple single-family homes under normal working conditions that meet the following criteria:

      (1) Test data shall be provided from a minimum of four (4) sites.

      (2) Each system shall be tested over a period of at least one (1) year.

      (3) Each system shall be sampled at least three (3) times during the year with at least one (1) sample obtained during cold weather conditions.

      (4) Laboratory results for all parameters for which acceptance is being requested shall be submitted.

4. A Board shall not arbitrarily deny any person the right to consideration of an application for such a system and shall apply reasonable performance standards in determining whether to approve such an application; C.R.S. §25-10-108 (2).

5. A completed application for a product development permit shall be submitted to the Department at least 30 days in advance of installation of the product.

6. An application for a product development permit shall include the following:

   a. Proof of the ability to install a replacement OWTS in compliance with all local requirements in a timely manner in the event of a failure or malfunction of the system under testing;

   b. A description of the product under development including performance goals;

   c. Documentation signed by the owner of the proposed product development site allowing access to the Department and Division for inspection of the site; and

   d. Design documents as required in Section 5.F. of these *Regulations*.

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7. The Department may stipulate additional requirements for the product development permit necessary to ensure that the system performs as intended.
8. A product development permit is a site-specific permit. Product development testing at multiple sites requires a product development permit for each site.
9. During the term of the product development permit, all data collected is to be submitted to the Division and the Department.
10. The Department may revoke or amend a product development permit, if the continued operation or presence of the product under development:
    a. Presents a risk to the public health or environment;
    b. Causes adverse effects on the proper function of the OWTS on the site;
    c. Leaks or discharges effluent on the surface of the ground; or
    d. If the developer of the product fails to comply with any requirements stipulated on the permit by the Department or the Division.
11. If the product development permit is revoked, the product developer shall install agency replacement OWTS in compliance with these *Regulations* and within the time frame established by the Department.
12. Once the system is installed and approved, the Department shall supply the Division with a copy of the completed OWTS permit.

L. Prohibition of OWTS in Unsuitable Areas

1. Where it is determined that the construction and use of OWTS may constitute a hazard to public health or water quality the issuance of an OWTS permit is prohibited.

M. Variance Procedure

1. Request for Variance
    a. An applicant for a permit to construct a new OWTS or to repair or expand an OWTS may request a variance from any provision of these Regulations, except as prohibited in Section 3.M.2.
    b. Variance request submittals shall include the following items:
        (1) Site-specific request identifying the specific criteria from which a variance is being requested;
        (2) Technical justification by a professional engineer or professional geologist, which indicates the specific conditions which exist and/or the measures which will be taken that support a finding that the variance shall result in no greater risk than that associated with compliance with the requirements of these Regulations. Examples of conditions which exist, or measures which might be taken,

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include but are not limited to the following: evidence of a natural or manmade physical barrier to the movement of effluent to or toward the feature from which the variance is requested; placement of a manmade physical barrier to the movement of effluent to or toward the feature from which the variance is requested; soil replacement with sand filter media to reduce the infiltration rate of the effluent such that the travel time of the effluent from the absorption field to the physical feature is no less than the travel time through the native soils at the prescribed setback and Treatment Level 2;

(3) A discussion of alternatives considered in lieu of the requested variance;

(4) Technical documentation for selected alternative, which may include a testing program, which confirms that the variance does not increase the risk to public health and to the environment; and

(5) A statement of the hardship that created the necessity for the variance.

(6) A nonrefundable fee as set forth in the *Appendix*.

2. Prohibitions on the granting of variance requests

a. No variance shall be issued where the property can accommodate a conforming OWTS.

b. No variance shall be issued to mitigate an error in construction involving any element of property improvements.

c. No variance shall be allowed solely for economic gain.

d. No variance shall be issued, if it will result in a setback reduction to an offsite physical feature that does not conform to the minimum setbacks defined in Table 7-1 of this regulation without the Board considering any concerns of the owner of property containing said feature. Property lines are considered offsite features. The property owner containing said feature shall be notified of the time and date of the hearing.

e. No variance shall be issued, if it reduces the separation to ground water or bedrock based on the level of treatment in Table 7-2.

f. No variance from the horizontal setback from a well shall be issued unless it also meets the variance requirements of the Board of Examiners of Water Well Construction and Pump Installation Contractors.

g. No variance shall be issued for the installation of a higher level treatment system based on sizing or separation reductions without the Department having a maintenance and oversight program as defined in Section 43.14.D. of State Regulation #43 (or Section 14.D. of these *Regulations*).

3. Variances for repair of failing systems

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a. When a proposed variance for a system repair or upgrade would result in encroachment on minimum distances to physical features on neighboring properties, the requirement of Section 3.M.1.b. shall be followed.

b. For the repair or upgrade to an existing system where the existing system does not meet the required separation distances and where conditions other than lot size precludes adherence to the required distances, a variance to the separation distances may be requested. The repairs or upgrade shall be no closer to features requiring setbacks than the existing components. Variances requesting setbacks no closer than existing setbacks do not have to provide technical justification from a professional engineer or professional geologist.

4. Burden of Proof

a. In all cases, the applicant has the burden of proof by a preponderance of evidence to demonstrate that the variance is justified and shall result in no greater risk than that associated with compliance with these *Regulations*.

5. Public Hearing

a. Upon receipt of the request for a variance and the information required in Section 4.Q.1., the Department shall schedule a Public Hearing before the Environmental Health Board.

(1) The Environmental Health Board shall hold a public hearing as soon as practical after receiving an application.

(2) The Public Hearing shall be conducted in accordance with procedures described in Appendix B.

b. Public Hearing notice and posting procedures for variance requests shall include the following:

(1) The Department shall issue a notice of public hearing and shall be responsible for posting a legal notice in the County's official newspaper. The legal notice shall be published at least once. The notice of public hearing shall be published and posted by the Department at least 20 days before the hearing and the first day the notice is published and posted shall be considered one of the 20 days. When the requested variance is located in an area of Gunnison County that is served by a local newspaper that is not the County's official newspaper, notice shall also be published in that local newspaper. The cost of publishing the notice shall be the responsibility of the applicant.

(2) The Department shall be responsible for posting the notice of public hearing at the County posting locations as determined by the Environmental Health Board during its annual organizational meeting.

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(3) The applicant shall be responsible for mailing of the notice of public hearing to all owners of properties who own surface rights within 500 feet of each boundary of the entire parcel. The notice shall be sent by certified mail a minimum of 20 days prior to the public hearing date. The certified mail receipts shall be submitted to the Department at least two (2) weeks prior to the public hearing date as proof of mailing.

(4) The applicant shall be responsible for posting the public hearing notice in a conspicuous location on the project property that is readily visible from a road adjoining or serving the area or parcel related to the proposed appeal or review. The post, fence, structure or other location to which the public hearing notice is posted shall be sturdy and visible. Where the property does not have frontage on a public road, the sign shall be erected on the nearest road right-of-way, with a notation stating the direction and distance to the land on which the project is proposed, or another location approved by the Department so it is visible to the greatest number of people.

(i) The applicant shall obtain a copy of the public notice and posting board from the Department. The dimensions of the posting board shall be no smaller than 24 inches wide by 36 inches high.

(5) A week before the public hearing, the applicant is required to provide the Department with an affidavit certifying that notice was accomplished pursuant to this Section. A photograph of the posted sign shall be attached to the affidavit.

(6) The notice for the hearing shall clearly state information sufficient to give adequate notice to people whose rights could be affected by the proposed project. The wording used in the notice shall be reasonably understandable by a person who is not a lawyer or design professional, and shall contain at least the following information:

(i) A statement that the Environmental Health Board will be conducting a hearing;

(ii) The location of the public hearing;

(iii) The date and time of day when the hearing will be conducted;

(iv) A statement specifying the type of application being reviewed;

(v) An invitation to interested persons to attend the hearing;

(vi) A brief description of the proposed project that reflects the description submitted in the application;

(vii) A description of the location of the subject property or area by reference to known landmarks, road intersections, existing

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towns or developments, addresses or other similar methods; lot, block and filing number if in an approved subdivision; or quarter-section, township and range descriptions;

(viii) The address and telephone number of the Department, stating that this is where the full details of the application may be obtained and is where written comments can be directed before the public hearing; and

(ix) A request for notification to the Department of special accessibility needs of persons attending the hearing, pursuant to the requirements of the *American Disabilities Act*.

6. Outcome of the Variance Proceeding

a. Following the Public Hearing, the Environmental Health Board shall vote on the proposed variance request. Approval of the variance shall require a majority vote of the Environmental Health Board. The Department shall send written notification of the decision regarding the request for a variance to the applicant.

(1) The Environmental Health Board may impose requirements and conditions on any variance granted. Written notification of a decision to approve a variance request shall include any conditions of approval imposed by the Environmental Health Board.

(2) Written notification of a decision to deny a variance request shall include the reasons which form the basis for the denial.

b. The term of an approval for a variance request shall be one year, unless expressly extended as a condition of approval. During the approval term, the applicant shall obtain an OWTS permit compliant with any conditions of approval.

c. Approved variance requests and any conditions of approval imposed by the Environmental Health Board shall be recorded on the deed to the property. Any expenses associated with the recording shall be the responsibility of the applicant.

d. An applicant may make an appeal of the final decision to the Board of County Commissioners pursuant to Section 3.M.7.

7. Findings on Appeal

a. A written request for review shall be made to the Department within 15 days after denial of an application by the Environmental Health Board.

b. The applicant shall bear the burden of supplying the Board with sufficient evidence to document that the denied system shall be constructed and used in such a manner that will result in no greater risk than that associated with compliance with the requirements of these Regulations, comply with the declaration and intent of these

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Regulations, and comply with all applicable state and local regulations and required terms and conditions in any permit.

c. The review shall be conducted pursuant to the requirements of C.R.S. §24-4-105.

d. The appeal shall be considered by the Board at a regularly scheduled meeting as soon as practicable after the date the written appeal was filed.

(1) The Department shall notify the following persons about the meeting, by first-class mail:

(i) The applicant;

(ii) The appellant; and

(iii) Anyone who testified at the public hearing.

e. At the meeting, the Board may determine that a public hearing should be conducted on the appeal. If the Board so determines, the public hearing shall be noticed as follows:

(1) The Department shall issue a notice of public hearing and shall be responsible for posting a legal notice in the County's official newspaper. The legal notice shall be published at least once. The notice of public hearing shall be published and posted by the Department at least 20 days before the hearing and the first day the notice is published and posted shall be considered one of the 20 days. When the requested variance is located in an area of Gunnison County that is served by a local newspaper that is not the County's official newspaper, notice shall also be published in that local newspaper. The cost of publishing the notice shall be the responsibility of the applicant.

(2) The Department shall be responsible for posting the notice of public hearing at the County posting locations as determined by the Environmental Health Board during its annual organizational meeting.

(3) The applicant shall be responsible for mailing of the notice of public hearing to all owners of properties who own surface rights within 500 feet of each boundary of the entire parcel. The notice shall be sent by certified mail a minimum of 20 days prior to the public hearing date. The certified mail receipts shall be submitted to the Department at least two (2) weeks prior to the public hearing date as proof of mailing.

f. The Board shall conduct a public hearing if the Board is satisfied that the anticipated additional testimony or documents could not reasonably have been presented to the Environmental Health Board. The Board shall consider the following in making such a decision:

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(1) Availability of the anticipated additional testimony or documents at the time of review of the application by the Environmental Health Board.

(2) Prejudice to the appellant or public of conducting the public hearing.

g. If the Board determines that a public hearing shall not be conducted on the appeal, the Board shall limits its consideration to review of the record of the Environmental Health Board, and argument regarding that record. No new evidence shall be accepted or considered, and the Board Chairperson may limit statements made to the Board.

h. If the Board determines that a public hearing shall be conducted on the appeal, the Board shall make its decision *de novo* based on consideration of the record of the initial decision-making body and any evidence presented at the public hearing.

i. The Board shall affirm, reverse, modify or remand, in whole or part the appealed action. When the Board reverses or modifies a decision, the Board shall set forth its findings and state its reasons. When the Board elects to remand the matter back to the Environmental Health Board, it shall include a statement explaining the reasons for the remand and the action to be taken.

(1) The original action shall only be modified, reversed or remanded if the appellant establishes that:

(i) There is no credible evidence in the record to support the original decision;

(ii) The original action was inconsistent with the applicable requirements of these Regulations; or

(iii) The Environmental Health Board exceeded its jurisdiction or abused its discretion.

j. The Board's decision to affirm, reverse, or modify a decision shall be final and shall not be further appealed, but may be subject to judicial review.

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SECTION 4: REGULATION OF OWTS INSTALLERS AND OWTS CLEANERS

A. Licensing of OWTS Installers and OWTS Cleaners

1. OWTS Installer License

   a. No person shall install, alter, or repair an OWTS unless he or she holds a valid OWTS Installer license issued by the Department.

   b. An OWTS Installer license is issued to the individual who takes and passes the Department's written OWTS Installer examination and provides documentation of completion of the National Association of Wastewater Technicians (NAWT) Installers Course or approved equivalent, within (2) years from the effective date of this Regulation.

   c. Application for OWTS Installer licenses or renewals shall be made on forms supplied by the Department.

   d. Prior to the renewal of a license, the Department may require the applicant to demonstrate adequate knowledge of these Regulations. This may include, but is not limited to, passing an exam prepared by the Department or attending educational courses.

   e. Licenses shall expire on January 31st of each year. A license which lapses because of failure to renew shall be subject to the exam and fee established for a new license upon reapplication.

2. OWTS Cleaner License

   a. No person shall engage in the cleaning of OWTS Systems or the transportation of sewage to a disposal site unless he or she holds a valid OWTS Cleaner License issued by the Department.

   b. Application for an OWTS Cleaner License or renewals shall be made upon forms supplied by the Department. In addition to the application form, the OWTS Cleaner, and any vacuum truck technicians employed by the license holder, shall submit to the Department documentation of completion of the NAWT Vacuum Truck Course or NAWT Operation and Maintenance 1 Course or approved equivalent, within two (2) years from the effective date of this Regulation.

   c. Prior to renewal of a license, the Department may require the applicant to demonstrate adequate knowledge of these Regulations. This may include, but is not limited to, passing an exam prepared by the Department or attending educational courses.

   d. Licenses shall expire on January 31st of each year. A license which lapses because of failure to renew shall be subject to the fee established for a new license upon reapplication.

3. License Fees

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a. A non-refundable fee in the amount set forth by the Board shall be required of applicants for systems contractor and systems cleaner licenses. The fee shall be payable to the Department at the time the license application is made. The fee may be adjusted from time to time by the Board.

4. Revocation of an OWTS Installer or OWTS Cleaner License

a. An OWTS Installer or Cleaner's license may be revoked for failure to comply with these Regulations. Revocation shall take place only after a hearing before the Board. The license holder shall be given not less than ten (10) days' notice of the hearing and may be represented at the hearing by counsel.

b. Written notice of revocation, specifying the violations, shall be served upon the holder of the license. Service of notice as required in this Section shall be provided by the Colorado Rules of Civil Procedure, or by registered or certified mail, return receipt requested, deliverable to the addressee only.

c. A person who has previously had a license revoked may be denied renewal by the Board.

5. Standards of Performance Required of Licensed OWTS Installers

a. The OWTS Installer shall be responsible for proper installation of the OWTS. Installation, alteration, or repair of any OWTS shall be in compliance with these *Regulations* and with the conditions set out in the application and installation permit.

b. A request for an inspection shall be provided to the Department no less that two (2) business days prior to the requested inspection date.

c. A licensed OWTS Installer shall verify that an OWTS permit has been issued prior to starting construction and the installer shall install the system in accordance with the approved plans and specifications.

d. A licensed OWTS Installer shall have a copy of the OWTS permit and approved plans at the site during construction.

e. The licensed OWTS Installer shall provide the Department or system designer a scaled record drawing accurately locating all parts of the system in relation to the dwelling and/or property lines. Final approval of the system installation may be withheld for failure to submit the record drawing.

f. When installation of the system precedes the construction of a structure or dwelling, the OWTS Installer shall flag the system so as to identify its location in order to prevent vehicle or equipment travel on the system.

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g. A licensed OWTS Installer shall be responsible for maintaining certification as a Certified Installer through the NAWT or certification from an approved equivalent.

6. Standards of Performance Required of Licensed OWTS Cleaners

a. An OWTS Cleaner, when cleaning tanks or aeration plants, shall remove the liquid, sludge and scum from both compartments of divided tanks and both tanks that are in series, leaving only enough sludge to act as a seed for continuing operation. Three (3) inches of remaining residue is recommended. Tanks should not be washed or disinfected after pumping. The outlet tees or baffles on the outlet side of tanks shall be checked for proper installation and/or damage provided they can be observed as part of the routine pumping process. Missing or damaged tees or baffles on the outlet side of tanks shall be reported to the owner and the Department for immediate repair.

b. An OWTS Cleaner shall maintain his or her equipment so as to insure that no spillage of sewage will occur during transportation.

c. An OWTS Cleaner shall dispose of the collected sewage only at sites approved by the Department in a manner which does not create a public health hazard, nuisance or risk of pollution.

d. An OWTS Cleaner shall keep a record of each tank pumped, volume of septage pumped, disposal facility, and observed condition of components. The records shall be kept for a period of seven years.

e. An OWTS Cleaner, including vacuum truck technicians employed by the license holder, shall be responsible for maintaining certification as a Certified NAWT Vacuum Truck Operator or Certified NAWT Operation and Maintenance 1 Provider or certification from an approved equivalent.

f. The OWTS Cleaner shall provide to the property owner or their designee a receipt listing the name, address, date, activity(s) performed, septic tank volume, number of chambers in the septic tank, and any system deficiency, malfunction, or broken equipment observed, such as cracks, infiltration, overflows, or non-standard equipment.

g. When in the normal course of work, an OWTS Cleaner observes damaged or metal septic tanks, cesspools, failed or malfunctioning systems, or sewage being discharged onto the ground or beyond the normal area of confinement, the OWTS Cleaner shall notify the property owner and the Department of any such condition within 72 hours.

7. Property Owner Installation of OWTS

a. The owner of property for which an OWTS permit has been issued may install that system, without holding an OWTS Installer license,

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provided that the owner can demonstrate adequate knowledge of these *Regulations*. The following requirements shall apply to property owner OWTS installations:

(1) The property owner shall sign the Owner-Installer Affidavit.

(2) The OWTS shall be designed by a professional engineer.

(3) The property owner installing the system shall take and pass the OWTS Installer test.

(4) An additional inspection after excavation and preparation of the soil treatment area and prior to placement of any soil treatment area components shall be required.

(5) Owner-Installers shall be responsible for complying with all applicable requirements of these *Regulations.*

b. No portion of the work for the owner-installed OWTS shall be subcontracted to any other person who will be financially compensated for that work unless that person is a licensed OWTS Installer.

c. An owner-installer shall install no more than one OWTS per three years.

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SECTION 5: SITE AND SOIL EVALUATION

A. A site and soil evaluation shall be conducted for each property on which an OWTS is proposed.

1. A site and soil evaluation shall be conducted for each property on which an OWTS is proposed, to determine the suitability of a location to support an OWTS, and to provide the designer a sound basis to select the most appropriate OWTS design for the location and application.
2. Each site evaluation shall consist of:
   a. Preliminary investigation;
   b. Reconnaissance;
   c. Detailed soil investigation; and
   d. Report and site plan.

B. Preliminary Investigation

1. A preliminary investigation shall include the research of information relative to the site and anticipated conditions. Information gathered as part of the preliminary investigation shall include, but is not limited to:
   a. Property Information:
      (1) Address;
      (2) Legal description;
      (3) Size of parcel in acres or square feet;
      (4) Description of existing and proposed use(s);
      (5) Existing structures; and
      (6) Location of existing or proposed wells on the property.
   b. Department records.
   c. Published site information:
      (1) Topography; and
      (2) Soil data
   d. Location of physical features, on and off the property that will require setbacks as identified in Table 7-1.
   e. Preliminary soil treatment area size estimate based on information on existing or planned facility and these *Regulations*.
   f. The Department may require additional information in order to assure that a proper site evaluation has been performed.
   g. Additional information that may be useful to the specific evaluation as available:

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(1) Survey;

(2) Easements;

(3) Floodplain maps;

(4) Geology and basin maps and descriptions;

(5) Aerial photographs;

(6) Climate information; and

(7) Delineated wetlands maps.

C. Reconnaissance Visit

1. A reconnaissance visit to the property to evaluate the topography and other surface conditions that will impact the location and design of the

2. OWTS shall be conducted. Information gathered as part of the site reconnaissance may include, but is not limited to:

a. Landscape position;

b. Topography;

c. Vegetation;

d. Natural and cultural features; and

e. Current and historic land use.

D. Detailed Soil Investigation

1. Soil investigations to determine the long-term acceptance rate of a soil treatment area shall be conducted per the following criteria:

a. Visual and tactile evaluation of two (2) or more soil profile test pit excavations shall be conducted to determine soil type as well as to determine whether a limiting layer is encountered.

b. In addition to the two (2) soil profile test pit excavations, percolation testing may be conducted to obtain additional information regarding the long-term acceptance rate of the soil.

c. If the site evaluation includes both a visual tactile evaluation of soil profile test pit excavations and percolation tests, and the results from these two evaluations do not coincide with the same LTAR as noted in Table 10-1, the designer shall use the more restrictive LTAR in determining the size of the soil treatment area.

2. Procedure for performing visual and tactile evaluations of soil in order to determine a long-term acceptance rate:

a. Evaluation of two (2) or more soil profile test pit excavations shall be performed to determine soil types, limiting layers, and best depth for the infiltrative surface. The total number of soil profile test pit

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excavations beyond the required two shall be based on the judgment of the competent technician.

b. At least one of the soil profile test pit excavations shall be performed in the portion of the soil treatment area anticipated to have the most limiting conditions.

c. The minimum depth of the soil profile test pit excavation shall be to any limiting layer, or four feet below the infiltrative surface of the in-situ soil, whichever is encountered first.

d. Layers and interfaces that interfere with the treatment and dispersal of effluent shall be noted. Thus, any limiting soil characteristic such as consistence also needs to be evaluated. The evaluation of consistence may also include an evaluation of excavation difficulty, rupture resistance, and/or penetration resistance.

e. The soil observations shall be conducted at or immediately adjacent to the location of the proposed soil treatment area, but if possible, not under the final location of a trench or bed.

f. Each soil profile test pit excavation observed at the proposed soil treatment area shall be evaluated under adequate light conditions with the soil in an unfrozen state.

g. The soil observation method shall allow observation of the different soil horizons that constitute the soil profile.

h. Soil profile test pit observations shall be conducted prior to percolation tests to determine whether the soils are suitable to warrant percolation tests and, if suitable, at what depth percolation tests shall be conducted.

i. The soil type at the proposed infiltrative surface of the soil treatment area or a more restrictive soil type within the treatment depth shall be used to determine the long-term acceptance rate from Table 10-1 or Table 10-1A. The treatment depth is two to four feet depending on the required thickness for the treatment level below the infiltrative surface from Item 4, Table 7-2.

j. Soils data, previously collected by others at the site may be used for the purposes of an OWTS design at the discretion of the Department. It is recommended that the data be verified, at a minimum, by performing an evaluation of a soil profile test pit excavation.

3. Soil descriptions for determination of a limiting layer shall include:

a. The depth of each soil horizon measured from the ground surface and a description of the soil texture, and structure of each soil horizon;

b. Depth to the bedrock;

c. Depth to the periodically saturated soil as determined by:

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(1) Redoximorphic features and other indicators of water levels, or

(2) Depth of standing water in the soil observation excavation, measured from the ground surface, if observed, unless redoximorphic features indicate a higher level.

4. Procedure for performing percolation tests:

a. The percolation testing shall be performed by a professional engineer or by a trained person under the supervision of a professional engineer or by a competent technician.

b. Number of test holes; Location

(1) Soil percolation tests shall be performed in at least three test holes in the area in which the soil treatment area is to be located, spaced evenly over the proposed area.

(2) If the likely depth of a proposed infiltrative surface is uncertain, percolation tests shall be performed at more than one depth to determine the depth of the infiltrative surface.

c. Dimensions

(1) The percolation test hole shall have a diameter of eight to 12 inches and be terminated a minimum of six inches and a maximum of 18 inches below the proposed infiltrative surface.

d. Change in Soil

(1) If a change of soil type, color or structure is present within those soils comprising the depth of soil below the infiltrative surface as required in Table 7-2 for vertical separation, a minimum of two soil percolation holes shall be terminated in the changed soil, and percolation tests shall be conducted in both holes.

e. Percolation Tests

(1) The percolation tests shall be conducted using the hole preparation, soil saturation and rate measurement procedures described below.

(2) Preparation of Percolation Test Holes:

(i) Excavate the hole to the depth and diameter required.

(ii) Carefully scrape the bottom and sides of the hole with a knife blade or sharp instrument to remove any smeared soil surfaces and provide a natural soil interface into which water may percolate.

(iii) Remove all loose soil from the hole.

(iv) Add two (2) inches of very coarse sand or fine gravel to protect the bottom of the hole from scouring and sediment.

(3) Presoak:

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(i) The hole shall be presoaked adequately to accomplish both saturation, which is filling the void spaces between the soil particles, and swelling, which is the intrusion of water into the individual soil particles.

(ii) To presoak the hole, carefully fill the hole with clean water to a minimum depth of 12 inches over the gravel placed in the bottom of the hole. In most soils, it is necessary to refill the hole by supplying a surplus reservoir of clean water, possibly by means of an automatic siphon, to maintain water in the hole for at least four hours and preferably overnight. Determine the percolation rate 24 hours after water is first added to the hole. This procedure is to ensure that the soil is given ample time to swell and to approach the condition it will be in during the wettest season of the year. In sandy soils containing five percent or less particles passing the #200 sieve, by weight, the swelling procedure is not essential and the test may be conducted after the water from one filling of the hole has completely seeped out of the hole.

(4) Percolation Rate Measurement

(i) With the exception of sandy soils containing five percent or less particles passing the #200 sieve, by weight, percolation rate measurements shall be made on the day following the presoak procedure.

(ii) If water remains in the percolation test hole after the swelling period, adjust the depth to approximately six inches above the gravel in the bottom of the hole. From a fixed reference point, measure the drop in water level over a 30 minute interval. The drops are used to calculate the percolation rate.

(iii) If no water remains in the hole after the swelling period, carefully add clean water to bring the depth of water in the hole to approximately six inches above the top of the gravel in the bottom of the hole. From a fixed reference point, measure the drop in water level at 30 minute intervals for four hours, refilling to six inches over the top of the gravel as necessary. The drop in water level that occurs during the final 30-minute period is used to calculate the percolation rate. If the water level drops during prior periods provide sufficient information, the procedure may be modified to suit local circumstances. The requirement to conduct a four hour test under this section is waived if three successive water-level drops do not vary by more than 1/16 inch; however, in no case shall a test under this section be less than two hours in duration.

(5) Sandy Soils

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(i) In sandy soils or other soils in which the first six inches of water seeps out of the hole in less than 30 minutes, after the 24 hour swelling period, the time interval between measurements shall be ten minutes and the test conducted for one hour. The drop that occurs during the final ten minutes shall be used to calculate the percolation rate.

(ii) If the soil is so sandy or coarse-textured that it will not retain any water, then the infiltration rate shall be recorded as less than one minute per inch.

(6) Percolation Rate Determination and Reporting

(i) The field percolation rate shall be the average rate of the percolation rates determined for all percolation test holes observed in the proposed soil treatment area in minutes per inch. The average percolation rate determined by the tests shall be used in determining the long-term acceptance rate for the proposed system from Table 10-1.

(ii) The technician performing the percolation tests shall furnish an accurate scale drawing, showing the location of the soil profile test pit excavations and/or percolation holes tied to lot corners or other permanent objects. The drawing shall meet the criteria in Section 5.E.1.g. The information in the subsections following Section 5.E.1.g.(1). through 5.E.1.g.(5) may be included but is not required for this drawing. All holes shall be clearly labeled to relate to the information provided for the profile test pits and percolation tests.

(7) Alternate Percolation Testing

(i) Alternate percolation test procedures may be approved, provided the test results of alternate procedures are substantially equivalent to those determined using the test procedures described in this section.

(ii) Prior approval from the Department of alternate percolation test procedures is required.

5. Marking of Soil Profile Test Pit Excavations or Percolation Holes

a. The engineer or technician conducting the soil profile test pit excavations or percolation tests shall, upon completion of the tests, flag or otherwise mark each excavation or hole to allow easy location by others. Soil profile test pit excavations and percolation holes shall remain open until after evaluation by the Department, if required. Excavations shall be suitably barricaded to prevent unauthorized access and to address safety concerns.

E. Report and Site Plan

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1. A written report shall describe the results of the preliminary investigation, reconnaissance, and detailed evaluations. The report may be in text and/or tabular form and shall include a drawing locating features relative to the proposed OWTS location and test locations. The report may be included as part of the OWTS design document. The report shall include, but is not limited to:

   a. Company name, address, telephone number, e-mail address, and name of individual, credentials and qualifications of the individual conducting the site evaluation;

   b. Preliminary and detailed evaluations, providing information from the surface site characteristics assessment and soils investigation;

   c. Dates of preliminary and detailed evaluations;

   d. A graphic soil log, to scale, indicating depth of the soil test pit excavation, soil description and classification, depth to any limiting layer encountered, type of equipment used to excavate the soil profile test pit and date of soils investigation.

   e. Setback distances to features listed in Table 7-1;

   f. Setback distances to features listed in Table 7-2, existing on the site or within applicable setback limits, whichever is greater;

   g. A drawing created to a scale that provides the complete property boundary lines. The minimum drawing size is 8.5-inches by 11-inches. If the property is too large to adequately indicate and label the profile test pits and percolation test holes, a detail of the portion of the site containing the soil profile test pits and percolation test holes shall be submitted. If the property is too large to adequately show site evaluation information, a detail drawing that includes the information required from the site and soil evaluation that will impact the location of the OWTS shall be submitted. Drawings shall indicate dimensions, have a north arrow and graphic scale and include:

      (1) Fixed, non-degradable temporary or permanent benchmark, horizontal and vertical reference points of the proposed soil treatment area; soil observations; percolation testing results and pertinent distances from the proposed OWTS to all required setbacks, lot improvements, easements; ordinary high water mark of a pond, creek, stream, lake, wetland or other surface waters, and detention or retention ponds; and property lines;

      (2) Contours or slope direction and percent slope;

      (3) The location of any visible or known unsuitable, disturbed or compacted soils;

      (4) The estimated depth of periodically saturated soils and bedrock, or flood elevation, if applicable; and

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(5) The proposed elevation of the infiltrative surface of the soil treatment area, from an established datum (either ground surface or a benchmark);

h. Anticipated construction-related issues, if applicable;

i. An assessment of how known or reasonably foreseeable land use changes are expected to affect the system performance, including, but not limited to, changes in drainage patterns, increased impervious surfaces and proximity of new water supply wells, if applicable; and

j. A narrative explaining difficulties encountered during the site evaluation, including but not limited to identifying and interpreting soil and landform features and how the difficulties were resolved, if applicable.

F. Design Document

1. The report and site plan may be attached to the design document or the report and site plan may be combined with the design information as a single document.

2. The design document shall include a brief description of the facility and its proposed use, basis and calculations of design flow, and influent strength.

3. The design document shall contain all plan details necessary for permitting, installation and maintenance, including:

a. Assumptions and calculations for each component, including total dynamic head (TDH) and gallons per minute (GPM) for all dosing systems;

b. A fixed, non-degradable temporary or permanent benchmark, (North America Vertical Datum or assumed elevation is acceptable);

c. A scale drawing showing location of each OWTS component and distances to water supplies, surface water, physical and health impact features on both the subject and adjacent properties requiring setbacks;

d. Layout of soil treatment area, dimensions of trenches or beds, distribution method and equipment, distribution boxes, drop boxes, valves, or other components used;

e. Elevation or depth of infiltrative surface of the soil treatment area, the septic tank invert, and all other components of the OWTS;

f. Special structural design considerations, as applicable to ensure the long-term integrity of each component;

g. References to design manuals or other technical materials used;

h. Installation procedures, as applicable;

i. Operation and maintenance manuals or instructions; and

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j. Other information that may be useful such as photos and cross-section drawings.

G. Site Protection

1. Prior to and during construction, the proposed soil treatment area and replacement area, if any, shall be protected from disturbance, compaction, or other damage by means of staking, fencing, posting, or other effective methods.

H. Qualifications for a Competent Technician

1. Percolation Tests

a. Competencies needed:

(1) Set up equipment;

(2) Perform and run percolation tests according to the procedure in this regulation; and

(3) Record results and calculate percolation rates.

b. The Department may approve training for percolation testing.

2. Visual and Tactile Evaluation of Soil

a. Competencies needed:

(1) Identify soil types by hand texturing and observation;

(2) Identify presence or absence of soil structure;

(3) Identify type and grade of soil structure;

(4) Recognize evidence of highest seasonal water surface;

(5) Identify layers and interfaces that will interfere with effluent movement;

(6) Determine the most promising depth for infiltrative surface of OWTS and for percolation tests, if used; and

(7) Understand basic principles of OWTS siting and design.

b. Possible demonstrations of competence in visual and tactile evaluation of soil:

(1) Degree in soil science, agronomy, geology, other majors if a course(s) in soil morphology was included; or

(2) Attendance at training or workshop for soil evaluation for OWTS including both class and field work.

(i) If the training or workshop includes an exam to verify acceptable completion of the course, a passing grade on the exam shall be attained.

c. The Division shall approve training for visual and tactile evaluation of soil.

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SECTION 6: WASTEWATER FLOW AND STRENGTH

A. Wastewater Flows

1. The Department may require the installation of a meter to measure flow into the facility or the OWTS.
2. One-Family Residential Homes:
   a. Design flow per person shall be 75 gallons per day (gpd).
   b. The Department may only increase the wastewater design flow per person to 100 gpd on a case by case basis, where justified.
   c. The minimum design flow for a new home shall be for a two-bedroom house unless otherwise noted in this regulation. The minimum design flow for the repair or replacement of an OWTS of an existing one-bedroom home shall be for one-bedroom unless bedrooms are added.
   d. For homes up to and including three bedrooms, the assumed number of persons per bedroom is two for design purposes.
   e. For homes with more than three bedrooms, the assumed number of persons is six persons (first three bedrooms x two persons per bedroom) plus one additional person for each bedroom more than three bedrooms.
   f. The Department may increase the number of persons per bedroom to two for all bedrooms for design purposes.
   g. Table 6-1 summarizes the design flows for one-family residential homes up to six bedrooms. The Department may adjust these values as described in Sections 6.A.2.b. and 6.A.2.f.
   h. If a new home has unfinished area, the Department may increase the number of bedrooms used for the design of the OWTS by one or two bedrooms based on an assumption that 150 square feet of unfinished space can be converted into a bedroom, if the space can meet the building code requirements for a bedroom.

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Table 6-1 Single-Family Residential Design Flows

# Bedrooms	Occupancy (# of persons)	Wastewater flow per person (gal/day)	Design flow (gal/day)
2	4	75	300
3	6	75	450
4	7	75	525
5	8	75	600
6	9	75	675

3. Auxiliary Buildings

   a. If a one-family home has an auxiliary building, such as a non-commercial shop with plumbing fixtures, the flow may be conveyed to the OWTS of the home, or to a separate OWTS constructed to handle the flow from the auxiliary facility.

   b. If the flow from the auxiliary building is only generated by residents of the home, it will be assumed that the OWTS for the home will be adequately sized to include the auxiliary building if the flows are combined.

   c. If the auxiliary building will have users in addition to residents and the flow from the auxiliary building will flow to the OWTS of the home, the design flow of the home shall include the increased use.

   d. If the auxiliary building has a separate OWTS, the facility shall be sized on the basis of Table 6-2 and a septic tank detention time of 48 hours.

4. Multi-Family and Commercial On-site Wastewater Treatment Systems

   a. Design flow values and strengths for multi-family and commercial systems shall be determined from:

      (1) Table 6-2; or

      (2) An analysis of flows and strengths from at least three comparable facilities or from the facility, if it is an existing facility, shall be submitted to the local public health agency for approval. The analysis shall include:

         (i) Metered water flows for inside use only for at least a year, or if use is seasonal, for a full season. If metered flows are less than full capacity, they shall be paired with actual use in units of persons present or meals served or other units as appropriate so that an actual daily rate per unit can be determined. The daily rate per unit times the number of units at full occupancy shall be the design flow.

         (ii) Total Suspended Solids and BOD_5 or $CBOD_5$ tests at times of full use. At least three samples taken at least one week apart

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are required. Sampling that provides equivalent and representative data through “composite sampling” may be allowed.

(iii) Explanation and justification for the comparability of the tested facilities with the proposed facility.

5. Flow Equalization

a. Flow equalization may be used if a facility has flows that vary from day to day by more than four times the average flow.

b. The highest peak assumed shall be at least equal to the full capacity of the facility.

c. The stored flow shall be distributed to the soil treatment area before the next greater-than-average peak.

d. Flow equalization may be used only if:

(1) The facility is non-residential;

(2) The facility is only used for one purpose;

(3) Flows will follow a predictable pattern; and

(4) There is a long-term expectation that size and pattern of the flows will remain the same.

e. Timed dosed pressure distribution or timed dosed NDDS shall be used. The soil treatment area reduction for pressure distribution (Table 10-2) shall not be used in addition to the flow equalization reduction.

f. Contingency plans shall be made for expanding the capacity of the OWTS in the event of changed use at the facility.

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TABLE 6-2: For Design Purposes, the Estimated Daily Wastewater Flow and BOD_5 Load Per Person Unless Otherwise Noted

Residential Wastewater	GPD	BOD_5 in lbs/day
One-family dwellings	75	0.20
Auxiliary structures, by fixture type:		
bath/shower	14.7	0.014
dishwasher	1.8	0.002
kitchen sink w/garbage grinder	5.8	0.052
laundry washer	19.5	0.037
lavatory	8.4	0.021
water closet (toilet)	24.8	0.029
hotels and motels (per room)	75	0.15
multiple-family dwellings or apartments	75	0.2
boarding and rooming houses (users absent during working hours)	50	0.15
tiny homes[3], per unit	150	0.40
mobile homes	75	0.20
mobile home park, per space	300	0.80
Commercial Wastewater	**GPD**	**BOD_5 in lbs/day**
Facilities w/short-term or transient visitors:		
airports or bus stations per passenger; fairgrounds per person attending; ball parks, race tracks, stadiums, theaters or auditoriums per seat, etc.	5	0.02
airport per employee	10	0.06
barber and beauty shops per chair	100	0.70[1]
bowling alleys per lane - toilet wastes only	5	0.03[1]
country club per member	30	0.02
country club per employee	20	0.06
dentist offices per non-wet chair	50	0.14[1]
doctor offices per doctor	250	0.80[1]
factories and plants exclusive of industrial wastewater per employee per eight-hour shift-no showers	20	0.05

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factories and plants exclusive of industrial wastewater per employee per eight-hour shift-showers provided	35	0.08
kennels per dog	30	0.20
laundries, self-service per commercial washer	400	0.75
office buildings per employee per eight-hour shift	15	0.06
service stations per toilet fixture	250	0.50[1]
stores and shopping centers per square foot of retail space	0.1	0.01[1]
work or construction camps semi-permanent with flush toilets	50	0.17
work or construction camps semi-permanent without flush toilets	35	0.02
Food Service Establishment	**GPD**	**BOD_5 in lbs/day**
restaurant open 1 or 2 meals per seat	50	0.06/meal
24-hour restaurant per seat	75	0.07/meal served
restaurant with paper service only per seat	25	0.01/meal served
additional for bars and cocktail lounges per seat	30	0.02
drive-in restaurant per car space	50	0.02
Institutional Wastewater without kitchens unless otherwise noted	**GPD**	**BOD_5 in lbs/day**
churches per seat; without any food service, or other uses	3.5	0.01
churches, per seat; warming kitchen only, no major food service	5	0.01
churches, per seat; with food service, per meal served[4]	4	0.02
hospitals per bed space	250	0.20
nursing homes; group homes for developmentally disabled, per bed space	125	0.20
schools, boarding per person	100	0.17

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schools, day without cafeteria, gym or showers	15	0.04
schools, day with cafeterias, no gym or showers	20	0.08
schools, day with cafeterias, gym and showers	25	0.10
schools, day additional for school workers	15	0.06
Recreational and Seasonal Wastewater Use	**GPD**	**BOD_5 in lbs/day**
camps, day, no meals served	15	0.12
luxury resort	125	0.17
resort night and day	50	0.12
Campground per campsite[2]	50	0.12
Public park flush toilet per fixture per hour when park is open	36	.04 lbs./ fixture
Public park urinal per fixture per hour when park is open	10	.01 lbs./fixture
Public park shower per fixture per hour when park is open	100	.10 lbs./ fixture
Public park faucet per fixture per hour when park is open	15	.04 lbs./ fixture
Swimming pools and bathhouses	10	0.06
Travel trailer parks with individual water and sewage hookup per unit[2]	100	0.24
Travel trailer park without individual water and sewage hookup per unit[2]	50	0.12

1 BOD levels need further verification depending on the specific use of the facility.

2 Laundry facilities are to be calculated on a per commercial washer basis in accordance with other elements of this table.

3 For the purposes of this Table, a "Tiny home" is a structure (a non-recreational vehicle) that has only one bedroom and has <400 sq.ft. of livable space, including lofts. In this instance, the OWTS may be sized for only one bedroom.

4 For churches with food service, the 4 gal/meal shall be added to the 3.5 gal/seat to determine projected design flows.

B. Wastewater Strength

1. Table 6-3 includes levels of treatment that can be achieved by various OWTS components, excluding the soil treatment area. Systems qualifying for these treatment levels except TL1 produced by a septic tank alone shall be approved under Section 13 of these *Regulations*. If soil treatment area or vertical separation distance reductions are permitted, the

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Department shall have a maintenance oversight program under Section 14.D. in place.

2. High strength waste shall be reduced to at least Treatment Level TL1 quality or lower before applying to a soil treatment area. Waste strength levels defined in Tables 6-3 and 6-4 shall be used to determine compliance.

Table 6-3: Treatment Levels

Treatment Level	BOD_5 (mg/L)	$CBOD_5$[1] (mg/L)	TSS (mg/L)	Total Nitrogen (mg/L)
TL1[2]	180	-	80	60-80
TL2	-	25	30	N/A[3]
TL2N	-	25	30	>50% reduction[4]
TL3	-	10	10	N/A[3]
TL3N	-	10	10	20

Shading indicates higher treatment levels.

1 Requirements for $CBOD_5$ are only related to effluent samples from a higher level treatment system.

2 Domestic septic tank effluent prior to soil treatment or higher level treatment has a wide range of concentrations. These values are typical, but values used for design shall account for site-specific information.

3 Total Nitrogen does not apply to Treatment Levels TL2 and TL3. Processes intended to reduce total nitrogen are addressed in Treatment Levels TL2N and TL3N. Any total nitrogen reductions that may be observed for TL2 and TL3 are as a result of the treatment process for BOD_5 and TSS reductions.

4 NSF/ANSI Standard 245 – Wastewater Treatment Systems – Nitrogen Reduction requires reduction of 50 percent rather than an absolute value.

Table 6-4: High Strength Wastewater*

	BOD_5 (mg/L)	TSS (mg/L)	Fats, Oils, Grease (FOG) (mg/L)
Septic Tank Influent	>300	>200	>50
Septic Tank Effluent	>180	>80	>25

* High strength effluent prior to a septic tank has a wide range of concentrations. These values are typical, but values used for design purposes shall account for site-specific information.

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SECTION 7: MINIMUM DISTANCES BETWEEN COMPONENTS OF AN OWTS AND PHYSICAL FEATURES

A. Setback distances from system components to physical features.

1. Horizontal distances from the various components of a system to pertinent terrain features, including streams, lakes, water courses, springs, wetlands, wells, subsurface drains, cisterns, water lines, suction lines, dry gulches, cut banks, dwellings, other occupied buildings and property lines, shall be in accordance with Table 7-1. The setback requirements are applicable for minimum system performance and treatment levels with specific modifications allowed for higher treatment levels as provided in Table 7-2. All distance setback modifications shall be analyzed and approved by the Department and be in complete compliance with the variance procedures of this regulations and those of the Board. Acceptable methods of analyzing horizontal separation distances with higher treatment levels include but are not limited to:
2. Analyzing the intended uses of impacted surface and/or ground waters;
3. Contacting adjacent property owners for potential conflicts with property line encroachments; and
4. Analyzing potential impacts that system locations may have on building foundations and other potentially affected features.

B. Reductions in separation distances with higher level treatment shall include provisions for operation and maintenance for the life of the system, as described in Section 14.D.

C. Dry Gulches, Cut Banks and Fill Areas

1. Separation distances to dry gulches, cut banks and fill areas in Table 7-1 shall apply unless the designer or design engineer determines by observation of the exposed slope of the dry gulch or cut bank or by soil profile test pit excavations that a limiting layer is present that will direct or allow the effluent from the soil treatment area to move laterally and surface. In this instance, a greater distance may be required.
2. A lesser distance may be used if it can be demonstrated by a professional engineer or professional geologist that the use of a barrier, such as a minimum 30 mil PVC liner placed between the soil treatment area and the slope of the dry gulch, cut bank or fill area will prevent effluent surfacing laterally.
3. The separation distance between a component and the crest of a dry gulch or cut bank will be evaluated for potential erosion or slope instability if the component and the slope are too close together. If there is potential for erosion or instability, the separation distance shall be increased until the risk is minimized.

D. Minimum distance requirements for components of an OWTS.

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1. Components of an OWTS listed in Table 7-1 shall be installed or located in accordance with the minimum distance requirements provided in the table.

E. Site evaluation, design, and treatment level considerations.

1. Table 7-2 provides the required site evaluation, design, and treatment level considerations necessary to evaluate the site and to design and locate the soil treatment area component of an OWTS.
2. Items 1, 2 and 3 in Table 7-2 address the allowable horizontal setback distance between the soil treatment area and the following physical features:
   a. Setback distance from soil treatment area to well(s);
   b. Setback distance from soil treatment area to water features; and
   c. Setback distance from soil treatment area to a dry gulch or cut bank.
3. Item 4 in Table 7-2 addresses the required vertical separation distance between the infiltrative surface of the soil treatment area and the limiting layer or the required depth of soil comprising the soil treatment area.
4. The designer may select the level of treatment from Table 7-2 to be applied to the soil treatment area that is necessary in order to accommodate the site conditions, if higher level treatment for that purpose is permitted by the Department.

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Table 7-1: Minimum Horizontal Distances in Feet Between Components of an OWTS and Water, Physical and Health Impact Features

	Spring, Well[1], Suction Line, Potable Water Supply Cistern[4]	Potable Water Supply Line[2]	Structure with basement, crawl space or footing drains	Structure without basement, crawl space or footing drains	Property Line, Piped or Lined Irrigation Ditch, upslope curtain drain	Subsurface Drain, Intermittent Irrigation Lateral, Drywell, Stormwater Structure	Lake, Water Course, Irrigation Ditch, Stream, Wetland	Dry Gulch, Cut Bank, Fill Area (from Crest)	Septic Tank, Higher level treatment Unit, Dosing Tank, Vault Privy
Septic Tank, Higher Level Treatment Unit, Dosing Tank, Vault Privy	50[2]	10[2]	5	5	10	10	100(state is 50)	10	--
Building Sewer or Effluent Lines	50[2]	5[6]	0	0	10[2]	10[2]	50[2]	10[2]	--
STA Trench or Bed, Un-lined Sand Filter, Sub-surface Dispersal System,	100[3]	25[2]	20	10	10	25	100[3](state is 50[3])	25	5
Lined Sand Filter	60	10[2]	15	10	10	10	100(state is 25)	10	5
Lined Evapotranspiration Field	60	10[2]	15	15	10	10	100(state is 25)	10	5
Unlined Sand Filter in Soil with a Percolation Rate Slower than 60 Minutes per Inch,	100	25[2]	15	15	10	25	100(state is 25)	15	10

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Unlined or Partially Lined Evapotranspiration System, System not relying on STA for Treatment other than Aerosol									
Pit Privy	100	50[2]	25	25	25	25	100	25	N/A
System not relying on STA for dispersal	100[3]	10[2]	125	125[5]	10	0	100(state is 25[3])	10	10

NOTE: The minimum distances shown above shall be maintained between the OWTS components and the features described. Where soil, geological or other conditions warrant, greater distances may be required by the local board of health or by the Water Quality Control Commission pursuant to C.R.S. §25-8-206 and applicable regulations. For repair or upgrading of existing OWTS where the size of lot precludes adherence to these distances, a repaired OWTS shall not be closer to setback features than the existing OWTS, as reviewed and approved by the Department. Components that are not watertight should not extend into areas of the root system of nearby trees.

1 Includes potable wells, irrigation wells and monitoring wells set within a potable aquifer and infiltration galleries permitted as wells by the Division of Water Resources.

2 Crossings or encroachments may be permitted at the points as noted above provided that the water or wastewater conveyance pipe is encased for the minimum setback distance on each side of the crossing. A length of pipe with a minimum Schedule 40 rating of sufficient diameter to easily slide over and completely encase the conveyance shall be used. Rigid end caps of at least Schedule 40 rating shall be glued or secured in a watertight fashion to the ends of the encasement pipe. A hole of sufficient size to accommodate the pipe shall be drilled in the lowest section of the rigid cap so that the conveyance pipe rests on the bottom of the encasement pipe. The area in which the pipe passes through the end caps shall be sealed with an approved underground sealant compatible with the piping used. Other methods of encasement that provide equal protection are allowed. These methods shall be reviewed and approved by the local public health agency.

3 Add eight feet additional distance for each 100 gallons per day of design flows between 1,000 and 2,000 gallons per day, unless it can be demonstrated by a professional engineer or geologist by a hydrologic analysis or the use of a barrier, consisting of a minimum 30 mil PVC liner or equivalent, that contamination will be minimized. Flows greater than 2,000 gallons per day shall be hydrologically analyzed for flow, velocity, hydraulic head, and other pertinent characteristics as means of estimating distances required to minimize contamination as part of the Division site application and permitting process.

4 All horizontal setbacks to a potable water supply cistern shall be met unless a variance by the Board of Examiners of Water Well Construction and Pump Installation Contractors is granted per section 18.2 of the Water Well Construction Rules, 2 CCR 402-2. Setback requirements which may necessitate a variance are found within section.10.2 or 11.4 of the Water Well Construction Rules, as applicable. The minimum horizontal setback that may be granted through a variance is to 25 feet.

5 If the structure is not used as a habitable unit, the isolation may be reduced by the local board of health to no less than 50 feet.

6. Building sewer installations shall meet the design requirements of the Colorado Plumbing Code.

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Table 7-2 On-site Wastewater Treatment System Design Consideration and Treatment Requirements – Separation Distances from Soil Treatment Area

			Pressure Dosing Required		
Item #	OWTS Design Consideration	Treatment Levels 1 & 2	Treatment Level 2N	Treatment Level 3	Treatment Level 3N
Horizontal Separation Distances					
1	Distance from soil treatment area to well(s)	≥100 feet	≥100 feet	≥100 feet	≥100 feet[1]
2	Distance from soil treatment area to pond creek, lake, or other surface water feature	≥100 feet (state is 50)	≥100 feet (state is 25)	≥100 feet (state is 25)	≥100 feet (state is 25)
3	Distance from soil treatment area to dry gulch or cut bank	≥25 feet	≥25 feet (state is 10)	≥25 feet (state is 10)	≥25 feet (state is 10)
Vertical Separation Distances					
4	Treatment depth in feet from infiltrative surface to a limiting layer	4 feet (3 feet with pressure dosing)	≥3 feet (state is 2.5 feet)	≥3 feet (state is 2.5 feet)	≥3 feet (state is 2 feet)

NOTE: Treatment levels are defined in Table 6-3. Reductions in separation distances with higher level treatment may be granted only under the operation and maintenance program of Section 14.D.

1 All setback distance reductions to the 100 foot requirement for wells and soil treatment areas shall be in full compliance with the minimum standards and variance requirements of the State of Colorado Division of Water Resources: Rules and Regulations for Water Well Construction, Pump Installation, Cistern Installation, and Monitoring and Observation Hole/Well Construction.

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SECTION 8: DESIGN CRITERIA - GENERAL

A. OWTS general design requirements.

1. The OWTS for one-family homes shall be designed to accommodate the proposed flows from the structure as defined in Section 6.A.2. Flow estimates for multi-family or commercial OWTS shall comply with Section 6.A.4. Expected waste strength as noted in Table 6-3 and Table 6-4 shall also be addressed, where applicable. Installation of low flow fixtures or the separation of toilet waste or other sources of wastewater does not allow for the reduction in the size of an OWTS.

B. OWTS general treatment level requirement.

1. OWTS shall be designed and constructed to achieve the treatment level specified by the design.

C. OWTS general requirement for construction.

1. OWTS shall be designed and constructed such that each component shall function, when installed and operated, in a manner not adversely affected by normal operating conditions including erosion, corrosion, vibration, shock, climatic conditions, and usual household chemicals. Each component shall be free of non-functional protrusions or sharp edges, or other hazards, which could cause injury to persons, animals, or properties. Design shall be such as to exclude flies and rodents and other vectors and to prevent the creation of nuisances and public health hazards and shall provide for efficient operation and maintenance.

D. Accessibility for Inspection, Maintenance, and Servicing

1. Septic tanks shall have watertight risers over each access manhole and all risers shall extend to or above final grade.
2. For new construction, the top of any septic tank, dosing tank or vault shall be no deeper than four feet below finished grade.
3. Each treatment component of an OWTS other than the septic tank and soil treatment area shall be equipped with access manholes with risers that extend to or above final grade, located to permit periodic physical inspection, collection and testing of samples and maintenance of all components and compartments.
4. Each riser lid shall be watertight, brought to or above the surface, and shall have a secure closing mechanism, such as a lock, special headed bolts or screws, or sufficient weight (defined as 59 pounds) to prevent unauthorized access.
5. Components that require access for maintenance shall include but not be limited to submerged bearings, moving parts, pumps, siphons, valves, tubes, intakes, slots, distribution boxes, drop boxes, cleanouts, effluent screens, filters, inlet and outlet baffles, aerators, treatment equipment and other devices.

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6. Components shall be designed and constructed so that, when installed, they shall be easily maintained, sampled, and serviced according to the manufacturer's recommendations. Easy physical access to treatment components by maintenance personnel and equipment shall be provided.

E. Plumbing Codes.

1. Plumbing fixtures, building sewers, vents, sewer lines and other appurtenances shall be designed, operated and maintained so as to comply with the minimum requirements of the Colorado Plumbing Code (3 CCR 720-1).

F. Electrical components.

1. All electrical work, equipment, and material shall comply with the requirements of the currently applicable National Electrical Code as designated by the State Electrical Board Rules and Regulations (3 CCR 710-1).
2. Electrical components shall be protected from moisture and corrosive gases.

G. Indicators of Failure or Malfunctioning for Systems Utilizing Mechanical Apparatus.

1. A signal device shall be installed which shall provide a recognizable indication or warning to the user that the system or component is not operating as intended. This indication or warning shall be a visual signal and an audible signal, and be located in a centralized area within visual and audible range of the system user. A signal or message may also be sent remotely to a maintenance provider.

H. Sampling Access

1. If sampling for testing or as a requirement for a permit will be required of effluent from a component other than the soil treatment area, an accessible sampling point shall be provided.
2. If sampling of the treated wastewater from the soil treatment area will be required for testing or as a requirement for a permit, a monitoring well or wells shall be constructed. Monitoring wells shall be located down gradient from the soil treatment area, accessible, and provided with a properly securable cover at or above the ground surface. Monitoring wells up gradient of the system may also be required. Lysimeters or other collection devices under the soil treatment area may be used instead of a monitoring well if approved by the Department.

I. Component Operating Instruction

1. The manufacturer of proprietary treatment units utilizing mechanical components shall provide clear, concise written instructions covering the components which, when followed, shall assure proper installation and safe and satisfactory operation and maintenance.

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2. If the OWTS uses public domain technology, the design engineer shall provide clear, concise written instructions covering the components which, when followed, shall assure proper installation and safe and satisfactory operation and maintenance.

J. Surface Activity limitations.

1. Activity or use on the surface of the ground over any part of the OWTS shall be restricted. The soil treatment area shall not be subject to damage or soil compaction from livestock, vehicular traffic, recreational use, or other site development activity. Construction equipment not necessary to install the OWTS shall be kept off of the soil treatment area to prevent undesirable compaction of the soils. If compaction occurs, the disturbed or compacted soil shall be re-evaluated and/or new soil evaluations performed. The system shall be redesigned if the soil permeability have changed.

K. Floodplains

1. A new, expanded or repair/replacement OWTS installed in a 100-year floodplain shall meet or exceed all the requirements of the Federal Emergency Management Agency, the National Flood Insurance Program as it may be amended, and the *Gunnison County Land Use Resolution*, Section 11-103: *Development in Areas Subject to Flood Hazards*, as it may be amended. Repairs of an existing system shall meet the requirements as feasible. The system shall be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from the system into the floodwaters. The OWTS shall be located to avoid impairment to floodwaters or contamination from them during flooding.

2. No new OWTS or new component or extension of an existing system shall be installed, extended or repaired, or relocated, wholly or partially, in a floodway. For any system repair that may affect the floodway delineation, appropriate procedures shall be followed including revision of the floodway designation, if necessary.

L. Business Commercial, Industrial, Institutional or Multi-Family Dwelling Wastewater Systems

1. An OWTS that will serve a business, commercial, industrial or institutional property, or a multifamily dwelling shall:

   a. Be designed by a professional engineer;

   b. Receive only such biodegradable wastes for treatment and distribution as are compatible with those biological treatment processes as occur within the septic tank, any additional treatment unit and the soil treatment area; and

   c. Receive authorization by rule or a class V underground injection permit from the United States Environmental Protection Agency (EPA) before an application for an OWTS permit is approved if the system may

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receive non-residential wastewater or is otherwise covered by the EPA underground injection control program. Subsequent to acceptance by the EPA, the Department may choose to also issue a permit for this type of use.

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SECTION 9: DESIGN CRITERIA - COMPONENTS

A. Tanks and Vaults

1. Watertightness

   a. Septic tanks, vaults, dosing tanks, other treatment components, risers and lids shall not allow infiltration of ground water or surface water and shall not allow the release of wastewater or liquids through other than designed openings.

   b. When the final compartment of a tank is being proposed for use as a pump or siphon chamber, the wall between this chamber and the previous chamber shall be watertight except for the intended hydraulic opening.

   c. Acceptable watertightness testing methods performed at a manufacturer's site or in the field include water filling the tank or vacuum testing.

2. Tank Anchoring: In locations where ground water or floodwaters may cause instability problems to the septic tank, vault, or other treatment unit in the OWTS due to flotation, the tank, vault or unit shall be anchored in a manner sufficient to provide stability when the tank is empty. Risers shall be included in the buoyancy calculations.

   a. If a manufacturer provides recommendations for anchoring designs, they may be used if they meet the conditions present at the site.

   b. If a manufacturer does not provide recommendations for provisions to compensate for buoyancy, or if the professional engineer chooses to provide his/her own designs, the anchoring system design shall be prepared by the professional engineer.

3. Identification and Data Marking: All tanks and treatment units shall be permanently and legibly marked in a location for the purpose of inspection that is readily visible when inspected before backfilling. The marking inscription shall include the following:

   a. Name of manufacturer;

   b. Model or serial number, if available;

   c. Effective volume and unit of measure;

   d. Maximum depth of earth cover and external loads the tanks is designed to resist; and

   e. Inlet and outlet identifications, if relevant.

B. Septic Tanks

1. The manufacturer shall provide sufficient information to demonstrate that the tank will meet the design specification.

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2. Sizing Requirements:

   a. Sizing for residential capacity for new installations shall be based upon the number of bedrooms according to Table 9-1.

Table 9-1 Minimum Septic Tank Size Based on Number of Bedrooms

# Bedrooms	Tank Capacity (gallons)
2 or 3	1,000
4	1,250
each additional	250

   b. For multi-family and non-residential applications, a septic tank shall be sized to permit detention of incoming wastewater design flows for a minimum of 48 hours.

   c. For systems that remove toilet waste for separate treatment, tank capacity may be less than 1,000 gallons, if it provides a minimum of 48 hours detention time.

   d. Minimum tank size for new installations other than for a one-family residence is 400 gallons.

3. Inspection and Testing of Septic Tank Watertightness

   a. Testing of septic tanks shall be performed and evaluated as specified in section 9 of ASTM C1227-13 (Standard Specification for Precast Septic Tanks) for concrete tanks or in Standard IAPMO/ANSI Z1000-2013 (American Standards for Prefabricated Septic Tanks) for other prefabricated septic tanks.

   b. Each unit shall be inspected in the field for conditions that may compromise its watertightness.

   c. The inspection in the field shall be conducted by the Department and be performed after the tank installation but before backfilling.

   d. If the inspection in the field indicates that the tank may be damaged or is not watertight, the inspector may require that the tank be tested for watertightness by the tank manufacturer or the system contractor.

4. Septic Tank Design and Dimension Criteria

   a. A septic tank shall have two or more compartments or more than one tank may be used in series. The first compartment of a two-compartment tank or the first tank in a series shall hold no less than one-half of the required effective volume.

   b. Inlet invert shall be at least two inches higher than the outlet invert.

   c. Inlet tee or baffle shall extend above the surface of the liquid at least five inches and shall extend a minimum of eight inches below the liquid surface. However the inlet tee or baffle shall not extend to a depth of more than 40 percent of the liquid depth measured from the liquid surface.

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d. Outlet tee or baffle shall extend at least 5 inches above and 14 inches below the outlet invert, however it shall not extend to more than 40 percent of the liquid depth measured from the liquid surface. The outlet tee or baffle that accommodates an effluent screen shall be located so that the effluent screen has sufficient clearance to be removed through the access opening with a riser in place.

e. The distance from the outlet invert to the underside of the tank top shall be at least ten inches.

f. Liquid depth shall be a minimum of 30 inches and the maximum depth shall not exceed the tank length.

g. The transfer of liquid from the first compartment to the second or successive compartment shall be made at a liquid depth of between 35 and 40 percent of the liquid depth measured from the liquid surface.

h. At least one access opening no less than 20 inches across shall be provided in each compartment of a septic tank.

i. A septic tank shall have a minimum of 25 square feet of liquid surface area and have at least a six-foot separation between inlets and outlets. Septic tanks in series, combined, shall have a minimum of 25 square feet of liquid surface area and the sum of the distances between inlets and outlets of all tanks shall be at least six feet. The requirements for liquid surface area and separation between inlet and outlet may be waived for tanks with less than 750 gallon effective volume.

5. Concrete Septic Tank Structural Design

a. Concrete septic tanks shall comply with the structural design criteria of ASTM C1227-13 (Standard Specification for Precast Septic Tanks).

b. The design for each tank model and size by each manufacturer shall be certified by a professional engineer as complying with these design and structural requirements and the watertightness standard of this regulation.

c. Certification by a professional engineer shall be submitted to the Division for acceptance.

d. Tank slab lids, mid-seam tanks, and the connections between the tank and risers shall be designed to provide for a watertight seal.

6. Fiberglass, Fiberglass-Reinforced Polyester, and Plastic Tanks

a. All fiberglass, fiberglass-reinforced polyester, and plastic tanks shall meet the minimum design and structural criteria of IAPMO/ANSI Z1000-2013 (American Standards for Prefabricated Septic Tanks) and be certified by a professional engineer as meeting these standards. The professional engineer certifying the criteria shall be registered or licensed in the United States, but need not be registered in Colorado.

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b. All tanks shall be sold and delivered by the manufacturer or manufacturer's designated representative, preferably completely assembled. On-site tank assembly will be allowed on an as-needed basis.

c. Tanks shall be structurally sound and support external forces as specified in the standard referenced above when empty and internal forces when full. Tanks shall not deform or creep resulting in deflection of more than five percent in shape as a result of loads imposed.

d. All tanks shall be constructed of sound, durable materials and not be subject to excessive corrosion, decay, frost damage, or cracking.

e. All seams or connections including to risers shall be sealed to be watertight.

7. Metal tanks are prohibited.

C. Abandonment of Tank

1. A tank may be completely removed and the parts disposed of safely.
2. If the tank will remain in place:

a. The tank shall be pumped to remove as much waste as possible;

b. The bottom of the tank shall be broken so the tank neither floats nor fills with water;

c. The top shall be collapsed and the sides may be broken into the void;

d. The remaining void shall be filled with gravel, sand or compacted soil; and

e. The filled excavation will be graded to surroundings, allowing for settling.

3. The Department may require abandonment of a tank that is deemed to be a hazard.

D. Pipe Standards and Bedding Requirements:

1. Pipe Standards

a. All wastewater pipes used in portions of an OWTS that are pressurized shall be constructed of compatible pipe, primer, bonding agent, and fittings. Flexible couplings to connect pipes may only be used in portions of an OWTS that are intended for gravity flow of the wastewater.

b. Where unperforated plastic pipe and fittings are used for gravity flow, the minimum wall thickness of the pipe shall conform to ASTM Standard D 3034 or equivalent or greater strength. Schedule 40 pipe is preferred.

c. Perforated distribution pipe surrounded by rock within a soil treatment area shall have a minimum wall thickness and perforations conforming

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to ASTM Standard D 2729 or equivalent or greater strength. Corrugated polyethylene pipe with smooth interior that meets ASTM F405 or AASHTO M252 specifications or equivalent may be used.

d. Schedule 40 or pipe of equivalent or greater strength shall be used for the placement of piping under driveways or roadways and in instances where sewer line setback distances are granted a variance for any reason.

e. Tile pipe, open-joint pipe, and cast iron pipe shall not be used in an OWTS.

f. Pressure pipe shall be rated for the intended use to accommodate pump discharge pressure.

2. Bedding.

a. All system piping, except for distribution laterals within the soil treatment area, shall be bedded with select material before final inspection by the local public health agency. Select bedding material shall consist of loose, granular material, free from stones, clods, frozen soil, or other deleterious material. Select material may consist of on-site job-excavated or imported material. Bedding material shall be mechanically compacted to support piping.

E. Cleanouts required between the building and the septic tank:

1. Cleanouts shall have a secure cap and a riser extending to or easily accessible from grade. The installation of a straight tee or sanitary tee is acceptable.

2. Cleanouts shall be provided within five (5) feet of the outside of the building.

3. Where a sewer has a change of horizontal direction greater than 45 degrees, a cleanout shall be installed at the change of direction unless a cleanout already exists within 40 feet upstream of this fitting. Where more than one change of direction greater than 45 degrees occurs within 40 feet of a developed length of piping, the cleanout for the first change of direction may serve as the cleanout for all changes within that 40 feet of developed length of pipe.

4. Cleanouts shall be provided at intervals within the building sewer from the structure to the tank of not more than 100 feet. The effluent pipe between the septic tank and soil treatment area is exempt from this requirement.

F. Distribution Box.

1. A distribution box, if used, shall be of sufficient size to distribute effluent equally to the laterals of a trench or absorption bed system. The box shall be constructed with the inlet invert at least one inch above the level of the outlet inverts. Flow equalizers or similar devices shall be used to adjust the flow between laterals. Access to the box shall be provided with a

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manhole riser with access lid at or above grade if the top of the box does not reach final grade.

G. Drop Box.

1. In sequential or serial distribution, a watertight box may be used to transfer the effluent to the following trench when the effluent in a trench has received the designed level for overflow to the next trench. A drop box shall have a riser at or above final grade, if the top of the drop box does not reach final grade. Outlet pipes in sequential distribution shall be designed and installed so that they may be capped off for resting periods.

H. Stepdown/Relief Pipe.

1. In sequential or serial distribution, an unperforated pipe may be used to transfer the effluent to the following trench when the effluent in a trench has received the designed level for overflow from that trench.

I. Wastewater Pumping and Dosing Siphon Systems:

1. Pumps
   a. Non-clog pump opening shall have at least two-inch diameter solids handling capacity where raw wastewater is pumped. A pump opening shall not have more than 3/4-inch diameter solids handling capacity if previously settled effluent is pumped.
   b. Pumps shall be certified to the applicable UL or CSA electrical safety standard, bear the seal of approval of CSA, UL or an equivalent testing program and be constructed of corrosion resistant materials.
   c. Grinder pumps shall also be certified to NSF/ANSI Standard 46 and bear the seal of approval of the NSF or equivalent testing and certification program.
2. Floats and Switches
   a. Automatic liquid level controls shall be provided to start and shut off pumps at a frequency or level specified in the design.
   b. Floats shall be mounted on a stem separate from the pump discharge piping to allow for removal, adjustment, and replacement of the float from grade without removing the pump.
   c. Float switches shall be certified to the applicable UL or CSA electrical safety standard, bear the seal of approval of CSA, UL or an equivalent certification program and be constructed of corrosion resistant materials.
   d. Dosing siphons for pressure dosing and higher level treatment systems shall provide for a means of determining the number of dosing events.
3. Location of Pump or Siphon

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a. A pump or a siphon may be installed in a separate tank following the septic tank. The tank shall be of sufficient volume to allow pump or siphon cycling commensurate with the design capacity.

b. The second compartment of a two-compartment septic tank may only be used as the pump tank when the tank is specifically designed for this purpose and it can be demonstrated to the satisfaction of the local public health agency that the minimum 48-hour detention time will not be decreased. The pump shall be screened or provided with an approved filtering device to assure that only liquid effluent will be discharged. The transfer of liquid from the first to the second compartment shall be at an elevation that is between the inlet and outlet invert elevations, and through a standard tee designed and located as per the requirements of Section 9.B.4.d. Siphons shall not be installed in the second compartment of a two compartment tank.

c. The use of a three-compartment septic tank, sized to provide the required effective volume in the first two compartments with the pump or siphon in the third compartment is acceptable for tanks specifically designed for this purpose. The transfer of liquid from the second to the third compartment shall be at an elevation that is between the inlet and outlet invert elevation, and through a standard tee designed and located as per the requirements of Section 9.B.4.d.

4. Pump or Siphon Discharge Piping

a. The discharge pipe from the pumping or siphon chamber shall be protected from freezing by burying the pipe below frost level or sloping the pipe to allow it to be self-draining. Drainage shall be provided through the bottom of the pump or through a weep hole located in the discharge pipe prior to exiting the tank.

b. The pump discharge piping shall have a quick disconnect that is accessible from grade to allow for easy pump access and removal.

c. The pipe shall be sized to maintain a velocity of two or more feet per second.

d. Pressure pipes shall be designed to prevent air or vacuum locking and allow self-draining of the pipes.

5. Access

a. The pump or dosing system tank, chamber, or compartment shall have a minimum 24-inch diameter access riser, made of corrosion-resistant material, extending to or above ground level. A smaller diameter riser may only be installed if it is accepted by the Division as an integral component of a specific product during the product review process.

b. The access riser shall have a watertight connection to the pump or dosing chamber/compartment to prevent infiltration or exfiltration. All

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other intrusions to the riser for electrical or other component access shall also be watertight.

6. Splice Box

   a. Splice boxes shall be located outside the pump system access riser and be accessible from the ground surface.

   b. Wire splices are prohibited inside the tank, dosing chamber or riser. Wire splicing shall be completed with corrosion-resistant, watertight connectors.

7. Controls

   a. Control panels or other electrical boxes used to control the functions of an OWTS shall comply with the following, as appropriate:

      (1) The pump system shall have an audible and visual alarm notification in the event an excessively high water condition occurs.

      (2) The pump shall be connected to a control breaker separate from the alarm breaker and from any other control system circuits.

      (3) An electrical disconnect shall be provided within the line of sight of the pump chamber.

      (4) The pump system shall be provided with a means that will allow the pump to be manually operated; such as an H.O.A. switch (Hand/Off/Auto).

      (5) The pump system for pressure dosing and higher level treatment systems shall have a mechanism for tracking both the amount of time the pump runs and the number of cycles the pump operates.

      (6) Shall bear the seal of a Nationally Recognized Testing Laboratory (NRTL), such as UL or ETL.

J. Effluent Screens:

1. Effluent screens shall be installed in all septic tanks in new installations and repairs where the septic tank is replaced.

2. If a pump or dosing siphon is used to remove septic tank effluent from the final compartment of the septic tank, the effluent shall be filtered prior to dispersal into the soil treatment area. An effluent screen, pump vault equipped with a filter cartridge, or a filter on the discharge pipe, would all be considered acceptable.

3. The effluent screen shall be cleaned at manufacturer-recommended intervals, or more often, if use patterns indicate.

4. An alarm may be installed on an effluent screen indicating need for maintenance.

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5. Where an ejector pump, grinder pump or non-clog pump is proposed for use prior to the septic tank, an effluent screen shall be installed on the outlet of the septic tank.
6. The handle of the effluent screen shall extend to within 12 inches of grade.

K. Grease Interceptor Tanks:

1. All commercial food service facilities and other facilities generating fats, oils and greases in their waste shall install a grease interceptor tank.
2. Grease interceptor tanks shall treat only those portions of the total wastewater flow in which grease and oils are generated.
3. The grease interceptor shall have a minimum of two compartments and shall be sized proportionate to the amount of fats, oils and grease it receives, the peak flow rate through the tank, and the expected cleaning frequency.
4. The inlet and outlet tees or baffles shall extend into the bottom 1/3 of the liquid volume, but shall be at least 12 inches off the inside floor of the interceptor.
5. The inlet and outlet tees or baffles shall extend at least 5 inches above the liquid level and shall provide for a free vent area across the liquid surface.

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SECTION 10: DESIGN CRITERIA – SOIL TREATMENT AREA

A. OWTS sizing and design.

1. The size and design of the soil treatment area shall be based on the results of the site and soil evaluation, design criteria, and construction standards for the proposed site and OWTS selected.

B. When an engineer is required.

1. At proposed soil treatment area locations where any of the following conditions are present, the system shall be designed by a professional engineer and approved by the Department:

   a. For soil types 3A, 4, 4A, 5, R-0, R-1 and R-2, and Treatment Levels TL2, TL2N, TL3, and TL3N as specified in Tables 10-1 and 10-1A of this regulation;

   b. The maximum seasonal level of the ground water surface is less than four feet below the bottom of the proposed infiltrative surface;

   c. A limiting layer exists less than four feet below the bottom of the proposed infiltrative surface;

   d. The ground slope is in excess of thirty percent; or

   e. Pressure distribution is used.

C. Calculation of Infiltrative Surface of Soil Treatment Area:

1. The infiltrative surface of a trench or bed receiving any treatment level of effluent is only the bottom area. No sidewall credit is allowed except in deep gravel trenches that are permissible in repairs.

2. Long-term acceptance rates (LTARs) are shown in Tables 10-1 and 10-1A.

3. Factors for adjusting the size of the soil treatment area are in Tables 10-2 and 10-3.

4. The required area for a soil treatment area is determined by the following formula:

Soil Treatment Area (min. in sf) = Design Flow (gal/day) ÷ LTAR (gal/day/sf)

   a. Adjusted Soil Treatment Area equals the Required Soil Treatment Area multiplied by Size Adjustment Factor(s).

   b. Size adjustment factors for methods of application are in Table 10-2.

   c. Size adjustment factors for types of distribution media are in Table 10-3.

   d. A required soil treatment area receiving TL1 effluent may be multiplied by one size adjustment factor from Table 10-2, Table 10-3, or both.

   e. A soil treatment area receiving TL2, TL2N, TL3, or TL3N effluent shall be pressure dosed.

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(1) For products that combine distribution and higher level treatment within the same component, pressure distribution of the effluent over the soil treatment area shall be used.

(2) TL2 – TL3N effluent may be applied by gravity flow in soil types 3, 3A, 4, 4A, or 5 for designs where reductions in the soil treatment area size or vertical/horizontal separation reductions are not being requested.

f. The distribution media in Table 10-3 may be used for distribution of higher level treatment system effluent, but an additional reduction factor from Table 10-3 shall not be used. Sizing reductions for higher level treatment systems are achieved through increased LTAR's provided in Table 10-1.

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Table 10-1: Soil Treatment Area Long-term Acceptance Rates by Soil Texture, Soil Structure, Percolation Rate and Treatment Level

Soil Type, Texture, Structure and Percolation Rate Range					Long-term Acceptance Rate (LTAR)-gallons per day per square foot				
Soil Type	USDA Soil Texture	USDA Soil Structure-Type	USDA Soil Structure-Grade	Percolation Rate (MPI)	Treatment Level 1[1]	Treatment Level 2[1]	Treatment Level 2N[1]	Treatment Level 3[1]	Treatment Level 3N[1*]
R	>35% Rock (>2mm): See Table 10-1A					>35% Rock (>2mm): See Table 10-1A			
1	Sandy, loamy sand	Single grain	0 (structureless)	5-15	0.8	1.4	1.4	1.55	1.55
2	Sandy loam, loam, silt loam	PR(prismatic) BK (blocky) GR (granular)	2 (moderate) 3 (strong)	16-25	0.60	1.0	1.0	1.1	1.1
2A	Sandy loam, loam, silt loam	PR, BK, GR massive	1(weak) 0(structureless)	26-40	0.5	0.80	0.80	0.90	0.90
3	Sandy clay loam, clay loam, silty clay loam	PR, BK, GR	2, 3	41-60	0.35	0.55	0.55	0.65	0.65
3A	Sandy clay loam, clay loam, silty clay loam	PR, BK, GR Massive	1 0 (structureless)	61-75	0.30	0.45	0.45	0.55	0.55
4	Sandy clay, clay, silty clay	PR, BK, GR	2, 3	76-90	0.20	0.30	0.30	0.30	0.30
4A	Sandy clay, clay, silty clay	PR, BK, GR massive	1 0 (Structureless)	91-120	0.15	0.20	0.20	0.20	0.20
5	Soil types 2-4A	platy	1, 2, 3	121+	0.10	0.15	0.15	0.15	0.15

NOTE: Shaded areas require system design by a professional engineer.
1 Treatment levels are defined in Table 6-3.
* Higher long-term acceptance rates for Treatment Level 3N may be allowed for OWTS required to have a discharge permit, if the capability of the design to achieve a higher long-term acceptance rate can be substantiated.

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Table 10-1A: Design Criteria for Soils with High Rock Content (Type "R" Soils) [1,2,3,4]

Soil Type, Percentage of Rock, LTAR, Distribution				Required sand or media depth relative to the quality of effluent applied to the distribution system				
Soil type	Percentage and size of rock[5]	Maximum LTAR (gal/sf/day)	Type of distribution required	Treatment level 1[6]	Treatment level 2	Treatment level 2N	Treatment level 3	Treatment level 3N
R-0	Soil type [7] 1 w/>35% rock (>2mm)	Unlined sand filter: 1.0 for "preferred sand media", 0.8 for "secondary sand media"	Pressure distribution[8]	Minimum 3-foot deep unlined sand filter	Minimum 3-foot deep unlined sand filter	Minimum 2.5-foot deep unlined sand filter	Minimum 2.5-foot deep unlined sand filter	Minimum 2-foot deep unlined sand filter
R-1; option 1	Soil type[7] 2-5, >35-65% rock (>2mm); w/≥50% of the rock <20mm (3/4")	Use TL1 LTAR from table 10-1 for the soil type corresponding to the soil matrix, w/ a max LTAR of 0.80	Pressure distribution[8]	Minimum 2-foot deep unlined sand filter	Minimum 1-foot deep unlined sand filter	Minimum 1-foot deep unlined sand filter	Sand media not required	Sand media not required
R-1; option 2	Soil type[7] 2 & 2A, >35-65% rock (>2mm), w/≥50% of the rock <20mm (3/4")	The allowable LTAR's are defined in each individual treatment level column in this Table	Pressure distribution[8]	remove, mix, replace 4 feet of existing material; w/a max LTAR of 0.60	remove, mix, replace 2 feet of existing material; w/a max LTAR of 0.70	remove, mix, replace 2 feet of existing material; w/a max LTAR of 0.70	remove, mix, replace 2 feet of existing material; w/a max LTAR of 0.80	remove, mix, replace 2 feet of existing material; w/a max LTAR of 0.80
R-2	Soil type[7] 2-5, >65% rock (>2mm), OR ≥50% of rock >20mm (3/4")	Use TL1 LTAR from Table 10-1 for the soil type corresponding to the soil matrix, with a max LTAR of 0.80	Timed pressure distribution[8]	Minimum 3-foot deep unlined sand filter	Minimum 3-foot deep unlined sand filter	Minimum 2.5-foot deep unlined sand filter	Minimum 2.5-foot deep unlined sand filter	Minimum 2-foot deep unlined sand filter

1. General guidance for Table 10-1A: The intent of the soil type R-0 is to define a material that consists of a high percentage of rock, or rock fragments, and has a percolation rate of less than 5 mpi. Soil types R-1 and R-2 consist of a high percentage of rock or rock fragments, but have a percolation rate of greater than 5 mpi. Soil types R-0 and R-2 are considered to be a "limiting layer".
2. No sizing adjustments are allowed for systems placed in type "R" soils. The maximum LTAR's are provided in this table
3. The design of type "R" soil treatment systems shall conform to Sections 11.C.2 and 11.C.3.
4. All systems installed in a type "R" soil shall be designed by a professional engineer.
5. The percentage of rock may be determined by a gradation conducted per ASTM standards, or an appropriate field evaluation by volume.
6. Type "R" soil treatment systems that are designed per the criteria noted in the Treatment Level 1 column of this table do not require O/M oversight by the Department.
7. The "Percentage and Size of Rock" column references the soil types noted in Table 10-1.
8. Design of the pressure distribution system for type "R" soils shall comply with the requirements of Sections 11.C.2.b, c, e, f, g, h and i.

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D. Allowable Soil Treatment Area Sizing Adjustments:

1. The soil treatment area size determined by dividing the design flow rate by the long-term acceptance rate may be adjusted by factors for method of treatment, soil treatment area design, and type of distribution media.
2. For the purpose of the table, a "baseline system," i.e. adjustment factor of 1.00, is considered to be Treatment Level 1 (TL1) applied by gravity to a gravel-filled trench.
3. Sizing adjustments for use of the higher level treatment categories listed in Tables 10-1 will only apply provided the system is inspected and maintained as specified in the requirements of Section 14.D. Permitting and Oversight of Maintenance for Soil Treatment Area Reductions and Vertical and Horizontal Separation Distance Reductions Based on Use of Higher Level Treatment.

Table 10-2: Size Adjustment Factors for Methods of Application in Soil Treatment Areas Accepting Treatment Levels 1, 2, 2N, 3 and 3N Effluent

Type of Soil Treatment Area	Method of Effluent Application from Treatment Unit Preceding Soil Treatment Area		
	Gravity	Dosed (siphon or pump)	Pressure Dosed
Trench	1.0	0.9	0.8
Bed	1.2	1.1	1.0

Table 10-3: Size Adjustment Factors for Types of Distribution Media in Soil Treatment Areas for Treatment Level 1 Systems

Type of Soil Treatment Area	Type of Distribution Media Used in Soil Treatment Area[1]		
	Category 1	Category 2	Category 3
	Rock or Tire Chips	Other Manufactured Media	Chambers or Enhanced Manufactured Media
Trench or Bed	1.0	0.9	0.7

1. All proprietary distribution products shall receive acceptance and the applicable reduction through Division review per the applicable requirements of Section 13.

E. Design of Distribution Systems

1. General
   a. The infiltrative surface and distribution laterals shall be level.
   b. The infiltrative surface shall be no deeper than four feet below grade unless TL2 or higher effluent is applied to the distribution media and the system is inspected and maintained as specified in the requirements of Section 14.D. The depth of the infiltrative surface will be measured on the up-slope side of the trench or bed.

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c. Trenches shall follow the ground surface contours so variations in infiltrative surface depth are minimized. Beds shall be oriented along contours to the degree possible.

d. Pipe for gravity distribution shall be no less than three inches in diameter.

e. A final cover of soil suitable for vegetation at least ten inches deep shall be placed from the top of the geotextile or similar pervious material in a rock and pipe system, chamber, or manufactured media up to the final surface grade of the soil treatment area.

f. Following construction, the ground surface shall be graded to divert stormwater runoff or other outside water from the soil treatment area. The area shall be protected against erosion. Subsurface drains upslope of the soil treatment area may be installed to divert subsurface flow around the area.

g. Backfilling and compaction of soil treatment areas shall be accomplished in a manner that does not impair the intended function and performance of the storage/distribution media and soil and distribution laterals, allows for the establishment of vegetative cover, minimizes settlement and maintains proper drainage.

h. Dosing may be used for soil treatment area distribution. The dose shall be sized to account for the daily flow and the dosing frequency.

2. Distribution Laterals shall meet the requirements of Section 9.D. as applicable.

a. Distribution between laterals in a soil treatment area shall be as level as possible. Uneven settling of portions of the distribution system following construction shall be addressed by provisions in the design to adjust flows between laterals.

b. The maximum length of distribution laterals shall not exceed 150 feet.

c. Distribution laterals longer than 100 feet shall be pressure dosed or the application of the effluent shall be at the center of the lateral through a distribution box.

d. For absorption beds, the separating distance between parallel gravity distribution laterals shall not exceed six feet (center-to-center), and a distribution lateral shall be located within three feet of each sidewall and endwall.

e. The end of a distribution pipe shall be capped, unless it is in a bed or trenches in a level soil treatment area, where the ends of the pipes may be looped.

f. To promote equal distribution to the soil treatment area, the forcemain or effluent pipe shall be connected to as near to the middle of the

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distribution header as possible. However it shall be offset from any distribution lateral to prevent preferential flow.

g. Orifices shall be oriented downward unless pressure distribution is used and provision for pipe drainage is included.

3. Pressure Distribution

a. Design of pressure distribution systems shall include:

(1) Dose size and frequency for either proposed flows and soil type, or media long-term acceptance rate;

(2) Pipe diameter and strength requirements;

(3) Orifice size and spacing;

(4) A 30 – 72 inch operating head at the distal end orifice;

(5) Pump/siphon information; Total Dynamic Head; gallons/minute;

(6) Drain-back volume from forcemain; and

(7) Calculations, or a design software reference, that indicates the selected component sizing will provide equal flow within each active zone of the distribution system, and provide no more than a 10% flow differential from the initial orifice to the most distal end orifice within each zone.

b. The separating distance between parallel distribution pipes in a pressure distribution absorption bed shall not exceed four feet, and the outer distribution pipe shall be located within two feet of each sidewall and endwall. Specific requirements for the design of sand filters are noted in Section 11.C.2.

c. Flushing assemblies shall be installed at the distal end of each lateral and be accessible from finished grade. A sweeping 90 degree or bends limited to 45 degree shall be provided.

d. All effluent shall be screened prior to discharging to a pressure distribution system. This may be accomplished by an effluent screen in the septic tank or pump chamber, or a filter placed on the discharge pipe from the pump or siphon.

F. Soil Treatment Area Requirements:

1. Trenches

a. Trenches shall be three (3) feet wide or less.

b. The separating distance between trenches shall be a minimum of four (4) feet sidewall-to-sidewall.

c. Distribution laterals used in a trench much be as close to the center of the trench as possible.

2. Beds

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a. Maximum width for a bed shall be 12 feet, unless the bed receives effluent meeting Treatment Level 2 quality or better.

b. The separating distance between beds shall be a minimum of six (6) feet sidewall-to-sidewall.

3. Serial and Sequential Distribution:

a. A serial or sequential distribution system may be used where the ground slope does not allow for suitable installation of a single level soil treatment area unless a distribution box or dosing chamber is used.

b. The horizontal distance from the side of the absorption system to the surface of the ground on a slope shall be adequate to prevent lateral flow and surfacing.

c. Adjacent trenches or beds shall be connected with a stepdown/relief pipe or a drop box arrangement such that each trench fills with effluent to the top of the gravel or chamber outlet before flowing to succeeding treatment areas.

4. Alternating Systems

a. An alternating system shall have two or more zones that shall be alternated on an annual or more frequent basis.

b. For repairs, each section shall be a minimum of 50 percent of the total required soil treatment area. For new installations, each separate soil treatment area shall meet the minimum sizing requirements of this regulation.

c. A diversion valve or other approved diversion mechanism that requires the owner or operator to manually alternate zones of the OWTS may be installed on the septic tank effluent line allowing soil treatment area sections to be alternated.

d. The diversion mechanism shall be readily accessible from the finished grade.

5. Sequencing Zone Systems

a. Sequencing zone systems have two or more soil treatment area sections that are dosed on a frequent rotating basis.

b. Where soil conditions are similar between the sections, each section area shall be the same size. If soil conditions are such that long-term acceptance rates are different, each section may be sized for the same dose, but different long-term acceptance rates.

c. An automatic distribution valve shall be used.

d. Dosing of each system shall be evaluated by the design engineer based on projected daily flow rates, number of zones, and soil types.

6. Inspection Ports

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a. A 4-inch inspection port accessible from ground surface shall be installed at the terminal end of each lateral in a trench system and at each corner of a bed system. The bottom of the inspection port tube shall extend to the infiltrative surface and not be connected to the end of a distribution pipe.

b. Inspection ports in chambers may be installed according to manufacturer's instructions if the infiltrative surface is visible and effluent levels can be observed from the inspection port.

c. Additional inspection ports connected to distribution pipes may be installed.

d. An inspection port is required at the end of each lateral in a trench system.

e. The top of inspection ports may be terminated below the final grade if each is housed in a component such as a valve box for a lawn irrigation system and has a removable cover at the ground surface.

G. Storage/Distribution Media:

1. Rock and Pipe

a. The perforated pipe shall be surrounded by clean, graded gravel, rock, or other material of equal efficiency which may range in size from ½ inch to 2 ½ inches. AASHTO M 43 size No. 3 coarse aggregate meets this specification.

b. At least six inches of gravel, rock or other material shall be placed below the pipe. The gravel, rock or other material shall fill around the pipe and be at least two inches above the top of the distribution pipe.

c. The top of the placed gravel or such material used shall be covered with non-woven permeable geotextile meeting a maximum thickness rating of 2.0 ounces per square yard or equivalent pervious material. An impervious covering shall not be used.

2. Chambers

a. Chambers shall be installed with the base of the unit on in-situ soil or, if placed on acceptable media, the manufacturer's installation instructions shall be followed so as to prevent chambers from settling into the media.

b. Installation shall be according to manufacturer's instructions.

c. Effluent may be distributed by gravity, pump or siphon.

d. For width and square footage requirements, refer to Section 13.E.1.d.

3. Media, Enhanced, or Other Manufactured

a. Manufactured media shall be installed with the base on the in-situ soil or placed on acceptable media meeting the manufacturer's

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specifications for proprietary distribution products or combined treatment/distribution products.

b. Installation shall be according to manufacturer's instructions.

c. Pressure distribution is required for TL2-TL3N effluent, unless otherwise noted in this regulation.

4. Driplines

a. The infiltrative surface area shall be calculated using the long-term acceptance rate for the site or a more conservative value if recommended by the manufacturer.

b. Driplines shall be installed on manufacturer's spacing recommendations.

c. Drainback shall be provided for all drip lines, pipes and pumps.

d. Provisions shall be made to minimize freezing in the distribution pipes, driplines, relief valves, and control systems.

e. Provisions shall be made for filtering, back-flushing, or other cleaning.

5. Tire Chips

a. The pipe may be surrounded with clean, uniformly-sized tire chips.

b. Tire chips shall be nominally two inches in size and may range from ½ inch to a maximum of four inches in any one direction.

c. Wire strands shall not protrude from the tire chips more than 0.75 inches.

d. Tire chips shall be free from balls of wire and fine particles less than two mm across.

e. The top of the tire chips used shall be covered with non-woven permeable geotextile meeting a maximum thickness rating of 2.0 ounces per square yard or equivalent pervious material. An impervious covering shall not be used.

H. Soil Replacement Systems.

1. The construction of a soil replacement system is permitted to bring the soil treatment area into compliance with the requirements of this regulation.

2. When a soil type "R" is removed, the following requirements shall be met:

a. All added soil shall comply with the following specifications:

(1) Added soil shall meet the specifications of either "preferred" or "secondary" sand filter media, as specified in Section 11.C.2.

(2) The long-term applicable rates as specified in Table 10-1A shall be used. No additional sizing adjustments are allowed.

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(3) The depth of the added media shall comply with the requirements of Table 10-1A.

(i) In order to utilize the reduced vertical separation requirements for TL2 or higher quality effluent, the requirements of Section 14.D. shall also be met.

(4) A gradation of the sand media used shall be provided. The gradation shall be dated no more than one month prior to the installation date. However, a gradation of the actual material placed in the excavation is recommended.

(5) All added soil shall be completely settled prior to installation of components as specified and approved by the design engineer.

(6) Pressure distribution shall be used.

3. The removal and reinstallation of in-situ soil may only be allowed where the soils are determined to be a soil type “R-1” (Option 2). The design shall comply with the requirements for this soil type noted in Table 10-1A (Soil Type R-1, Option 2).

4. When a sand media is added to soil treatment area or to an excavation where a soil type 1-5 (Table 10-1) is the underlying soil, the following requirements shall be met:

a. Added soil shall meet the specifications of either “preferred” or “secondary” sand filter media, as specified in Section 11.C.2.d.

b. Unless the design follows the criteria for a sand filter or mound system design as required in Section 11, the TL1 long-term acceptance rate for the receiving soil shall be used.

c. A gradation of the sand media used shall be provided. The gradation shall be dated no more than one month prior to the installation date. However, a gradation of the actual material placed in the excavation is recommended.

d. All added soil shall be completely settled prior to installation of components.

I. Repairs:

1. When space is not available or if there are other site limitations that preclude other soil treatment area options for OWTS repairs, wide beds, deep gravel trenches, and deep beds may be considered for repairs only.

2. Repairs to failing systems shall conform to setbacks identified in Table 7-1 when possible. When this is not possible using all available methods described above, the Department may permit reductions to setbacks. At no point will a setback reduction be approved the Department less than what the existing separation is to existing OWTS. In maximizing this setback distance, all methods available in Section 10.H.2. shall be utilized including but not limited to the use of Higher Level Treatment, wide beds,

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deep gravel trenches, etc., where allowed. Any proposed setback reduction beyond what the existing failing system presents requires variance approval in accordance with Section 3.M.

3. For repairs, beds may be wider than 12 feet without being required to receive effluent meeting Treatment Level 2 quality or better.

4. For repairs, the infiltrative surface of a bed may be no deeper than five feet. Size adjustments as provided for in Tables 10-2 and 10-3 shall not be applied. System sizing will be based strictly on the soil type and corresponding LTAR.

5. Deep Gravel Trenches

   a. The length of an absorption trench may be calculated by allowance for the sidewall area of additional depth of gravel in excess of six inches below the bottom of the distribution pipe according to the following formula:

      Adjusted Length = L * ((W+2)÷(W+1+2D))

      Where:

      L = length of trench prior to adjustment for deep gravel

      W = width of trench in feet

      D = additional depth in feet of gravel in excess of the minimum required six inches of gravel below the distribution pipe

   b. Maximum allowable additional depth is five feet.

   c. Percolation tests or soil profile test pit excavations shall be performed at the proposed infiltrative surface depth.

   d. Size adjustments as provided for in Tables 10-2 and 10-3 shall not be applied to deep gravel trenches.

6. Seepage pits are prohibited in unincorporated Gunnison County.

7. Wastewater ponds are prohibited in unincorporated Gunnison County.

8. Vault Systems are prohibited in unincorporated Gunnison County.

9. Higher Level Treatment Options

   a. Reduction in required soil treatment area for repairs is possible with higher level treatment only where the local public health agency meets the requirements of Section 14.D.

   b. Design criteria for higher level treatment systems are in Section 11.

10. Remediation Systems

   a. The intent of a remediation technology or process is to sufficiently increase the infiltration rate through the infiltrative surface at the bottom of an existing trench or bed and restore permeability to the soil below. Treatment levels as defined in Table 6-3 are not granted to remediation technologies.

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b. The Department may permit the use of remediation technologies or processes to address an existing failure or malfunction within a soil treatment area.

c. The use of a remediation technology or process constitutes an alteration to the OWTS, and therefore the owner shall obtain a permit for this work from the Department.

d. Upon approval of the Department, a system owner may choose to try a remediation technology or process to see if an existing problem with the soil treatment area will be resolved. The system owner bears the risk and cost of this attempt and is aware that an additional repair may be required.

e. Remediation technologies and processes shall not adversely affect groundwater, surface water, any existing components, the long-term effectiveness of the soil treatment area, or the environment.

f. If the remediation technology or process does not correct the problem with the system, a conforming OWTS shall be installed per the requirements in this regulation and within a reasonable time frame.

g. The Department may require monitoring and/or maintenance of the remediation technology or process as a stipulation of permit issuance.

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SECTION 11: DESIGN CRITERIA – HIGHER LEVEL TREATMENT SYSTEMS

A. General

1. Higher level treatment systems shall be designed by a professional engineer.
2. Higher level treatment systems may be public domain technology systems or proprietary systems.
   a. Public domain technology systems shall be designed, installed and maintained according to established criteria and additional criteria established by the Department. When design criteria are not specifically provided in this regulation, the criteria used in the design shall be from a reference commonly used as an industry standard and the criteria shall be cited in the design.
   b. Proprietary systems shall be designed, installed, and maintained according to manufacturer's instructions and additional criteria identified in the Technology Review and Acceptance process, Section 13.
3. Reductions to soil treatment area or separation distances based on higher level treatment shall not be permitted unless the local public health agency has adopted a program for permitting and oversight of inspections and maintenance in Section 14.D.
4. Soil treatment areas for higher level treatment systems shall be pressure dosed.
5. Systems shall be capable of accommodating all anticipated flows and organic loads.
6. Ventilation and air systems: Mechanical components shall be installed in a properly vented location and all vents, air intakes, and air hoses shall be protected from snow, ice, or water vapor accumulations.
7. Covers, barriers, or other protection: All systems shall be installed to include protection of openings against entry of insects, rodents, other vectors and unauthorized people.

B. Adequate maintenance required for higher treatment levels.

1. The treatment levels identified in Table 6-3 are specified in this section for public domain technology, and proprietary treatment systems will be assigned a treatment level by the technology review and acceptance process in Section 13. Adequate maintenance for each shall be required and documented in accordance with Section 14.D.

C. Sand Filters:

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1. A lined or unlined intermittent sand filter, or recirculating sand filter, may be used as a higher level treatment system prior to dispersing the effluent into a soil treatment area.
2. Intermittent (Single Pass) Sand Filters; General Requirements
   a. The treatment level for intermittent sand filters is considered TL3.
   b. General Design Parameters: Not all combinations of the variables noted below will result in a proper distribution system design. The design engineer shall justify through calculations or design software that the selected values will concur with industry standards.
      (1) Distribution pipe size: 3/4 inch – 1.5 inches (PVC Class 200, min.)
      (2) Distribution pipe spacing: 18 inches – 48 inches
      (3) Orifice size: 1/8 inches – 3/8 inches (Also see Section 11.C.2.b.(5) below)
      (4) Orifice spacing: 18 inches – 48 inches
      (5) Operating head at the distal end of distribution pipes: 30 inches – 72 inches (60 inches typ.). Larger orifices allow for an operating head at the lower end of this range, while smaller orifices will necessitate an operating head at the higher end of this range.
   c. Dosing:
      (1) Pressure distribution is required. The design of the distribution system shall also comply with the requirements of Section 10.E.3.a.
      (2) Number of cycles/day: Will vary with design (Short, frequent doses are preferred.)
      (3) Proposed dose volume: Will vary with design (0.25 – 1.0) gallons/orifice/dose, or 3-5 times distribution pipe volume.
      (4) Timed dosing is recommended where design considerations allow.
   d. Sand Filter Treatment Media
      (1) The depth of the sand media below the distribution system shall be at least 24 inches unless otherwise noted in Table 10-1A for type “R” soils.
      (2) “Preferred” sand media requirements:
         (i) Effective size: 0.25-0.60 mm
         (ii) Uniformity coefficient: ≤ 4.0
         (iii) Percent fines passing #200 sieve: ≤ 3.0
      (3) “Secondary” sand media requirements:
         (i) Effective size: 0.15-0.60 mm
         (ii) Uniformity coefficient: ≤7.0

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(iii) Percent fines passing #200 sieve: ≤ 3.0

(4) A gradation of the sand media used shall be provided. The gradation shall be dated no more than one month prior to the installation date. A gradation of the actual material placed in the excavation is recommended.

e. Gravel Requirements

(1) Clean, graded gravel, or rock, shall range in size from ½ inch to 2 ½ inches. AASHTO M 43 size No.3 coarse aggregate meets this specification.

(2) The gravel shall surround the distribution pipes used to disperse the effluent and shall be at least 6 inches below and 2 inches above the pipes.

(3) Division accepted manufactured media may be used as an alternative to specified gravel.

f. Filter Fabric Requirements

(1) The top layer of gravel shall be covered with a non-woven permeable geotextile fabric meeting a maximum thickness rating of 2.0 ounces per square yard or equivalent pervious material.

g. Final Cover Material

(1) 8 inches – 10 inches of Type 1 or 2 soil with an additional 2 inches top soil

h. Size adjustment factors provided in Tables 10-2 and 10-3 are not applicable for sand filters.

i. Sand filters shall not be used to treat wastewater that does not conform to TL1 treatment level or better.

3. Unlined (Open Bottom) Sand Filters

a. All requirements of Section 11.C.2.a through Section 11.C.2.i will apply to unlined sand filters.

b. Application rates:

(1) Maximum hydraulic loading rate for TL1 effluent applied to “Preferred Sand Media” in an unlined sand filter is 1.0 gal./sq.ft./day, or the long-term acceptance rate of the receiving soil for TL3 (Table 10-1) whichever results in the larger area.

(2) Maximum hydraulic loading rate for TL1 effluent applied to “Secondary Sand Media” in an unlined sand filter is 0.8 gal./sq.ft./day, or the long term acceptance rate of the receiving soil for TL3 (Table 10-1) whichever results in the larger area.

(3) Maximum hydraulic loading rate for TL2, TL2N, TL3, or TL3N effluent applied to “Preferred” or ”Secondary” Sand Media in an

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unlined sand filter shall be the long-term acceptance rate of the receiving soil for TL3, (Table 10-1).

c. The upper infiltrative surface of an unlined sand filter receiving TL1 – TL2 effluent shall be at least three feet above a limiting layer.

d. The upper infiltrative surface of an unlined sand filter receiving TL2N-TL3 effluent shall be at least three feet above a limiting layer.

e. The upper infiltrative surface of an unlined sand filter receiving TL3N effluent shall be at least three feet above a limiting layer.

4. Lined Sand Filters

a. All requirements of Section 11.C.2.a through Section 11.C.2.i will apply to lined sand filters.

b. Application rates:

(1) Hydraulic loading rate for TL1 effluent applied to “Preferred Sand Media” in a lined sand filter is 1.0 gal./sq.ft./day.

(2) Hydraulic loading rate for TL1 effluent applied to “Secondary Sand Media” in a lined sand filter is 0.8 gal./sq.ft./day.

c. The minimum depth of the sand media in a lined sand filter shall be three feet.

d. An intermediate layer of pea gravel, two inches in thickness, shall be placed between the sand filter media and the course under-drain media to prevent the migration of sand into the lower layer of under-drain gravel. ASTM C 33, No. 8, coarse aggregate meets this specification.

e. A minimum four-inch diameter slotted SCH40 PVC under-drain pipe shall be used to collect the treated effluent. The under-drain pipe shall be installed in the center of a 5 inches thick bed of washed, graded gravel, or rock ranging in size from 1/2 inch to 2 1/2 inches. AASHTO M 43, No.3 coarse aggregate meets this specification.

f. Lined sand filters shall have an impervious liner on the sides and bottom of the filter. The liner shall consist of a minimum 30 mil thick PVC material or equivalent.

g. Effluent collected by the under-drain shall be dispersed to a soil treatment area. The soil treatment area may be sized with a maximum long-term acceptance rate of the receiving soil for TL3 effluent.

5. Recirculating Sand Filter, Minimum Requirements:

a. Treatment level:

(1) Treatment level provided within recirculating sand filters is TL3.

b. General Design Parameters: Not all combinations of the variables noted below will result in a proper distribution system design. Engineer

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shall justify through calculations or design software that the selected values will concur with industry standards.

(1) Distribution pipe size: 3/4 inch – 2 inches (PVC Class 200, min.)

(2) Distribution pipe spacing: 18 inches – 36 inches (24 inches typ.)

(3) Orifice size: 1/8 inch – ¼ inch

(4) Orifice spacing: 18 inches – 36 inches (24 inches typ.)

(5) Pressure head at end of distribution pipe: 24 inches – 72 inches (60 inches typ.)

c. Dosing:

(1) Timed dosed, pressure distribution is required. The design of the distribution system shall comply with the requirements of Section 10.E.3.a.

(2) Recirculation ratio: 3:1 – 5:1

(3) Gallons/orifice/dose: 1 – 3 (2.0 typ.)

(4) Hydraulic loading: 3 - 5 gal./sq.ft./day (4 – 5 typ.)

(5) Dosing time "ON"; <2.5 min. (<2.0 typ.)

(6) Number of cycles/day: 48 – 120

d. Top gravel requirements:

(1) Washed, graded gravel, or rock, shall range in size from 1/2 inch to 2 1/2 inches. AASHTO M 43, No.3 coarse aggregate meets this specification.

(2) The gravel shall surround the distribution pipes used to disperse the effluent and shall be at least 6 inches below and 2 inches above the pipes.

(3) State accepted manufactured media may be used as an alternative to specified gravel.

(4) Soil cover is prohibited. The upper gravel layer shall be open to the atmosphere.

e. Filter media requirements:

(1) Effective size: 1.5 – 2.5 mm

(2) Uniformity coefficient: ≤ 3

(3) Fines passing #200 sieve: ≤ 1.0

(4) Media depth (min.): ≥24 inches

f. Intermediate gravel layer:

(1) An intermediate layer of pea gravel, two inches in thickness, shall be placed between the coarse underdrain media and the sand filter

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media to prevent the migration of sand into the lower layer of under-drain gravel (ASTM C 33, No. 8, coarse aggregate).

g. Under-drain requirements:

(1) A minimum four-inch diameter slotted SCH40 PVC under-drain pipe shall be used to collect the treated effluent. The under-drain pipe shall be installed in the center of a 5 inches thick bed of washed, graded gravel, or rock ranging in size from 1/2 inch to 2 1/2 inches. AASHTO M 43, No.3 coarse aggregate meets this specification.

h. PVC liner requirements:

(1) Lined sand filters shall have an impervious liner on the sides and bottom of the filter. The liner shall consist of a 30 mil thickness PVC material or equivalent.

i. Effluent collected from the recirculating sand filter shall be discharged to a soil treatment area. The soil treatment area may be sized with a maximum long-term acceptance rate of the receiving soil for TL3N effluent.

D. Mound Systems:

1. When the infiltrative surface area of the media receiving wastewater effluent is at or above the natural ground surface at any point, it shall be considered a mound system.

2. Mound systems that provide a minimum of 24 inches of sand treatment media may use the application rates for the in-situ receiving soil for TL3 effluent (Table 10-1). Size adjustment factors within Table 10-3 shall not be applied to mound designs where TL3 application rates are used. However they may be applied if TL1 application rates are used.

3. Mound systems shall conform to the design requirements of Sections 11.C.3.a. through e. for unlined (open bottom) sand filters, with the following exceptions.

a. A mound system may include less than 24 inches of imported sand media on a site where a lesser depth of sand media is sufficient to meet vertical separation requirements above a limiting layer. Application rates for the in-situ receiving soil for TL1 effluent shall be used when less than 24 inches of sand media is used, unless higher level treatment is provided prior to dispersal into the mound system.

b. For the design of a mound system where less than 24 inches of sand media is proposed, and application rates for TL1 are used, the size adjustment factors within Table 10-3 may be used.

4. The basal area shall be determined using the LTAR from Table 10-1 for the in-situ receiving soil under the mound.

5. Linear loading rates shall be determined. The evaluation of many factors is required for an accurate determination of the linear loading rate. While

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application rates for the in-situ receiving soil under the mound is a main component, placement on the slope, and percent of slope shall also be addressed when defining the linear loading rate. If the movement of the effluent is primarily vertical, then the linear loading rate is not as critical. However, if the movement of the effluent will be primarily horizontal, as would be expected in soil types 3A through 5 (Table 10-1), then the linear loading rate is extremely important and long narrow mounds are strongly recommended.

a. When TL1 effluent is applied to the distribution media of a mound system installed above in-situ soil types 1 through 3 (Table 10-1) and R-0 through R-2 (Table 10-1A), the suggested linear loading rate is between 6 gpd/lin.ft. and 12 gpd/lin.ft. The maximum width of the distribution media in a mound system installed above these soil types is 12 feet when TL1 effluent is applied to the distribution media of a mound system.

b. When TL2 through 3N effluent is applied to the distribution media of a mound system installed above in-situ soil types 1 through 3 (Table 10-1) and R-0 through R-2 (Table 10-1A), the linear loading rate may exceed 12 gpd/lin.ft.; subsequently the mound may be wider than 12 feet.

c. When TL1 through TL3N effluent is applied to mound systems installed above in-situ soil types 3A through 5 (Table 10-1), the suggested linear loading rate is between 3 gpd/lin.ft. and 5 gpd/lin.ft. The maximum width of the distribution media in a mound system placed above these soil types is 12 feet.

6. The final cover over a mound system shall extend at least twelve inches horizontally beyond the perimeter of the distribution media prior to sloping down to existing grade. The final slope of the mound shall be no greater than three feet horizontal to one foot vertical.

7. The surface of the mounded area shall be planted with a suitable vegetative cover.

8. A suggested reference for the design and installation of mound systems is, “The Wisconsin Mound Soil Absorption System: Siting, Design, and Construction Manual, January 2000”. Note that this is suggested guidance, and where the requirements of this regulation differ from those in the referenced mound document, the requirements of this regulation will govern in those cases.

E. Rock Plant Filter (Constructed Wetland) Treatment before a Soil Treatment Area:

1. A rock plant filter system shall be designed by a professional engineer.

2. The design shall be site specific and include specifications for: loading, capacity, dimensions, liner material, filter media, effluent depth and depth

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control mechanism, density and species of plant material, and other site specific information.

3. The treated effluent from a rock plant filter shall be distributed to a soil treatment area.
4. Although producing higher level treatment, rock plant filters shall not be assigned a treatment level higher than TL1 because of system and seasonal variability.

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SECTION 12: DESIGN CRITERIA – OTHER FACILITIES

A. Evapotranspiration and Evapotranspiration/Absorption Systems:

1. Non-Pressurized Drip Dispersal System (NDDS):

   a. An NDDS is considered a type of evapotranspiration/absorption system. However as specific design criteria is provided for an NDDS, they are exempt from the additional requirements of Sections 12.A.2, 12.A.3, and 12.A.4.

   b. The Colorado Professionals in Onsite Wastewater Guidelines for the Design and Installation of Non-Pressurized Drip Dispersal Systems (NDDS), September, 2016 is the procedural guideline in the design of a NDDS and shall be followed when an NDDS is proposed.

   c. The width of an NDDS system may be wider than 12 feet.

2. The following section provides general criteria which shall be followed when an evapotranspiration or evapotranspiration/absorption bed is proposed.

   a. The design may only be permitted in arid climates where the annual evaporation rate exceeds the annual precipitation rate by more than 20 percent, and where site characteristics dictate that conventional methods of effluent dispersal are not appropriate.

   b. The design may only be permitted in soil types 4, 4A and 5.

   c. The system shall be designed by a professional engineer.

   d. If data for the Pan Evaporation Rate is provided, it shall be multiplied by 0.70, or less, to obtain the equivalent Lake Evaporation Rate.

   e. The width of the bed may be wider than 12 feet.

   f. The required capillary or wicking sand shall meet the gradation requirements in Table 12-1 and be approved by the design engineer. This sand is to be covered by a crowned, thin layer of loamy-sand mix and appropriate vegetation that will assist in drawing the water to the surface.

   g. Adjustment factors as provided in Tables 10-2 and 10-3 shall not be used.

Table 12-1 Gradation of Wicking Sand for Evapotranspiration Beds (Fine Sand)

Sieve Size	Percent Passing
4	100
40	50-70
200	<15

3. For systems designed strictly as an evapotranspiration bed, the following criteria shall be met:

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a. Design data to be furnished shall include, but shall not be limited to: system dimensions, distribution system design, specifications of distribution media and wicking sand, liner material if used, bedding, properties of the soil under the system, vegetation cover, and a water balance calculation including annual precipitation and storage requirements for periods of the year when evapotranspiration does not occur.

b. The following formula shall be used for determining the minimum area necessary for total evapotranspiration of septic tank effluent:

Area (sf)* = (Design Flow (gpd) X 586) ÷ Lake Evaporation Rate at the Site (ipy)
* *Additional area may be required based on the annual water balance calculations.*

c. Designs will include a rock and pipe, or other Division approved proprietary distribution product, with the centerline of the distribution system 6 to 8 feet on center. A thin non-woven fabric may be placed above the distribution system. Capillary wicking of the effluent is accomplished by a uniform depth layer of the specified sand media (capillary wicks), no more than 24 inches deep, placed between and above the distribution media. The base of the evapotranspiration bed may be no more than 30 inches below finished grade.

d. Capillary wicks which penetrate between the distribution system to the bottom of the bed, shall be at least 15 percent of the bed surface area. The wicks shall be uniformly spaced throughout the system.

e. Reductions for season use will not be permitted.

4. For systems designed as an evapotranspiration/absorption bed, the following criteria shall be met.

a. Data to be furnished shall include, but is not limited to: system dimensions, distribution system design, specifications of wicking sand, properties of the soil under the evapotranspiration/absorption bed, provision for vegetation cover, and a water balance calculation including annual precipitation and storage requirements for periods of the year when evapotranspiration does not occur.

b. Design will include a rock and pipe, or other Division approved proprietary distribution product, with the centerline of the distribution system 6 to 8 feet on center. A thin non-woven fabric may be placed above the distribution media. Capillary wicking of the effluent is accomplished by a uniform depth layer of the specified sand media (capillary wicks) no more than 24 inches deep placed between and above the distribution media. The infiltrative surface may be no more than 30 inches below finished grade.

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c. Capillary wicks which penetrate between the distribution system to the bottom of the bed, shall be at least 15 percent of the bed surface area. The wicks shall be uniformly spaced throughout the bed.

d. Amount of storage and evapotranspiration capacities may be reduced by the volume of effluent absorbed by the underlying soil based on the long-term acceptance rate for that soil type and the formulas provided in Section 12.A.4.e. below.

e. The following formula shall be used for determining the minimum area necessary for evapotranspiration/absorption of septic tank effluent:

$$\text{Area (sf)}^{*} = \text{Flow (gpd)} \div (\text{LTAR} + \text{ETR})$$

LTAR refers to the long-term acceptance rate of the underlying soil as provided in Table 10-1 for TL1 effluent.

ETR refers to the evapotranspiration rate derived from the following formula:

$$\text{ETR (gal/day/sf)} = \text{Lake Evaporation Rate at the Site (ipy)} \div 586$$

*Additional area may be required based on the annual water balance calculations.

B. Seepage Pits are prohibited in unincorporated Gunnison County.

C. Vault Systems are prohibited in unincorporated Gunnison County.

D. Privies:

1. The Installation of low flow fixtures or the separation of toilet waste or other sources of wastewater does not allow for the reduction in the size of an OWTS as noted in Section 8.A.1.

2. Privies may be permitted for, but are not limited to, the following types of uses:

   a. Additional accessory uses where an OWTS exists and is sized to accommodate all wastewater generated on a parcel.

   b. In support of agricultural, as defined in the *Gunnison County Land Use Resolution*, scientific, recreational or similar operations where no other additional wastewater is generated.

   c. Privies are prohibited within Gunnison County Special OWTS Districts.

3. Vault Privy:

   a. Effective volume of the vault shall be no less than 400 gallons and it shall be constructed of concrete or plastic. The vaults for privies shall meet the structural and watertightness standards of vaults.

   b. A vault privy shall be built to include: fly- and rodent-tight construction, a superstructure affording complete privacy, an earth mound around the top of the vault and below floor level that slopes downward away from the superstructure base, a floor, and a riser of concrete or other impervious material with hinged seats and covers of easily cleanable, impervious material. All venting shall be fly-proofed with No. 16 or tighter mesh screening.

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4. Pit Privy:
   a. The bottom of the pit shall be located above at least four feet of suitable soil and four feet above a limiting layer;
   b. The pit shall have at least 400 gallons of effective volume; and
   c. The superstructure shall provide complete privacy and have fly- and rodent-tight construction, an earth mound around the top of the pit and below floor level that slopes downward away from the superstructure base, a floor, and a riser of concrete or other impervious material with hinged seats and covers of easily cleanable, impervious material. All venting shall be fly-proofed with No. 16 or tighter mesh screening.

E. Incinerating, Composting and Chemical Toilets:

1. The use of an incinerating, composting or chemical toilet will not reduce the required size of the OWTS as noted in Section 8.A.1.
2. Permitting of an incinerating or composting toilet may also be subject to the jurisdiction of the Colorado Plumbing Board. The requirement for one flushable toilet connected to the OWTS per residence may apply.
3. Compartment and appurtenances related to the unit shall include fly-tight and vector-proof construction and exterior ventilation.
4. An approved incinerating toilet shall be designed and installed in accordance with all applicable federal, state, and local air-pollution requirements and manufacturer's instructions.
5. Composting Toilets
   a. Composting toilets shall meet the requirements of NSF/ANSI Standard 41 and bear the seal of approval of the NSF or an equivalent testing and certification program.
   b. An approved composting toilet shall treat deposits of feces, urine, and readily decomposable household garbage that are not diluted with water or other fluids and are retained in a compartment in which aerobic composting will occur.
   c. The effective volume of the receptacle shall be sufficient to accommodate the number of persons served in the design of the unit installed. The effective volume of the unit shall include sufficient area for the use of composting materials which shall not be toxic to the process or hazardous to persons and which shall be used in sufficient quantity to assure proper decomposition.
   d. Residue from the composting toilet shall be removed when it is filled to 75 percent of capacity. Residue from the unit shall be properly disposed of by methods recommended by the manufacturer and acceptable to the local public health agency. Disposal methods shall prevent contamination of water and not cause a public health nuisance. Disposal using solid waste practices is recommended.

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e. If a system will be installed where low temperature may be a factor, design and installation shall address the effects of the low temperature.

f. Composting toilets shall be operated according to manufacturer's specifications.

6. Incinerating Toilets Acceptance Requirements

a. Incinerating toilets shall meet the requirements of the NSF Protocol P157 and bear the seal of approval of the NSF or an equivalent testing and certification program.

b. Incinerating toilets shall be operated according to manufacturer's specifications.

7. Portable Chemical Toilets

a. Use of a portable chemical toilet permanently in occupied buildings is prohibited except during construction or under emergency circumstances as determined by Department. Proper ventilation of a chemical toilet used inside shall be required.

F. Slit Trench Latrines are prohibited in unincorporated Gunnison County.

G. Treatment Systems Other Than Those Discharging Through a Soil Treatment Area or Sand Filter System:

1. For systems discharging to State Waters, see Section 1.H.

2. Systems that discharge other than through a soil treatment area or a sand filter system shall:

a. Be designed by a professional engineer;

b. Be reviewed by the Board;

c. Not pose a potential health hazard or private or public nuisance or undue risk of contamination; and

d. Not allow drainage of effluent off of the property of origin.

3. The following minimum performance criteria shall be required for all permitted systems pursuant to this section:

a. If effluent discharge is made into areas in which the possibility exists for occasional direct human contact with the effluent discharge, the effluent at the point of discharge shall meet the minimum treatment criteria of TL3 effluent and specifically adhere to each of the following standards:

(1) The geometric mean of the E. coli density shall not exceed 15 per 100 milliliters when averaged over any five consecutive samples, and no single sample result for E. coli can exceed 126 per 100 milliliters.

(2) The arithmetic mean of the standard five-day carbonaceous biochemical oxygen demand ($CBOD_5$) shall not exceed ten

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milligrams per liter when averaged over any three consecutive samples.

(3) The arithmetic mean of the total suspended solids shall not exceed ten milligrams per liter when averaged over any three consecutive samples.

b. If the effluent discharge is made into an area so restricted as to protect against the likelihood of direct human contact with the discharged effluent, the effluent at the point of discharge shall meet the treatment criteria of TL2 effluent and specifically adhere to each of the following standards:

(1) The geometric mean of the E. coli density shall not exceed 126 per 100 milliliters when averaged over any five consecutive samples, and no single sample can exceed 325 E. coli per 100 milliliters.

(2) The arithmetic mean of the standard five-day carbonaceous biochemical oxygen demand (CBOD5) shall not exceed 25 milligrams per liter when averaged over any three consecutive samples.

(3) The arithmetic mean of the total suspended solids shall not exceed 30 milligrams per liter when averaged over any three consecutive samples.

4. To determine compliance with the standards contained in this section, the required sampling frequency for E. coli, CBOD5, and total suspended solid levels shall be performed at least once per month when the system is in operation and the results submitted to the Department for compliance with the permit requirements.

5. Methods of Analysis - Sampling Points:

a. All effluent samples shall be analyzed according to the methods prescribed in the American Public Health Association, American Water Works Association, and Water Environment Federation: Standards Methods for the Examination of Water and Wastewater, 21st edition.

b. The sampling point shall be a location that is representative of final discharge from the system.

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SECTION 13: TECHNOLOGY REVIEW AND ACCEPTANCE

A. Technology types.

1. OWTS technologies shall either be public domain, including but not limited to rock and pipe distribution systems, sand filters with pressure distribution and mound systems, with criteria for design, installation, maintenance and use as described in this regulation, or proprietary products that have received Division review and acceptance before the Department may permit them for use.

B. The Division shall review and provide either comment or acceptance to the manufacturer for proprietary products in these technology categories:

1. Proprietary treatment products (e.g. treatment systems);
2. Propriety distribution products (e.g. manufactured distribution products or subsurface dripline);
3. Septic tanks;
4. Others as needed.

C. Product Acceptance Requirements – General:

1. To qualify for product acceptance, manufacturers desiring to sell or distribute proprietary products in Colorado shall submit a completed application to the Division in the format provided by the Division and a report describing in detail the test procedures and data confirming the performance and properties of the product claimed by the manufacturer. Products within a single series or model line sharing distinct similarities in design, materials, capacities, configuration, and claiming the same level of treatment may be accepted under a single application. Products outside of the series or model line shall be accepted under separate applications. The following information shall be included in the application:

   a. Manufacturer's name, mailing address, street address, and phone number;

   b. Contact individual's name, mailing address, street address, phone number and email address. The contact individual shall be vested with the authority to represent the manufacturer in the acceptance process;

   c. Category of product (e.g., proprietary treatment product, proprietary distribution product, septic tank);

   d. Name, including specific brand and model, of the proprietary product;

   e. A description of the functions of the proprietary product, along with any known limitations on the use of the product;

   f. Product description and technical information, including dimensioned drawings; materials and characteristics; component design

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specifications; and volumes, design capacity, and flow assumptions and calculations, as relevant;

g. Siting and installation requirements;

h. Product performance information in appropriate product section;

i. Detailed description, procedure and schedule of routine service and maintenance events;

j. Copies of manufacturer's literature to include sales and promotion, design, installation, operation and maintenance, and owner instructions; and

k. Identification of information subject to protection from disclosure and trade secrets, if any.

2. Upon receipt of an application, the Division shall verify that the application is complete and meets the requirements for which the product is being evaluated. If the application is found to be complete, and the requirements of this section needed to accept the product are met, the Division will place the product on a list of accepted proprietary products for the type of product. Installation and use of accepted products shall comply with the requirements noted on the acceptance document provided by the Division.

3. Manufacturers shall have readily accessible and up to date information for designers, regulators, product owners, and other interested parties about their product including:

a. Product manuals;

b. Design instructions;

c. Installation instructions;

d. Operation and maintenance instructions; and

e. A list of representatives and manufacturer-certified service providers in Colorado, if any. If none exist, information on how service on the product will be provided in Colorado.

4. If, at any time after a proprietary product has been accepted for use, the Division receives information that the product so accepted does not meet the required standards, or in any way constitutes a public health or environmental hazard, the Division may, at its discretion, revoke the product acceptance. The Division shall notify the manufacturer and local public health agencies within 30 days of any revocation.

D. Proprietary Treatment Product Acceptance Requirements:

1. If a proprietary treatment product is submitted to meet a specific treatment level, a report with test procedures and data shall be submitted to the Division to demonstrate that it can meet the treatment level for which the approval is being requested on a consistent basis in actual installations.

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The Division shall approve the test methods and programs. Test results from product certification testing shall also be submitted.

2. If a product is accepted for a specific treatment level, the product may also be used for applications requiring lower treatment levels. Reductions based on higher level treatment may not be applied unless the local public health agency has a maintenance oversight program in place as described in Section 14.D.

3. Field Performance Testing

   a. Testing shall be performed by a neutral third party.

   b. Testing for residential applications shall be performed on a minimum of 12 single-family homes under normal operating conditions unless otherwise noted below:

      (1) If the proprietary treatment product is requesting TL2 acceptance and that product has received NSF/ANSI 40 certification, the number of home sites to be tested may be reduced to six. The NSF/ANSI 40 certification shall be submitted if the reduced number of test sites is requested.

      (2) If the proprietary treatment product is requesting TL2N acceptance and that product has received NSF/ANSI 245 certification, the number of home sites to be tested may be reduced to six. The NSF/ANSI 245 certification shall be submitted if the reduced number of test sites is requested.

   c. Each system shall be tested over a period of at least one year.

   d. Each system shall be sampled at least four times during the year with the sampling evenly distributed throughout the year.

   e. Laboratory results for all parameters for which acceptance is being requested shall be submitted.

   f. Testing may be performed in Colorado under a Product Development Permit.

   g. Testing may be performed in locations other than Colorado. As part of the testing, the manufacturer shall define, to the acceptance of the Division, what adjustments or modifications to the product will be required to compensate for the following conditions:

      (1) Increased elevation results in lower atmospheric pressure and lower oxygen content. Adjustments or modifications to the treatment process may be required to compensate for these conditions and those adjustments or modifications shall be specified.

      (2) Winter season conditions in Colorado include cold temperatures that may affect product performance. Adjustments or modifications to the treatment process may be required to compensate for these

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conditions and those adjustments or modifications shall be specified. This item shall be addressed if nitrogen reductions are claimed.

h. The report conclusions shall indicate the proprietary treatment unit can consistently be expected to meet the treatment level for which acceptance is being requested.

i. The report shall include estimated operating costs for the first five years of the treatment system's life. This shall include both estimated annual electricity or other energy costs, and routine inspection and maintenance costs, including replacement of parts.

(1) Energy and other costs are to be based on typical Denver, Colorado, costs at the time of the acceptance request.

(2) Replacement part costs shall include shipping and handling.

(3) If media or other major part replacement is expected during the normal life of the system, the cost of replacement and the typical replacement interval shall be included even if replacement is not expected within five years.

j. If a proprietary product had been previously accepted for use in Colorado under NSF/ANSI 40 or equivalent testing and at least one product unit had been installed in Colorado prior to June 30, 2013, the acceptance for use in Colorado may continue as treatment level 2. A request for this continued acceptance shall be submitted to the Division on the forms provided by the Division. Documentation of a product installation shall be provided.

E. Proprietary Distribution Product Acceptance Requirements:

1. Proprietary manufactured distribution products shall:

a. Be constructed or manufactured from materials that are non-decaying and non-deteriorating and do not leach chemicals when exposed to septic tank effluent and the subsurface soil environment;

b. For gravity distribution systems, the product shall provide a liquid storage volume at least equal to the storage volume within the assumed 30 percent void space in a rock and pipe distribution system assuming six inches of rock below the pipe and two inches above the pipe;

c. Maintain the integrity of the trench or bed. The material used, by its nature and its manufacturer-prescribed installation procedures, shall withstand the physical forces of the soil sidewalls, soil backfill and the weight of equipment used in the backfilling; and

d. If the width of a proprietary manufactured distribution product is within 90 percent of the width of the excavation, it may be approved as being equivalent to the full width of the excavation, if information is provided

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that demonstrates distribution over the full width. Thus, the product shall cover at least 90 percent of the excavated area in either a trench or bed configuration in order to receive sizing adjustments provided in Table 10-3.

2. Chambers:

   a. Include a sidewall that is structurally sound and capable of allowing aeration of the infiltrative surface and exfiltration of effluent while minimizing the intrusion of soil.

3. Enhanced manufactured media:

   a. The product shall be wrapped in a fabric that promotes movement of the effluent through the fabric and prevents intrusion of soil. Manufacturer shall demonstrate that the product has been adequately tested and functions as intended.

   b. For enhanced manufactured media that requires a specified layer of sand or other media to be placed below the actual product, the vertical separation requirements of this regulation will be determined from the base of the sand or other media, as the sand or media is an integral part of the component.

   c. For products that allow for sand extensions beyond the actual manufactured component, the distance of sand allowed from the edge of the excavation to the manufactured component may be up to six inches in a trench system and 24 inches in a bed system.

   d. If sand media is proposed by the manufacturer as an integral part of the distribution product, it shall meet the size and uniformity specifications as noted by the manufacturer.

4. Other manufactured media:

   a. In order to receive sizing adjustments provided in Table 10-3, the product shall cover at least 90 percent of the excavated area in either a trench or bed configuration without the use of gravel, stone or other aggregate containing fines, which may compromise soil permeability.

5. Proprietary subsurface dripline products shall:

   a. Be warranted by the manufacturer for use with OWTS effluent;

   b. Specify required treatment level of influent to the driplines;

   c. Be designed for resistance to root intrusion; and

   d. Incorporate emitters that may be controlled either by use of pressure-compensation emitters or with a pressure regulator.

F. Septic Tank Acceptance Requirements:

1. Septic tank design shall conform to the requirements of Section 9.B. of this regulation.

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2. Each manufacturer shall annually test five percent of its tanks for watertightness at the manufacturing facility, unless the tanks are certified for use as a septic tank by the International Association of Plumbing and Mechanical Officials (IAPMO) or Canadian Standards Association (CSA), or the manufacturer participates in the Plant Certification Program of the National Precast Concrete Association (NPCA).
3. Watertightness results shall be sent to the Division on an annual basis unless otherwise addressed in Section 13.F.2. above. The manufacturer shall provide information that specifies measures taken to repair a tank that fails the watertightness test. The manufacturer shall also define the measures taken to prevent similar problems in future tanks.
4. IAPMO, CSA, and NPCA certifications shall be submitted to the Division for acceptance. Current certifications shall be submitted to the Division on an annual basis.

G. Other Product Acceptance Requirements:

1. The Division may adopt review and acceptance requirements for additional products as needed.

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SECTION 14: OPERATION AND MAINTENANCE

A. Responsibility.

1. The owner shall be responsible for maintenance of an OWTS unless the responsibility has been contractually assigned to a tenant or a third party or a public, quasi-public, or political subdivision.

B. Service Label.

1. For higher level treatment systems or other components under a service contract, a clearly visible, permanently attached label or plate giving instructions for obtaining service shall be placed at a conspicuous location.

C. OWTS maintenance recommendations for typical systems.

1. Unless required as a condition of the permit approval or for systems within a Gunnison County Special OWTS District, the following inspection and maintenance schedule is recommended for all OWTS to ensure adequate wastewater treatment and proper system function:

Table 14-1: OWTS Maintenance Recommendations

System Type	Inspection/Maintenance	Cleaning/pumping
Septic Tanks, vault privies, conventional OWTS	Annually and at property transfers (may require cleaning/pumping). Effluent screens should be checked and cleaned to prevent a back-up and protect the field.	Every 2-4 years of normal use and more frequent for heavy use
Higher Level Treatment Systems, mechanical components, aeration, engineer designed systems	Conditions of permitting and/or specific manufacturer's specifications may require more frequent or specialized inspection and maintenance then conventional OWTS or typical septic tanks	

D. Permitting and Oversight of Maintenance for Soil Treatment Area Reductions and Vertical and Horizontal Separation Distance Reductions Based on Use of Higher Level Treatment:

1. Purpose: Reductions in requirements for soil treatment areas, vertical separation distances to limiting layers or reductions in horizontal separation distances by using higher level treatment systems are based on the criteria that these systems are functioning as designed. If these criteria are not met, failure or malfunction is likely, which could result in damage to public health and water quality.

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2. The Board may permit reductions in the size of soil treatment areas and horizontal and vertical separation distances based on higher level treatment of effluent, only if an oversight program for inspection, maintenance, and repair is implemented by the Department. The Department may designate a separate entity to conduct and maintain the oversight of this program. However, enforcement of the requirements of this regulation will remain with the Board. System monitoring may be required.

3. The Board is not required to allow reductions in soil treatment areas or vertical or horizontal separation distances based on higher level treatment. If these reductions are not allowed, the Board is not required to implement Section 14.D.

4. Before permitting systems with a reduced soil treatment area as a result of higher level treatment, the Department shall develop an oversight program for inspections, maintenance, recordkeeping and enforcement to ensure and document that the systems are meeting the designed higher level treatment standards. At a minimum:

   a. Maintain accessible records that indicate:

      (1) Owner and contact information;

      (2) Address and legal description of property;

      (3) Location of OWTS specifying location of septic tank, higher level treatment system, soil treatment area and other components;

      (4) Description of OWTS installed;

      (5) Level of treatment to be provided;

      (6) Copy of current contract with a service provider;

      (7) Inspection and maintenance performed:

         (i) Dates system was inspected and/or maintained;

         (ii) Name and contact information of inspector and/or maintenance provider;

         (iii) Condition of system at inspection; and

         (iv) Maintenance tasks performed;

      (8) Permits, if required by the local public health agency for the work performed; and

      (9) Condition of system at completion of any maintenance activity.

   b. Frequency of inspection and maintenance shall be the most frequent of:

      (1) Manufacturer recommendations for proprietary systems or design criteria requirements for public domain technology;

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(2) Department or Division requirements;

(3) For higher level treatment systems, two inspections at six-month intervals for the first year of operation, followed by annual inspections for the life of the system.

5. Owner responsibilities:

a. Ensure OWTS is operating, maintained and performing according to the required standards for the designated treatment level;

b. Maintain an active service contract with a maintenance provider at all times; and

c. Each time his/her current contract with a maintenance provider is renewed or replaced, send a copy to the Department within 30 days of signing.

6. Maintenance provider responsibilities:

a. Shall notify the Department when a service contract has been terminated.

b. Shall obtain appropriate training/certification for specific proprietary treatment products as provided by the manufacturer necessary to provide the required operation and maintenance for said products.

E. Monitoring and Sampling:

1. For an OWTS for which monitoring of effluent is required, the Department or delegated third party shall collect and test effluent samples to ensure compliance with the provisions of this regulation.

2. Sampling may be required by the Department in conjunction with an enforcement action.

3. Any owner or occupant of property on which an OWTS is located may request the Department to collect and test an effluent sample from the system. The Department or delegated third party may perform such collection and testing services. The owner or occupant shall pay for these services.

a. If the Department or a delegated third party collects and tests effluent samples, a fee not to exceed that which is allowed by the OWTS Act may be charged for each sample collected and tested. Payment of such charge shall be stated in the permit as a condition for its continued use.

b. Conditions when a local public health agency can require routine monitoring:

(1) Indications of inadequate performance;

(2) Location in sensitive areas;

(3) Experimental systems; and/or

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(4) Systems under product development permits.

c. Sampling and analysis shall be performed according to American Public Health Association, American Water Works Association, and Water Environment Federation: *Standards Methods for the Examination of Water and Wastewater*, 21st edition.

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SECTION 15: ENFORCEMENT

A. Primary Enforcement Responsibility

1. The primary responsibility for enforcement of the provisions of the OWTS Act and these Regulations will lie with the Board.
2. In the event that Board of Health fails to administer and enforce the provisions of said Section and the regulations adopted under the OWTS Act, the Division may assume such functions of the Department or Board as may be necessary to protect the public health and environment. C.R.S. §25-10-110.

B. Division Authority to Administer and Enforce

1. Wherever the term Board, Board of Health or Department is used in this regulation, said terms also includes the Division under its designated authority for the purposes of administering and enforcing the provisions of these Regulations where necessary to protect the public health and environment.

C. Complaints Regarding Violations

1. Persons who believe that an OWTS, or lack adequate wastewater treatment, is in violation of the requirements of these Regulations shall report this information to the Department on a form specially provided for that purpose. Upon receipt of such complaint, the Department shall investigate the matter and, if appropriate, obtain a correction of any violation.
2. Whenever the Department determines that an OWTS is operating in violation of any provision of these Regulations or constitutes a nuisance or hazard to public health, safety or welfare, it shall give notice of such violation to the owner and/or occupant of the real property on which the OWTS is located.
   a. Such notice shall be in writing, shall describe the violation(s), provide a reasonable time for correction, and shall be addressed to the owner and/or occupant of the real property on which the OWTS is located.
   b. Service of such notice shall be by a member of the Gunnison County Sheriff's Department, an employee of Gunnison County, or by registered or certified mail, return receipt requested, deliverable to the addressee only. Service by mail shall be complete upon receipt by the Department of the return receipt. Service may be made by posting the notice in a conspicuous place on the property if one or more persons cannot be found or served after a diligent effort to do so; in such a circumstance, the notice shall include a statement of the diligent efforts made.

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3. When the Department receives information that an OWTS is not functioning in compliance with these Regulations, an onsite inspection of the property shall be conducted.

D. General Prohibitions.

1. The Department shall not issue to any person a permit to construct or remodel a building or structure that is not serviced by a sewage treatment works until the Department has issued a permit for an OWTS.
2. The Department shall not issue a Certificate of Occupancy for the use a building that is not serviced by a sewage treatment works until the Department makes a final inspection of the OWTS and approves the installation.
3. The construction of new, or the repair of existing cesspools is prohibited. Where an existing cesspool is failing, a conforming OWTS shall be installed. Where space is not available for a conforming OWTS, the criteria for repairs established within Section 10.H. shall be followed.
4. A person shall not connect more than one dwelling, commercial, business, institutional or industrial unit to the same OWTS unless such multiple connection was specified in the application submitted and in the permit issued for the system.
5. No person shall construct or maintain any dwelling or other occupied structure which is not equipped with adequate facilities for the sanitary disposal of sewage.
6. All persons shall dispose of septage removed from systems in the process of maintenance or cleaning at an approved site and in an approved manner.
7. No OWTS permit shall be issued to any person when the subject property is located within a municipality or special district that provides public sewer service, except where such sewer service to the property is not feasible in the determination of the municipality or special district.

E. Cease and Desist Orders

1. The Department may issue an order to cease and desist from the use of any OWTS or sewage treatment works which is found by the Department not to be functioning in compliance with the OWTS Act or with applicable regulations or is found to constitute a hazard to public health, or has not otherwise received timely repairs under the provisions of C.R.S. §25-10-106 (1) (j).
   a. A Cease and Desist Order may be issued by the Department after reviewing the facts of the situation at a meeting which the owner or occupant is invited to and given at least 48 hours written notice of.

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(1) The order shall require that the owner or occupant bring the system into compliance or eliminate the health hazard within thirty days, or thereafter cease and desist from the use of the system.

b. A cease and desist order issued by the Department shall be reviewable in the district court for the 7th Judicial District of Colorado, upon a petition filed not later than ten days after the order is issued.

F. Penalties Per C.R.S. §25-10-113.

1. Any person who commits any of the following acts or violates any of the provisions of this section commits a Class 1 petty offense as defined in C.R.S. §18-1.3-503.:

a. Constructs, alters, installs, or permits the use of any OWTS without first having applied for and received a permit as provided for in C.R.S. §25-10-106;

b. Constructs, alters, or installs an OWTS in a manner which involves a knowing and material variation from the terms or specifications contained in the application, permit or variance;

c. Violates the terms of a cease and desist order that has become final under the terms of C.R.S. §25-10-106 (1) (k).;

d. Conducts a business as a systems contractor without having obtained the license provided for in C.R.S. §25-10-109 (1);

e. Conducts a business as a systems cleaner without having obtained the license provided for in C.R.S. §25-10-109 (2);

f. Falsifies or maintains improper records concerning system cleaning activities not performed or performed improperly; or

g. Willfully fails to submit proof of proper maintenance and cleaning of a system as required by regulations adopted by the Department.

2. Upon a finding by the Board that a person is in violation of this regulation, the Board may assess a penalty of up to fifty dollars for each day of violation. In determining the amount of the penalty to be assessed, the Board shall consider the seriousness of the danger to the health of the public caused by the violation, the duration of the violation, and whether the person has previously been determined to have committed a similar violation.

3. A person subject to a penalty assessed pursuant to section 15.F.2. may appeal the penalty to the Board by requesting a hearing before the appropriate body. The request shall be filed within thirty days after the penalty assessment is issued. The Board shall conduct a hearing upon the request in accordance with C.R.S. §24-4-105.

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SECTION 16: OWTS SPECIAL DISTRICTS

A. Designation.

1. Special OWTS Districts may be designated by the Board of County Commissioners of the County of Gunnison, Colorado (herein the "Board). A Special OWTS District may be a specific geographic location, subdivision(s), drainage basin or land area defined with specific boundaries. The rationale of designating a Special OWTS District shall be the identification of a discrete geographical or hydrological area in which groundwater water pollution is to be systematically evaluated and specially regulated.

2. The Gunnison County Planning Commission will review the proposal to designate any area as a Special OWTS District in accordance with Section 1-110: *Process for Designating Special Areas* of the *Gunnison County Land Use Resolution*.

3. A public hearing will be conducted by the Board on a proposal to designate any area as a Special OWTS District.

   a. Public notice shall be written notice by certified mail to the property owners affected by such action, and publication notice shall be published in the official County newspaper at least 30 days before the hearing. When the proposed Special OWTS District is in an area of Gunnison County that is served by a local newspaper that is not the County's official newspaper, notice shall also be published in that local newspaper.

B. Regulation of OWTS in Special OWTS Districts.

1. The Board may specially regulate or prohibit the permitting and use of OWTS in certain OWTS Districts.

2. A public hearing will be conducted by the Board on a proposal to require special OWTS regulations or prohibition within an OWTS District.

   a. Public notice shall be written notice by certified mail to the property owners affected by such action, and publication notice shall be published in the official County newspaper at least 30 days before the hearing. When the OWTS District is in an area of Gunnison County that is served by a local newspaper that is not the County's official newspaper, notice shall also be published in that local newspaper.

   b. The Board may seek the guidance of the Environmental Health Board, the Planning Commission, and Community Development Department staff during the consideration of the proposal.

   c. The Board may request to receive environmental, hydrological, engineering, geological, ecological, and other reports and analysis.

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SECTION 17: SEVERABILITY, REPEAL, SAVINGS CLAUSE, EFFECTIVE DATE

A. Severability.

1. If any provision of these *Regulations* or its application to any person or circumstance is held invalid, unconstitutional, void, or inoperative, such holding shall not affect other provisions or applications of these *Regulations*. The Board hereby declares that in these regards, the Regulations adopted hereunder are severable, and that the Board would have adopted the remaining regulations hereof notwithstanding such holding.

B. Repeal.

1. Each prior series of regulations regarding OWTS (also known as ISDS) promulgated by the County is hereby repealed effective on the effective date of these *Regulations*.

C. Savings Clause.

1. The repeal of any regulation hereunder including but not limited to those in Section 17.B. shall not deny any right, action or cause of action which arose under existing regulations.

D. These *Regulations* become effective as provided by C.R.S. §25-10-101.

1. These *Regulations* may be amended, from time to time, by the Board. The procedure to amend or revise these *Regulations* shall follow Section 43.4.A.3 of Regulation 43, as required.

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APPENDIX A OWTS FEES AND LICENSING FEES

OWTS Fees		
OWTS new construction or replacement-Residential	$825.00	Includes two inspections. Additional inspections $100 each
OWTS new construction or replacement-Commercial	$925.00	Includes two inspections. Additional inspections $100.00 each
OWTS repair-tank replacement only	$150.00	Includes one inspection
OWTS repair system	$315.00	Includes two inspections. Additional inspections $100.00 each
OWTS system alteration or expansion	$500.00	Includes two inspections. Additional inspections $100.00 each
Environmental Health Board variance request	$750.00	
Review of application for transfer of title acceptance document	$60.00	If application is incomplete, fee will be charged again upon resubmission
Site inspection for Land Use Change review	$225.00	Includes inspection and report
OWTS Licensing Fees		
OWTS Installer License	$100.00	Includes OWTS Regulations, test and license
OWTS Installer License Renewal	$40.00	
OWTS Cleaner License	$60.00	Includes license and inspection
OWTS Cleaner Renewal License	$40.00	

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APPENDIX B GUNNISON COUNTY ENVIRONMENTAL HEALTH BOARD

1. Establishment.

a. The Board establishes the Environmental Health Board consisting of five regular members appointed for over-lapping three-year terms and two alternate members who are appointed for one-year terms. An alternate member shall serve in the event that any regular member is unable to act because of absence or conflict of interest in the matter before the Environmental Health Board.

b. The Board shall have the power to remove any member of the Environmental Health Board, with or without cause, no sooner than ten days after written notice is provided to such member.

c. In additional to the powers as the Board may grant from time to time, the Environmental Health Board shall consider and decide on the following matters:

(1) Applications for a variance in accordance with Section 4.Q of the *Gunnison County OWTS Regulations*.

(2) Requests for product development permits in accordance with Section 4.M of the *Gunnison County OWTS Regulations*.

d. The Environmental Health Board shall serve as the initial review body for the following matters, and shall provide recommendations to the Board:

(1) Revocation of OWTS Installer and Cleaner licenses;

(2) *OWTS Regulations*; and

(3) OWTS Special Districts.

2. Procedures of the Environmental Health Board shall include the following:

a. The Environmental Health Board shall meet whenever necessary to determine matters brought before it.

b. The Environmental Health Board shall, at its first meeting of each calendar year, elect a chairperson and a vice-chairperson from its regular members.

c. All meetings of the Environmental Health Board shall be open to the public except those executive sessions permitted by law.

d. A quorum of the Environmental Health shall consist of five members. A concurring vote of three members shall be necessary to grant an appeal or approve a decision.

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e. The Environmental Health Board shall keep a permanent public record of all proceedings.

f. The Environmental Health Board may adopt such additional rules or procedures as are necessary and appropriate.

3. Public Hearing.

a. The Environmental Health Board shall hold a public hearing as soon as practical after receiving an application.

b. Public hearing notice and posting procedures shall be the following:

(1) The Department shall issue a notice of public hearing and shall be responsible for posting a legal notice in the County's official newspaper. The legal notice shall be published at least once. The notice of public hearing shall be published and posted by the Department at least 20 days before the hearing and the first day the notice is published and posted shall be considered one of the 20 days. When the requested variance is located in an area of Gunnison County that is served by a local newspaper that is not the County's official newspaper, notice shall also be published in that local newspaper. The cost of publishing the notice shall be the responsibility of the applicant.

(2) The Department shall be responsible for posting the notice of public hearing at the County posting locations as determined by the Environmental Health Board during its annual organizational meeting.

(3) The applicant shall be responsible for mailing of the notice of public hearing to all owners of properties who own surface rights within 500 feet of each boundary of the entire parcel. The notice shall be sent by certified mail a minimum of 20 days prior to the public hearing date. The certified mail receipts shall be submitted to the Department at least two (2) weeks prior to the public hearing date as proof of mailing.

(4) The applicant shall be responsible for posting the public hearing notice in a conspicuous location on the project property that is readily visible from a road adjoining or serving the area or parcel related to the proposed appeal or review. The post, fence, structure or other location to which the public hearing notice is posted shall be sturdy and visible. Where the property does not have frontage on a public road, the sign shall be erected on the nearest road right-of-way, with a notation stating the direction and distance to the land on which the project is proposed, or another location approved by the Department so it is visible to the greatest number of people.

(i) The applicant shall obtain a copy of the public notice and posting

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board from the Department. The dimensions of the posting board shall be no smaller than 24 inches wide by 36 inches high.

(5) A week before the public hearing, the applicant is required to provide the Department with an affidavit certifying that notice was accomplished pursuant to this Section. A photograph of the posted sign shall be attached to the affidavit.

(6) The notice for the hearing shall clearly state information sufficient to give adequate notice to people whose rights could be affected by the proposed project. The wording used in the notice shall be reasonably understandable by a person who is not a lawyer or design professional, and shall contain at least the following information:

(i) A statement that the Environmental Health Board will be conducting a hearing;

(ii) The location of the public hearing;

(iii) The date and time of day when the hearing will be conducted;

(iv) A statement specifying the type of application being reviewed;

(v) An invitation to interested persons to attend the hearing;

(vi) A brief description of the proposed project that reflects the description submitted in the application;

(vii) A description of the location of the subject property or area by reference to known landmarks, road intersections, existing towns or developments, addresses or other similar methods; lot, block and filing number if in an approved subdivision; or quarter-section, township and range descriptions;

(viii) The address and telephone number of the Department, stating that this is where the full details of the application may be obtained and is where written comments can be directed before the public hearing; and

(ix) A request for notification to the Department of special accessibility needs of persons attending the hearing, pursuant to the requirements of the *American Disabilities Act*.

c. A public hearing shall be conducted in accordance with the following process and order:

(1) The Department shall report whether or not adequate notice has been accomplished, pursuant to section 3.b. above.

(2) The applicant shall make a presentation at the public hearing to inform persons at the hearing of the specifics of the matter before the Environmental Health Board. The applicant may submit a written statement.

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(3) The Department may discuss specific standards of these *Regulations* that apply to the proposed project; describe the required process of review; iterate public comments that have been received by the Department of the application, cite specific submittals, plans or actions that are required in order for the application to comply with the OWTS Regulations or OWTS Act, and provide any other relevant information concerning the application.

(4) The Environmental Health Board may ask questions of the Department, the applicant, or anyone else who is present.

(5) Public comments shall be heard. Written comments that have been received before the hearing shall be reported by the Department and acknowledged to be part of the hearing record.

(6) The applicant may respond to any comments made by the public, the Department, or the Environmental Health Board.

(7) The Department may respond to any comments made by the public, the applicant, or the Environmental Health Board.

(8) At the conclusion of the public hearing, the Environmental Health Board may continue the public hearing to a fixed date and time. An applicant shall have the right to request, and be granted on a showing of good cause, one continuance of each required hearing. All subsequent continuances shall be granted at the discretion of the Environmental Health Board and upon a finding that good cause has been shown for the continuance.

(9) If the public hearing is not continued is shall be closed and the Environmental Health Board shall render a decision on the proposed application.

d. Notice of the final decision shall be in writing and mailed to the applicant. A decision denying the proposal shall include the reasons which form the basis for denial. A decision approving the proposal shall include any conditions of the approval.

e. The approval of a variance request, and any conditions of the approval, shall be recorded on the deed to the property and any expenses associated with that recording shall be the responsibility of the property owner.

4. Ex Partè Communications.

a. Members of the Environmental Health Board, and applicants and their agents shall not engage in ex partè communication about matters or applications under review or reasonably anticipate to come under review. If an ex partè communication is attempted by telephone, in person, electronically, or other means outside of a regularly schedules meeting, the Environmental Health Board member involved shall first attempt to stop the party from the prohibited behavior, then document the

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communication and notify the Department by telephone or in written form. The Department shall then enter that documentation into the public record. The member or the Department shall report that documentation at the next meeting or hearing on the subject application. No ex partè communication shall be considered by the Environmental Health Board, or any of its members, in making a decision on a matter.

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APPENDIX C **TRANSFER OF TITLE INSPECTIONS**

A. Beginning on January 1, 2019, property owners of a residence or other building or facility served by an OWTS shall have an inspection performed to demonstrate that the system is functioning according to the design prior to the sale or transfer of title of the property. Prior to the sale or transfer of title of the property, the owners of the property shall obtain a complete Transfer of Title Acceptance Document from the Department, unless exempt or waived as noted by these Regulations.

B. The following properties and situations are exempt from the requirement to obtain a Transfer of Title Acceptance Document:

1. The property is served by an OWTS that was installed and given final approval by the Department within four years of the current closing date of the property. This includes finalized repair and alteration permits with components older than four years.
2. Properties served by a sewage treatment works;
3. Properties permitted under Section 1.G.;
4. Undeveloped properties;
5. The change in ownership is not an arm's length transaction. Examples of arm's length transactions include, but are not limited to, transfers between family members, parents and children and estate transactions between a spouse, parent, or child.
6. The change in ownership is creating or ending a joint ownership if at least one person is an original owner of the property and/or the spouse, parent or child of an original property owner.
7. The transfer of property is to a trust in the same name as the original owner, or to a limited liability company, if the original owner is one of the directors of the limited liability company.
8. The transfer of property is a result of foreclosure or forfeiture of real property.
9. The property owner has obtained a repair or alteration permit for the OWTS which has not expired, and the requirement to complete the repairs has been disclosed to the person acquiring title to the property.

C. Transfer of Title Acceptance Documents shall only be issued for properties served by a permitted OWTS, unless the OWTS on the property clearly predates the OWTS permitting program adopted by Gunnison County on March 25, 1968. Property owners with an unpermitted OWTS shall apply for

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a permit for the system prior to applying for a Transfer of Title Acceptance Document.

D. Applications for Transfer of Title Acceptance Documents, and inspection reports for such a purpose, shall be made on forms provided by the Department, and include the following information:

1. Owner's name and contact information;
2. Site address of the property;
3. Legal description of the property;
4. Type of water supply;
5. Number of dwellings and number of bedrooms served by the OWTS;
6. Where required as a condition of the OWTS permit, a copy of a current service contract with a qualified service provider;
7. Name of the inspector, inspector's NAWT or other applicable certification number;
8. Date and time of the inspection(s);
9. A septic tank inspection report completed within the previous 12 months, including a septic tank pumping receipt, when applicable, based on the inspection report;
10. An inspection report completed within the previous 12 months providing a detailed report noting the condition of the soil treatment area;
11. An inspection report completed within the previous 12 months for any mechanical components such as pumps, alarms or higher level treatment systems;
12. All components that are found to be in a state of malfunction shall be noted and disclosed within the inspection report; and
13. A record drawing showing the layout of the OWTS and all relevant setbacks. This requirement is waived if such a drawing is already on file with the Department and the system, as inspected, matches the plan on file.

E. Inspections for transfer of title purposes shall be performed only by inspectors certified by the National Association of Wastewater Technicians (NAWT). Inspectors for higher-level treatment systems shall have training relevant to

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the specific system, if public domain, or certification from the equipment manufacturer.

F. A Transfer of Title Acceptance Document may be issued provided the following criteria are met:

1. All tanks shall be structurally sound and in good working order and provided with safe and secure lids;
2. All internal devices and appurtenances such as tees, effluent screens and baffles that were originally provided with the tank or added later shall be intact and in working order;
3. Alarms, control devices, and components necessary for the operation of the system are present and in good working order;
4. A soil treatment area, or other means of subsurface wastewater treatment, shall be present and not in a state of failure;
5. There is not unapproved wastewater discharges from the system or structure; and
6. Any items meeting the condition of a "Failure" as defined in these Regulations have been corrected to the acceptance of the Department.

G. The Department shall issue an acceptance document when the criteria listed above in Section F. of this Appendix are met and shall include, among other things, the following:

1. Statement of the size, type and capacity of the system and a record drawing;
2. Describe any evidence of past system failures;
3. Describe any circumstances or factors that may have affected the ability of the inspector to evaluate the system;
4. Whether the system meets the permitting requirements of the Department; and
5. Any other known pertinent information.

H. The acceptance document shall remain valid until the date of real estate closing or for a maximum period of 12 months, whichever comes first.

I. If the Department determines that the OWTS does not meet the requirements for issuance of a Transfer of Title Acceptance Document, the Department may issue a Conditional Transfer of Title Acceptance Document if any of the following conditions are met:

1. The person acquiring title to the property agrees in writing to obtain a repair or alteration permit and complete all necessary repairs or alterations to the OWTS within 90 days of closing.
2. Conditions, such as frozen ground, prevent the property owner from completing the necessary repairs or alterations. In this case, the property

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owner or person acquiring title to the property shall agree in writing to obtain a repair or alteration permit and complete necessary repairs within a reasonable time limit approved by the Department.

3. Conditions, such as snow cover, prevent access to the property for performing an inspection. In this case, both of the following are required for the issuance of a Conditional Transfer of Title Acceptance Document:

   a. A NAWT-certified inspector certifies, in writing, that the property was inaccessible and that payment has been made up front for an inspection to be performed as soon as conditions allow.

   b. The person acquiring title to the property agrees in writing to have the inspection completed when conditions allow and, if needed, to obtain a repair or alteration permit and complete all necessary repairs within 90 days of the inspection.

J. An acceptance document may be revoked if it is determined that the system is no longer functioning in accordance with these Regulations or that false or misleading information has been made on the application or inspection reports.

K. Failure to obtain an acceptance document for a covered transaction as provided by these *Regulations* shall subject the owner who failed to obtain the document to a penalty assessed under C.R.S. §25-10-113.

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APPENDIX D CRESTED BUTTE WATERSHED OWTS DISTRICT

1. Designation.

a. The designation of the Crested Butte Watershed On-site Wastewater Treatment System (OWTS) District is hereby reaffirmed to be the geographical area depicted on the Gunnison County "Map of the Crested Butte Watershed OWTS District". That geographic area includes the entire "Town of Crested Butte Watershed Protection District". A copy of the map may be obtained from the Gunnison County Community Development Department (herein the "Department").

2. Purpose.

a. The purpose of the Crested Butte Watershed OWTS District is the identification of a discrete geographic area in which groundwater pollution is to be systematically evaluated and sewage treatment is to be specially regulated by Gunnison County to minimize the threat of or actual pollution of surface, stream or groundwater.

3. Applicability.

a. Whenever a provision of this Section is inconsistent with any other provision of *Gunnison County OWTS Regulations* or the OWTS Act, the provision imposing the more restrictive definition, requirement or standard shall apply.

4. Applications for new, major repairs, or alterations within the Crested Butte Watershed OWTS District.

a. Applications for new, major repairs, or alterations within the Crested Butte Watershed OWTS District shall meet the following requirements for approval:

(1) Proposed designs for new or replacement systems, and to the maximum extent feasible for repairs, shall provide a minimum treatment level of 2.

(2) The applicant shall obtain a Watershed District permit from the Town of Crested Butte prior to issuance of the OWTS Permit.

(3) Inspection and maintenance of system in this Section shall be in accordance with Section 14.D. if required, or with Section 5. below of this Appendix if not required.

5. Inspection and maintenance for existing systems.

a. For other than inspection and maintenance of existing systems as required in Section 14.D. of these *Regulations* or as specially required under the individual permit terms, existing systems shall be inspected on at least an annual basis by September 15 of each year at the expense of the owner. The owner of any such system shall cause to be performed, within 60 days of the inspection, at the owner's cost, all cleaning and maintenance identified during the inspection. The owner shall provide

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proof of compliance to the Department no later than October 15 of each year.

(1) Inspectors shall be certified by the National Association of Wastewater Technicians or an equivalent program approved by the Department. Inspectors shall have training relevant to the specific system or certification by the equipment manufacturer.

6. Self-certification inspections.

a. When the results of an inspection described in item 5 of this document certify that a system is functioning as designed and when the certified inspector states, in writing, that the inspection may not be necessary annually, and where a system does not have required inspection and maintenance per Section 14.D. of these *Regulations*, a self-certification inspection shall be acceptable on an annual basis by September 15 of each year for a period of time not to exceed five years or as stated by the certified inspector, whichever is less. The person conducting the annual OWTS self-certification inspection shall be educated on the system, familiar with the system components, and approved by the Department. The self-certification inspection form shall be system specific and provided by the Department.

7. The installation and use of garbage disposals is prohibited within the Crested Butte Watershed OWTS District.

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APPENDIX E MARBLE OWTS DISTRICT

1. Designation.

a. The designation of the Marble On-site Wastewater Treatment System (OWTS) District is hereby reaffirmed to be the geographical area depicted on the Gunnison County "Map of the Marble OWTS District". That geographic area includes but is not limited to Marble Ski Area Filings 1, 2, 3, 4, 5, and 7, Marble Ski Area Condominium Filing, Hermit's Hideaway and the Crystal River Filing, all located in Sections 13, 14, 23, 24, 25, 26, 27, and 28 of Township 11 South, Range 88 West of the 6th P.M. in Gunnison County, Colorado. A copy of the map may be obtained from the Gunnison County Community Development Department (herein the "Department").

2. Purpose.

a. The purpose of the Marble OWTS District is to specially regulate the installation and use of OWTS in a discrete geographic area to reduce and control pollution of water, to protect the public health and to preserve the environment.

3. Geologic and hydrologic constrains.

a. The geographic area designated as the Marble OWTS District presents geologic and hydrologic constraints that require special regulation of OWTS to minimize the threat to and pollution of surface, stream, and groundwater.

(1) Those geologic and hydrologic constraints include those identified in the Board of County Commissioners of Gunnison County *Resolution 1996-46* ("Resolution 96-46") and the report prepared by *Wright Water Engineers titled Geographic and Hydrologic Factors Governing Impacts of Development on the Crystal River near Marble, Colorado, Gunnison County, Colorado* ("Wright Report") referenced in that Resolution. Copies of *Resolution 96-46* and the *Wright Report* can be obtained from the Department.

4. Department review of applications for OWTS within the Marble OWTS District.

a. The evaluation of each application for an OWTS for a parcel of land, wholly or partially within the Marble OWTS District, shall include consideration of the geologic and hydrologic constraints identified. Such application may be approved only if the Department and the Gunnison County Public Works Department have made a final determination that the application has demonstrated by site-specific data that each of the constraints identified in the *Wright Report* are not present with regard to the subject application.

5. Applicability.

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a. Whenever any provision of this Section is inconsistent with any other provision, the provision imposing the more restrictive definition, requirement, or standard shall apply.

6. Marble OWTS Permit.

a. Any permit for an OWTS constructed or altered in the Marble OWTS District after June 3, 1997 shall be titled as a "Marble OWTS Permit".

b. The Department shall require all necessary investigations, reports, and analysis required to adequately evaluate an application or system, including but not limited to impacts on other properties. The Department may condition any permit issued in the District with mandatory site- or system-specific requirements and prohibitions based on such investigations, reports, and analysis.

c. Within the Marble OWTS District, an application for an OWTS shall be reviewed in coordination with other anticipated permit applications (e.g. Building, Access, Land Use). No OWTS permit shall be issued for a parcel of land, wholly or partially within the Marble OWTS District, unless and until the Department and the Gunnison County Public Works Department have determined that it is appropriate pursuant to County policies and regulations for the requisite building, access, and land use change permits.

7. Inspection and maintenance of OWTS within the Marble OWTS District.

a. Existing systems shall be inspected at least every three years at the expense of the owner. The owner of any such system shall cause to be performed, within 60 days of the inspection, at the owner's cost, all cleaning and maintenance identified during the inspection. The owner shall provide proof of compliance to the Department no later than September 15 of every third year.

b. Inspectors shall be certified by the National Association of Wastewater Technicians or an equivalent program approved by the Department. Inspectors shall have training relevant to the specific system or certification by the equipment manufacturer.

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